AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Guntapally (Village), Abdullapurmet(M), Ranga Reddy (Dist)-501512

3.1.1 Grants received from Government and non-governmental agencies for research projects, endowments in the institution during the year (INR in Lakhs)

3.1.2 Number of departments having Research projects funded by government and non government agencies during the year

S.No	Name of the research project/ endowment	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Year of Award	Amount Sanctioned	Duration of the project	Name of the Funding Agency	Type (Government/non-Government)
1	Solar Panel Cleaning Robot	Dr.J.B. Siddhartha	Electronics and Communication Engineering	2023-24	2.65 Lakhs	4 Months	MANAC Infotech	non-Government
2	Airline Fare Prediction Using Machine Learning Algorithms	S.Rajendar	Computer Science Engineering	2023-24	1.45 Lakhs	4 Months	SashakT HR Services Pvt Ltd	non-Government
3	Design of Intelligent Robots Based on Body Sense Control	Dr G. Chandrashekar Reddy	Electronics and Communication Engineering	2023-24	6.30 Lakhs	4 Months	MINDWAVE Informatics	non-Government
4	Design and fabrication of 3D printer	Dr Y Ramesh Babu	Mechanical Engineering	2023-24	4.20 Lakhs	4 Months	SHELLX Software Solutions Pvt.Ltd	non-Government
5	Design solar street light pole	Dr.T .Kranti Kumar	Electrical And Electronics Engineering	2023-24	6.60 Lakhs	3 Months	Green life energy solutions LLP	non-Government
6	Design green auto	Dr. M.Surender	Electrical And Electronics Engineering	2023-24	5.35 Lakhs	3 Months	Innovative Systems	non-Government
7	Remote controlled Waiter Robot for RestaurantAutomation	Dr.V.Nagaraju	Electronics and Communication Engineering	2023-24	6.25 Lakhs	5 Months	MINDWAVE Informatics	non-Government
8	Phishing Detection System Through Hybrid Machine Leraning Based On Url	Dr Shahebaz Khan	Computer Science Engineering	2023-24	3.15 Lakhs	5 Months	Conscience Technologies	non-Government
9	Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques	Dr Shakeer basha	Computer Science Engineering	2023-24	2.55 Lakhs	4 Months	Conscience Technologies	non-Government

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Avanthi Institute of Engg. & Tech
Gurtihanally (V) Abdullapurmet (Mdl) R.R.Dist

MANAC
Infotech (P) Limited

Date: 15/09/2023,

To

The principal,

Avanthi Institute of Engineering and Technology,

Gunthapally (V), Abdullapurmet (M), Hyderabad, Telangana.

Subject: Request for Enhancements of project" **Solar Panel Cleaning Robot"**

Dear Sir,

I hope this letter finds you in good health and high spirits. I am writing to you as the Managing Director, MANAC infotech (P) Ltd , 201, 2nd, Sagarview Building, Dilsukhnagar, Hyderabad, Telangana with regard to a project that our agency funded in collaboration with your esteemed college.

Firstly, I would like to express my gratitude for the opportunity given to us to collaborate on such a promising project. After careful evaluation and analysis, we have identified several areas where the project could benefit from additional enhancements. These enhancements would undoubtedly contribute to further elevating the overall quality and impact of the project.

We are open to further collaboration with your college in terms of sharing our expertise and resources to facilitate the successful implementation of these enhancements. Meanwhile we will start the process of payment. We kindly request your prompt attention and favorable consideration of our proposal. We would be more than willing to provide any additional supporting documentation or answer any queries you may have.

Thank you for your time and support. We eagerly await your positive response and look forward to our continued collaboration for the advancement of this admirable project.

MANAC INFOTECH PVT. LTD. HYD.

Managing Director

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www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R & D PROJECT

Dt: 19/09/2023,

TO
The Manager,
MANAC Infotech (P) Limited,
Dilsukhnagar, Hyderabad.

Sub: Solar Panel Cleaning Robot.

Respected Sir,

With reference to letter received from your end regarding **Solar Panel Cleaning Robot,** We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Detection Of Chronic Kidney Disease Using Machine Learning Algorithm. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principal Investigator

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Ranga Reddy (Dist.)

Section A: General Information:

Project Title	Solar Panel Cleaning Robot
Project Type Research Design & Demonstration of Automated Street Light Controller Research Other	Solar Panel Cleaning Robot
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	2,65,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	2,65,000 Rs/-

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Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	40,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	80,000/-
A	Subtotal (Capital Items)	1,20,000/-
General Component		
1	Manpower and Contingencies	40,000/-
2	Consumables	90,000/-
3	Travel	10,000/-
4	Overhead	--------
5	PC	---------
6	Printer and Scanner	5,000/-
B	Subtotal (General)	1,45,000/-
C	**Total cost of the project (A+B)**	2,65,000/-

I. **Project Cost:2,65,000/-**
II. **Contribution of consortium (if any):**
III. **Total Budget (I+II):2,65,000/-**

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Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr J.B.Siddhardha
	Designation	Associate Professor
	Email	Avanthicse2005@gmail.com
	Telephone	9701228648
	Mobile	8639601017
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

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Information on Lead PI	Expertise available with the Principal Investigator
	Dr J.B.Siddhardha, Associate Professor Dept. Of ECE, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided Two M. Tech project students based on his research area. Guided Five B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of to words GPRS model & used them for the above said project works. The tools learned by PI are as follows: The Arduino, ultrasonic modules, motor driver, and motors work on 5 volts Word Processing: MS Office

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1. Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram					
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme				
2	Procurement of experimental equipment and installation				
3	Design of basic simulation of the project and control strategy using Embedded C & Embedded RTOS				
4	Implementation of research project and operational control of the test facility using Embedded C & Embedded RTOS				
5	Annual review of the progress of the project and effective guidance for implementation				
6	Commissioning of the project hardware				
7	Testing of the project and code				
8	Experimental validation of the project				
9	Report Writing				

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	Dedicated Embedded C Lab

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AVIH/2023/R&D PROJECT

Dt: 22.09.2023,

TO

The Manager,

MANAC Infotech (P) Limited,

Dilsukhnagar, Hyderabad.

Sub: Details of Project coordinator of **Solar Panel Cleaning Robot**.

Respected Sir,

We are pleased to appoint faculty for coordination of **Solar Panel Cleaning Robot,** We are happy to submit detailed proposal along with the milestones of Embedded Automation Design and Prototype.

Details of the Faculty:
Dr J.B.Siddhardha, Associate Professor
Department of ECE
Phone Number: 9701228648
Thank you and looking forward for your collaboration.

Principal Investigator

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MANAC
Infotech (P) Limited

Date: 04.10.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: **Solar Panel Cleaning Robot** - Regarding

With reference to communication along with detailed submission of project milestones. We are pleased to invite for an internal discussion on execution of the project and other design and implementation regarding development of Toward Better Statistical Validation Of Machine Learning-Based Multimedia Quality Estimators. We are deputing Engineer for the above state of project.

Details of the Engineer:
Mr.Sk Saleem
Phone Number: 8576902121

Thank you and looking forward for your response.

Regards

PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthaplly (V), Hayathnagar,
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MANAC
Infotech (P) Limited

WORK ORDER

Date: 05/10/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: **Solar Panel Cleaning Robot** Further to your offer for preparing of Portal/Control for face recognition as per the Telephone Discussion quotation, we are pleased to place the work order as below

S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	**Solar Panel Cleaning Robot**	10	26,500	2,65,000

Work Oder Valid: One Year (05 Oct 2023 to 04 Oct 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For MANAC Infotech (P) Limited,

MANAGER

MANAC INFOTECH PVT. LTD.

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Solar Panel Cleaning Robot

Abstract:- The dust particles accumulating on the solar panels will prevent the solar energy from reaching the solar cells, thereby reducing the overall power generation. Power output is reduced as much as by50%, if the module is not cleaned for a month. In order to regularly clean the dust, an automatic cleaning system which removes the dust on the solar panel is developed. In this paper, the problem is reviewed and the method for dust removal is discussed. A robot cleaning device is developed and it travels the entire length of the panel. A PIC microcontroller is used to implement robots control system. The robot provided a favorable result and proved that such a system is viable by making therobotic cleaning possible, thus helping the solar panel to maintain its efficiency.

Keywords:- PV panels, Brush, DC motors, microcontroller, battery, Dust effects.

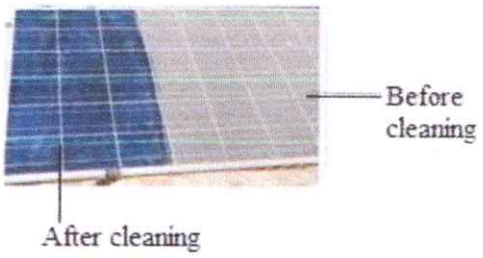
I. INTRODUCTION

After the invention of the solar cell, the solar technology reached the skies by implementing solar panels that use the solar energy to generate electrical energy. Renewable energy is used in all the industries and they use huge solar panels in more numbers in the form of an array. On the other hand it has also started playing a major role in the household usage. Now the problem with the implementation of solar panels is, their maintenance. Different cleaning methods are used to clean the solar panels to maintain their efficiency [1]. After one year of exposure without cleaning, the systems were cleaned using pressurized distilled water spray with brushing for one of the plant that showed 6.9% energy generation efficiency [2].There are many factors that affect PV panel's power efficiency, such as, shadow, snow, high temperatures, pollen, bird droppings, sea salt, dust and dirt. The main factor that affects a PV panel's efficiency is dust, which can reduce its efficiency by up to 50%, depending on the environment.

Cleaning dirty panels with commercial detergents can be time consuming, costly, hazardous to the environment or even corrode the solar panel's frame. Ideally, solar panels should be cleaned every few weeks to maintain peak efficiency, which is especially hard to do for large solar panel arrays. There is a need for an automated cleaning solution to this problem which can service large ground based solar array up to an operating park of 22,000

panels (20,000 Square meters).

The cleaning of dust particles on the solar panelist huge problem because it's time consuming process and requires lot of man power and money. To remove this limitation,



robotics can be used as it eliminates human labor and at the same time more economical and autonomous.

Fig.1:-solar panel

II. ANALYSISOFDUSTONPANEL

The accumulation of dust on the surface of a photovoltaic module, decreases the radiation reaching the solar cell and causes loss in the generated voltage and power. Dust doesn't only reduce radiation on the solar cell, but also changes the dependence on the angle of incidence of such radiation. According to research, daily energy loss along a year caused by dust deposited on the surface of the PV module is around 4.4%. During long periods without rain, daily energy loss can be higher than 20%. In addition, the irradiance loss is not constant throughout the day and is strongly dependent on the sunlight incident angle and the ratio between diffuse and direct radiations. When studied asa function of solar time, the irradiance loss is symmetric with respect to noon, where they reach the minimum value.

PV module performance has been tested under the deposition of different pollutants (red soil, ash, sand, calcium carbonate and silica). According to the obtained results, a drop of PV module's voltage and output power is observed when dust particles are deposited on the PVmodule depending on the mass accumulated and the type of pollutant. Moreover, larger reduction occurs when the PV module's temperature is increased. In addition to that, keeping the PV modules clean and cool, results inefficient system performance. Power generation in the solar panel with dust and without dust with varying load resistance is experimentally determined. [4]

III. NEEDFORANAUTOMATICPANELCLEANER

Accumulation of dust on even one panel, reduces their efficiency in energy generation. That is why; the panel's surface should be kept as clean as possible. Current human based cleaning methods for Solar panels are costly in terms of time, water and energy usage. No automation has taken place in cleaning the solar panels, so, there exists a need for developing automatic cleaning machines which can clean and move easily on the glass surface of the panels.

IV. PVEFFICIENCY

Efficiency in photovoltaic solar panels is measured by the ability of a panel to convert sunlight into usable energy for human utility. Maximum efficiency= {(max power output)/(incident radiation flux*area of collector)}*100.

V. METHODOLOGY

The proposed solar panel cleaning robot is used to remove the dirt and dust deposited on the solar panel thus helping the solar panel to absorb the maximum quantity of energy returns back to the carrier robot. The carrier robot moves to the next panel and the process is continued.

B. Carrier Robot

The carrier robot detects the solar panel with the help of IR sensor and stops when the sensor output becomes high. The sensors are used to sense the start and end of panels. It helps the robot to understand where to stop and where to start. When the carrier robot detects the panel, the output of the IR sensor becomes high and it stops the movement of the carrier robot. At this time, the transmitter sends the signal to the cleaning robot to perform its cleaning action.

The movement of the carrier robot is performed by the driver circuit. After cleaning the panel, the cleaning robot reaches the carrier robot and transmits the signal to the carrier robot. As soon as the carrier robot receives the signal, the carrier robot along with the cleaning robot travels to the next panel and the process is continued. The transmitter and the receiver action actions are carried out by means of the transmitter and the receiver module.

- *BlockDiagram*

The proposed system consists of two main parts, the first is the cleaning robot and the second is the carrier robot. The carrier robot acts as a carrier that carries a cleaning robot by moving from one panel to another. The cleaning robot travels along with the carrier robot, covering the entire length ofthe panel.The brush which isattachedto the cleaning robot takes away the dirt and dust from the panel. The robot is programmed with a microcontroller which controls its operations and its movement from one panel to the other panel.

The main criterion of the cleaning system design is its ability to clean multiple panels in a solar farm using a single robot. Such a system is considerably much simpler than having multiple robots in the same farm working simultaneously.

In practice, cleaning of solar panels should be frequently done which makes the process more laborious and expensive [5].In this paper, the effects of accumulated dust on the performance of the solar panels are investigated by referring the results obtained by experimentation in dusty atmosphere of different levels [3]. An auto cleaning robot to work as the auto cleaner which is equipped on the solar panel is also proposed.

A. Working Principle

The carrier robot, along with the cleaning robot moves towards the solar panel and stops its movement by sensing the solar panel. The carrier robot then sends the signal to the cleaning robot. By receiving the signal, the cleaning robot travels to the entire length of the solar panel in both forward and backward directions and cleans the panel for the specified time duration .After cleaning, it

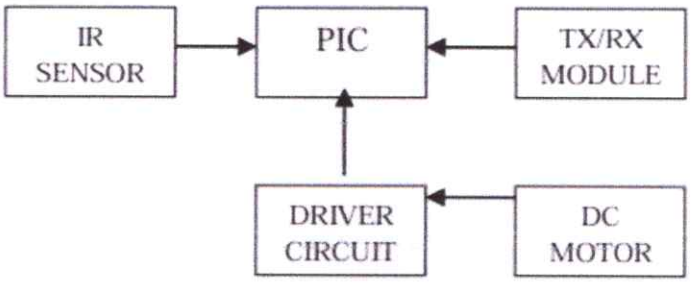


Fig. 2:- Block Diagram

B. Cleaning Robot

When the carrier robot stops its movement by detecting the panel, it transmits the signal to the cleaning robot. The cleaning robot, after receiving the signal from the carrier robot, travels to the entire length of the panel in forward directions.

On moving in forward direction, the cleaning robot removes the dust and dirt accumulated in the panel with a brush which is attached to it. After reaching the time duration, it travels in reverse direction and reaches the carrier robot. On reaching the carrier robot, it again transmits the signal to the carrier robot. The carrier robot after receiving the signal, starts to move and when it senses the panel, it stops again and the process is continued.

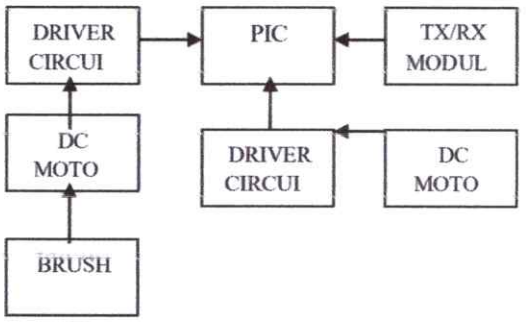


Fig.3:-Cleaning Robot Block Diagram

C. RF Module–Transmitter& Receiver

The RF modules are 433 MHz RF transmitter and receiver modules [7][10]. The transmitter draws no power when transmitting logic zero while fully suppressing the carrier's frequency. It thus consumes significantly low power in battery operation. When logic obeisant, carrier is fully on 4.5mA with a 3volts power supply[9]. The data is sent serially from the transmitter which is received by the tuned receiver. Transmitter and the receiver are duly interfaced to two microcontrollers for data transfer [8]

- *Transmitter Block Diagram*

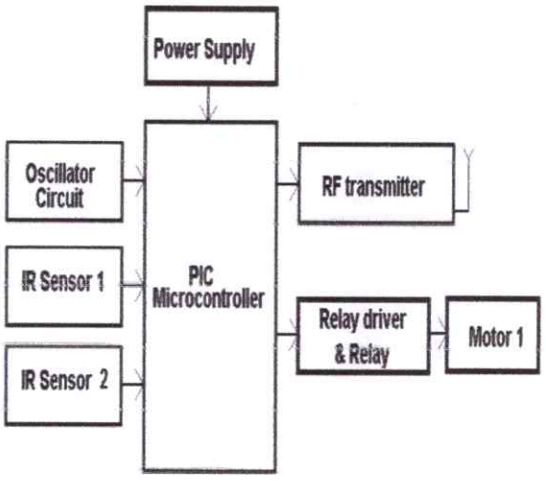


Fig.4:-Transmitter Block Diagram

- *Circuit Diagram*

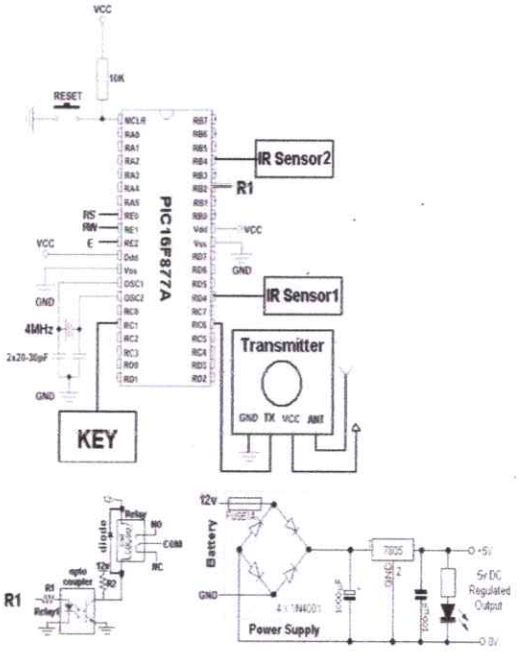


Fig.5:-Transmitter Circuit Diagram

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- *Receiver Block Diagram*

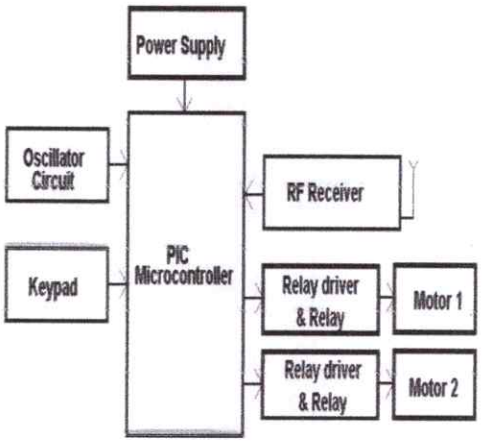

Fig.6:-Receiver Block Diagram

- *Circuit Diagram*

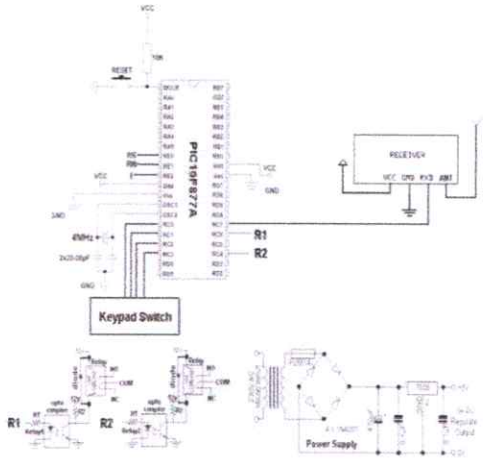

Fig.7:-Receiver Circuit Diagram

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- *Flow Chart*

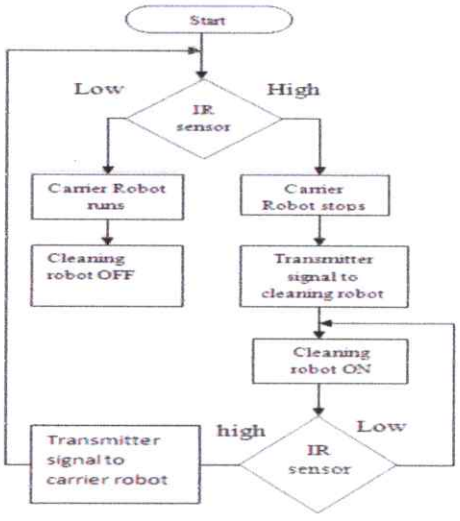

Fig.8:-Flow Chart

VI. CONCLUSION

This project highlights the effect of dust, dirt, pollen, sea salt, and bird droppings on the PV systems' efficiency. Dust has a major impact on the efficiency and performance of the solar panels. The reduction in the peak power generation can be up to 10 to 30%. Power reduction was observed due to dust accumulation on the panels and this can be improved by using robotic cleaning method. It has increased Power generation capacity of the solar panels. Easy maintenance, low cost and less power usage are few advantages of this process. Finally, the reduction in the peak power generation can also be overcome by using this cleaning system.

The device is lightweight because most of its material is made of aluminum. Comparing the costs of cleaning by Manual operation and Automatic operation, the cost for automatic cleaning is proved to be more economic and significantly less cumbersome, particularly, in systems with large number of solar panels. Frequent and periodical cleaning ensures that the solar panels work consistently with a good transmittance at all times [6].

VII. FUTURESCOPE

The device that is developed, reduces the number of workers needed to clean the arrays significantly. Further development could be done to optimize the system to be smaller, lighter and easier to assemble in higher volumes and to become more user-friendly. The next focus will be on diversifying the robot's functionality by including auto-inspection, communication and self-diagnostic features.

The installation of a thermal camera module that will allow for inspection of the panels since the cleaning head is in direct contact with every individual panel. Cold spots just under the glass surface will indicate a section of panel that remain sun-cleaned and will prompt the cleaner to make another passifneeded. Solar panel energy can be used instead of using individual battery. Wireless cameras can be also attached for perfect wireless operation.

REFERENCE

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www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the software development project being carried out at Avanthi Institute of Engineering and Technology ECE Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	**Solar Panel Cleaning Robot**	2,65,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be returned as per the agreement.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

Principal

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Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 12.02.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
MANA Infotech (P) Limited,
Hyderabad.

Respected Sir,

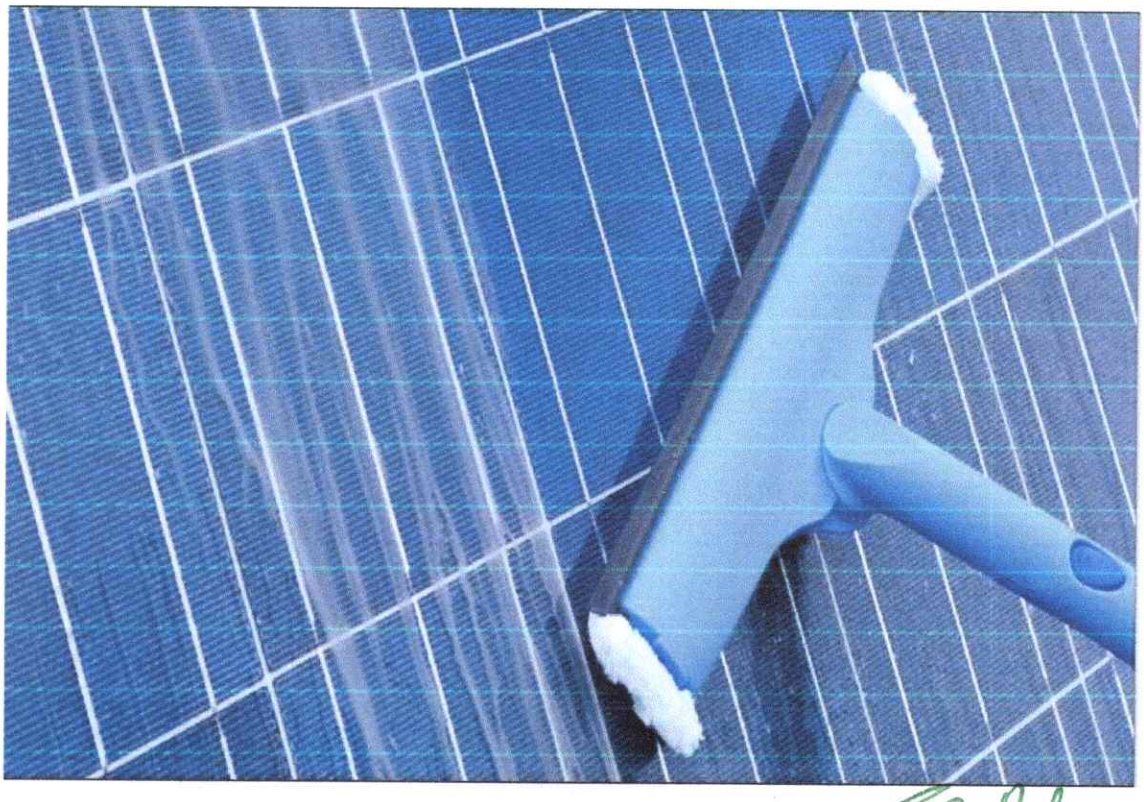
Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

Principal
PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthaplly (V), Hayathnagar,
Ranga Reddy (Dist.)



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Gunthaplly (V), Hayathnagar,
Ranga Reddy (Dist.)

SashakT
HR Services Pvt Ltd
HR Skilling Consulting

Date: 25/09/2023,

To
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Approval Letter for Financial Assistance for Project work entitled **"Airline Fare Prediction Using Machine Learning Algorithms"**

I'm Mr. Swamy Rao Kulkarni, working as one of the Directors of SashakT HR Services Pvt Ltd. which is located at 102, Sharada Nagar, Vanastalipuram Hyderabad, Telangana,India.

SashakT HR Services Pvt Ltd is very much pleased to see your application and is very much impressed with your faculty profile and research field. We are happy to inform you that the manager has approved your project proposal entitled **"Airline Fare Prediction Using Machine Learning Algorithms"** We anticipate this project proposal may be of greater signifying concern to the people in this Complete details of corresponding project proposal are mentioned, check it and plan accordingly .the project proposal should complete in specified time and should submit the complete information on time.

Looking forward to a meaningful collaboration with AVIH, Gunthapally

.

Thanks& Regards

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AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

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www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. RamaChandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R&DPROJECT Dt: 30.09.2023,

TO
The Manager,
SashakT HR Services Pvt Ltd,
Hyderabad.

Sub: Submission of detailed proposal of Detection of suicide related posts in twitter data stream.

Respected Sir,

With reference to letter received from your end regarding **Airline Fare Prediction Using Machine Learning Algorithms**. We are happy to submit detailed proposal along with the milestones of Design and hardware Control of Detection of suicide related posts in twitter data stream. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL

PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthaplly (V), Hayathnagar,
Ranga Reddy (Dist.)

Section A: General Information:

Project Title	**Airline Fare Prediction Using Machine Learning Algorithms**
Project Type Research Design &Control of Floor Cleaning Robot Research Other	Airline Fare Prediction Using Machine Learning Algorithms
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	1,45,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	1,45,000 Rs/-

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Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	45,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	30,000/-
A	Subtotal (Capital Items)	75,000/-
General Component		
1	Manpower and Contingencies	20,000/-
2	Consumables	45,000/-
3	Travel	3,000/-
4	Overhead	--------
5	PC	---------
6	Printer and Scanner	2,000/-
B	Subtotal (General)	70,000/-
C	**Total cost of the project (A+B)**	1,45,000/-

I. **Project Cost:1,45,000/-**
II. **Contribution of consortium (if any):**
III. **Total Budget (I+II):1,45,000/-**

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Ranga Reddy (Dist.)

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	S.Rajender
	Designation	Assistant Professor
	Email	csehod.avih@gmail.com
	Telephone	8106637110
	Mobile	9849714234
Secondary Point of Contact	Name:	Dr RamaChandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

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Information on Lead PI	Expertise available with the Principal Investigator
	S.Rajender, Assistant Professor Dept. Of Computer Science Engineering, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided five M.Tech project students based on his Research area. Guided seven B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of many simulations software& used them for the above said project works. The tools learned by PI are as follows: The Aurdino, ultrasonic modules, Word Processing: MS Office

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1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram					
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme				
2	Procurement of experimental equipment and installation				
3	Design of basic simulation of the project and control strategy using Arduino, Ultrasonic modules, motor drives				
4	Implementation of research project and operational control of the test facility using Arduino, Ultrasonic modules, motor drives				
5	Annual review of the progress of the project and effective guidance for implementation				
6	Commissioning of the project hardware				
7	Testing of the project and code				
8	Experimental validation of the project				
9	Report Writing				

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Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	Dedicated Control systems Lab

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AVIH/2023/R&DPROJECT

Dt: 09.10.2023,

TO

The Manager,

SashakT HR Services Pvt Ltd,

Hyderabad.

Sub: Details of Project Airline Fare Prediction Using Machine Learning Algorithms.

Respected Sir,

We are pleased to appoint faculty for coordination of Detection of suicide related posts in twitter data stream. We are happy to submit detailed proposal along with the milestones of Arduino & Ultra sonic modules Automation Design and Prototype.

Details of the Faculty:

S.Rajendar, Assistant Professor

Department of CSE

Phone Number: 8106637110

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthapily (V), Hayathnagar,
Ranga Reddy (Dist.)

SashakT
HR Services Pvt Ltd
HR Skilling Consulting

Date: 12.10.2023,

To,
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Airline Fare Prediction Using Machine Learning Algorithms

We request you to periodically submit progress reports regarding the project. After discussion with our committee members the budget is finalized for the mentioned project proposal in attached. As per your communication the concerned faculty members are Principal Investigator S.Rajendar, Assistant Professor& Department of CSE, AVIH, and Hyderabad. In this regard, we extend our facilities as well as sponsorship of Rs.1,45,000/- (One lakh forty Five Thousand Rupees only).

Details of the Engineer: Mr G.Shravan Kumar
Phone Number: 9396970037
Thank you and looking forward for your response.
Regards
Ravi
Managing Partner
SashakT HR Services Pvt Ltd

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SashakT
HR Services Pvt Ltd
HR Skilling Consulting

WORK ORDER

Date: 16/10/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Airline Fare Prediction Using Machine Learning Algorithms

Further to your of for preparing Detection of Unveiling In-app ads and Uncovering covert attacks via mobile app-web inter as per the Telephone Discussion quotation, we are pleased to place the work order as below.

S.NO	Description	Total Cost in Rs.
1	Airline Fare Prediction Using Machine Learning Algorithms	1,45,000

Work Oder Valid: One Year (16th Oct 2023 to 15th Oct 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feedback given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For SashakT HR Services Pvt Ltd,
MANAGER

PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthapily (V), Hayathnagar,
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AIRLINE FARE PREDICTION USING MACHINE LEARNING ALGORITHMS

Abstract:

This paper discusses the issue of airfare. A set of characteristics defining a typical flight is chosen for this purpose, with the assumption that these characteristics influence the price of an airline ticket. Flight ticket prices fluctuate depending on different parameters such as flight schedule, destination, and duration, a variety of occasions such as vacations or the holiday season. As a result, having a basic understanding of flight rates before booking a vacation will undoubtedly save many individuals money and time. Analyzing 3 datasets to get insights about the airline fare and the features of the three datasets are applied to the seven different machine learning (ML) models which are used to predict airline ticket prices, and their performance is compared. The goal is to investigate the factors that determine the cost of a flight. The data can then be used to create a system that predicts flight prices.

I. INTRODUCTION

Traveling is one of the biggest reasons, and everyone wants to try new things in life. With its diversity, India offers one of the most fascinating cities in the world, as well as a wealth of fantastic options and one of the world's most religiously and ethnically diverse nations. Because of its cultural and geographical variety, India is one of the world's most promising countries. These developments also raise concerns regarding the cost of airline tickets. When comparing the price of an airline ticket today to the previous day, it might be difficult to make an educated judgement. Tourists who wish to visit a new location in India should be aware of ticket prices in order to obtain the cheapest and most reliable ticket price that meets their requirements. This void inspires the concept of forecasting flight tickets in order to make it easier for travellers to buy tickets that meet their demands. The data set for this project contains 10683 records with 13 columns that define international and domestic flights in India in 2019. In this paper, we have analyzed this data set using machine learning techniques in order to forecast the price of an airline ticket based on the data columns qualities. We'll strive to delete null values (error input) based on these columns so that they don't impact our analysis' result. We'll start with the Duration column to figure out how many people are in each group. We'll check for null values before discarding the NaN values. Next implementation is Exploratory Data Analysis which is important in the achievement of our forecast. We will feature engineering certain characteristics such that they may be used to describe the output of our machine learning model. Handling categorical data is one of the most significant aspects of EDA. Categorical data can be classified into Nominal data (without order) & Ordinal data that uses One Hot Encoder and Label Encoder (with order). Because of the nominal categorical data, we will do the Airline column using One Hot Encoder. The same code will be applied to the Source column, and the Price and Source features will be compared. We have previously split the training and test datasets in our Machine Learning Process. This strategy will be used to prevent data leakage. The data is imported and pre-processed. In this research, we will forecast the price.

As a result, we'll do a feature selection to determine which feature has the best relationship with the target variable (Price). We will partition the data using sickest learn and utilize Random Forest for this sort of analysis. This score can be improved by using hyper parameter tuning, which includes Randomized Search CV and Grid Search CV. This research looks at the three most popular designs and learning methodologies. We are able to overcome this challenge in our project. The literature analysis is explained in Section 1 of the further documentation and the recommended system architecture is explained in Section 2. We'll go through the architectural algorithm and procedure in this part.

II. LITERATURE SURVEY

Tiyani Wang [1] proposed to predict the cost on pricing basis at the level of marketing strategies. The DB1B and T-100 datasets, as well as data about the economy. It depicts a high-level overview of the proposed framework's primary components. In the data preparation stage, all datasets are removed to exclude any inaccurate sample data, changed, and merged based on the section of the market. The feature extraction module extracts and generates handmade characteristics that are intended to characterize a market segment.

P.H.K.Tissera[2] proposed the research component's output which is a web application built with React native, a hybrid web application development platform with two APIs. One API is written in node js, while the other is written in Python Flask. K.Tziridis[3] Th.Kalampokas[4] proposed the complex tactics and approaches are used by airline firms to assign dynamic airfare pricing. These tactics consider a number of financial, marketing, commercial, and societal elements that all influence the final flight cost. Because the pricing mechanisms employed by airlines are incredibly complicated, It is quite difficult for a customer to get the best deal on an airline ticket because prices fluctuate often. G.A.Papakostas[5] proposed several strategies have lately been presented that can give the optimum moment for a consumer to purchase an airline ticket by projecting the price of the flight. The bulk of these strategies rely on advanced prediction models developed in the Machine Learning branch of computational intelligence research (ML). Janssen [6] designed a linear quantile hybrid regressor model that performs well for predicting plane ticket prices several days before arrival. Ren, Yang and Yuan [7], studied for predicting aircraft ticket prices, LR (77.06% acc.), NB (73.06% acc.), SR (76.84% acc.), and SVM (80.6% acc. for two bins) models performed well.

III. PROPOSED SYSTEM

In proposed system the Random Forest Algorithm was utilized. In machine learning, it can be utilized for both classification and regression issues. The principle of ensemble learning supports it. It is capable of dealing with huge datasets with a high dimensionality. Even with enormous data sets, we can use technique to discover the lowest airline ticket. A para estimator is created with extra-trees regressors, which fits various randomly selected decision trees on

distinct sub-samples of the data set and utilizes aggregating to increase projected correctness as well as control over-fitting.

We applied a heatmap, which is a graphical representation of particular matrix values as colours that may be used to visualize the concentration of values between two dimensions of a matrix. This enhances pattern detection and gives the impression of depth. By using the Randomized Search CV as our hyperparameter tuning, we were able to enhance our score from 79 to 81 percent.

Figure 1 explains about the architecture of proposed system, we collect the data and then we cleaned the data in data pre-processing stage which refers to dropping of data to enhance the performance. Before testing and training we should build the model to generalize the training data and then apply that knowledge to new data which has never see before in order to generate predictions and achieve its goal. The next step is to train/test the approach in order to determine the model's correctness. To do so, divide the data set into two sets: a training set and a testing set. We divide the training set and testing set as follows: 80% for training and 20% for testing. After testing and training we fit the best model to get the good accuracy score and we predict the cheapest flight ticket price using machine learning algorithms.

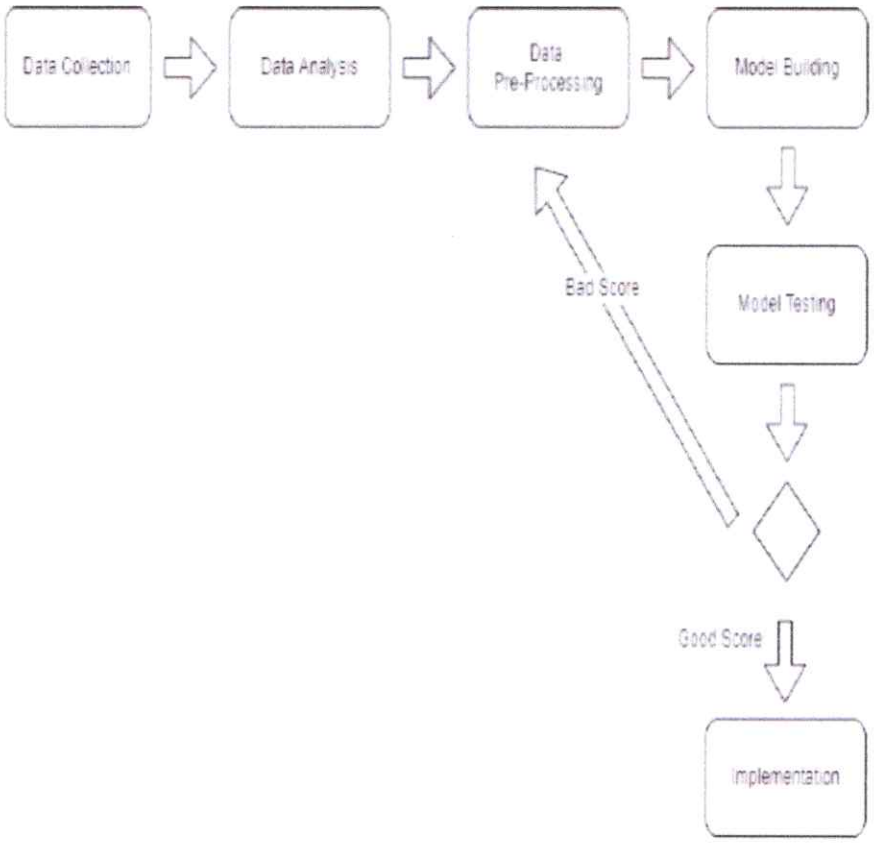

Fig. 1. Architecture of Proposed System

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IV. ALGORITHM

The following are the steps in the working procedure:

Step 1: Pick R observations at random from the training data set.

Step 2: Develop classification trees for the sample points you've chosen.

Step 3: Select a number A to indicate the classification trees in the system.

Step 4: Steps 1 and 2 will be repeated.

Step 5: Find the projections for current data elements in each decision tree, then assign the samples to the class with the best scores.

The Random Forest Algorithm's construction steps are as follows:

1.Data Pre-processing

2.Application of the Random Forest Algorithm to the dataset for training

3.Forecasting the result of the study

4. Construction of Confusion matrix

5. Exploring the possible result

Random Forest is an aggregate technique that combines numerous decision trees with a mechanism called Bootstrap and Aggregation, sometimes known as bagging, to tackle both regression and classification tasks.

The random forest training method uses the traditional methodology of bootstrap aggregation, often known as bagging, to train tree learners. With replies Y = y1,..., yn and a training set Z = z1,..., zn, Bagging a random sample with replacement of

the training set (V times) a random sample is chosen and trees are fitted on those observations:

For v = 1,..., V:

1. Take a look at n different training scenarios from Z, Y with replacement; label them Zv, Zv.
2. Use Zv and Yv to train a classification or regression tree.

After training, you can create predictions for unknown samples z' by adding the predictions from all the different regression trees on z':

$\hat{f}=1V\Sigma fvVv=1(\overline{z})$

Alternatively, the majority vote is employed in the case of classification trees.

Additionally, the standard deviation of the predictions from all of the separate regression trees on may be used to quantify the prediction's uncertainty.

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$$\sigma=\sqrt{\Sigma}(fvVv=1(\bar{Z})-\bar{f})2/V-1$$

V. RESULTS

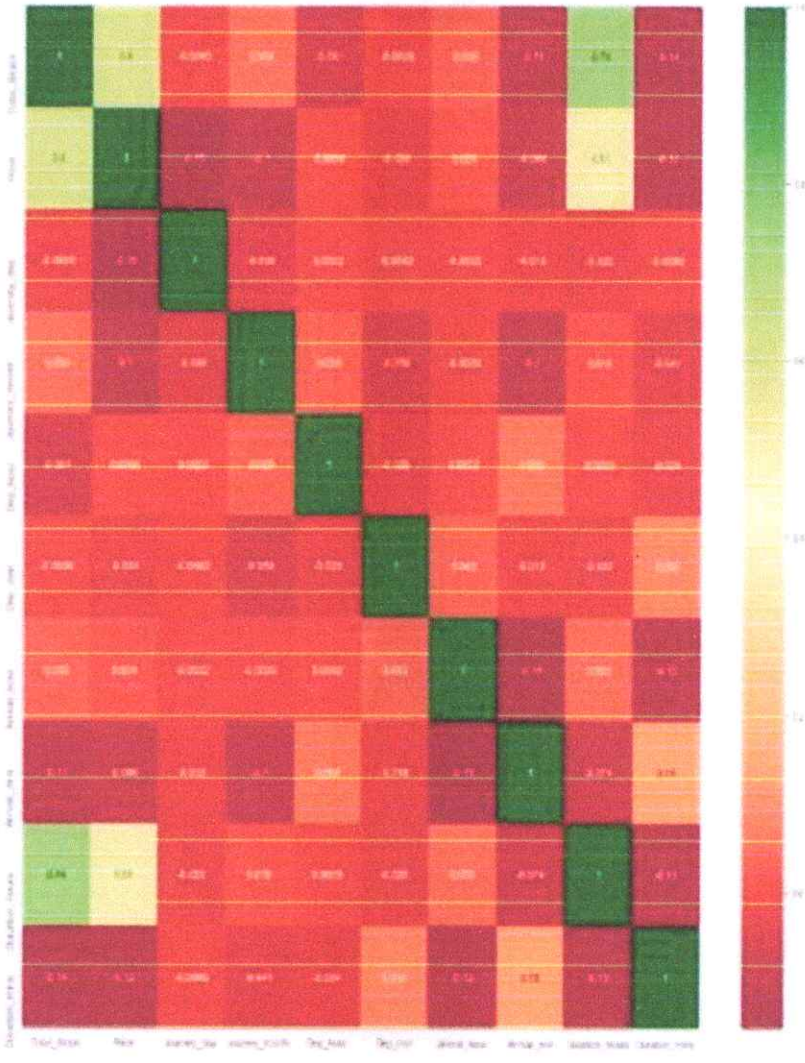

Fig. 2. Heat-map

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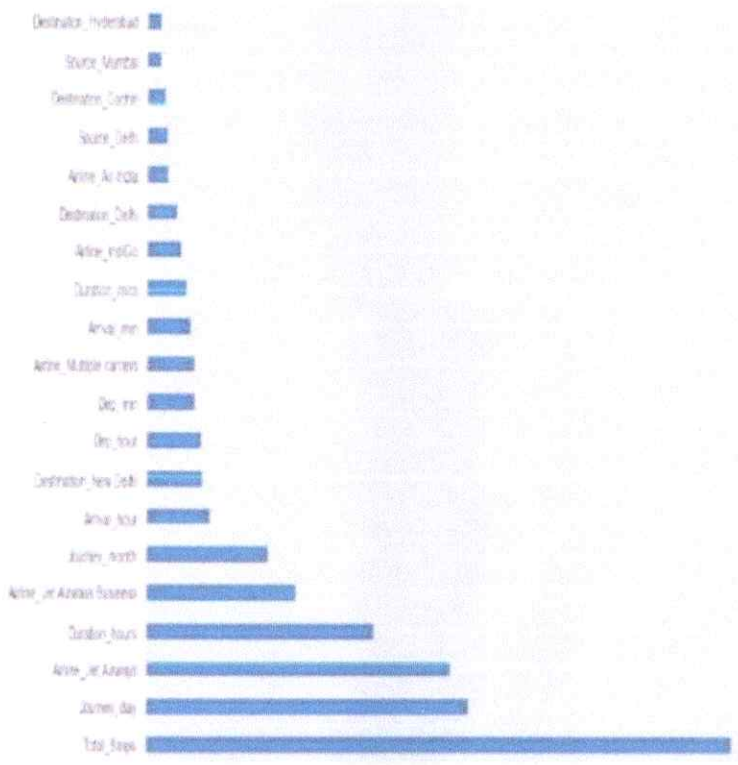

Fig. 3. The fitting model feature selection approach

Figure 2 is a Heat map which shows uunique features of a matrix are portrayed as colors, which is a graphical depiction. A heat map is a useful tool for visualzing how values are distributed across two dimensions of a matrix. This enhances pattern detection and gives the impression of depth.

The fitting model feature selection approach shown in Figure 3 is based on a machine learning technique that we are aiming to apply to a specific data set. It uses a greedy search method, in which all feasible feature combinations are compared to the evaluation criterion.

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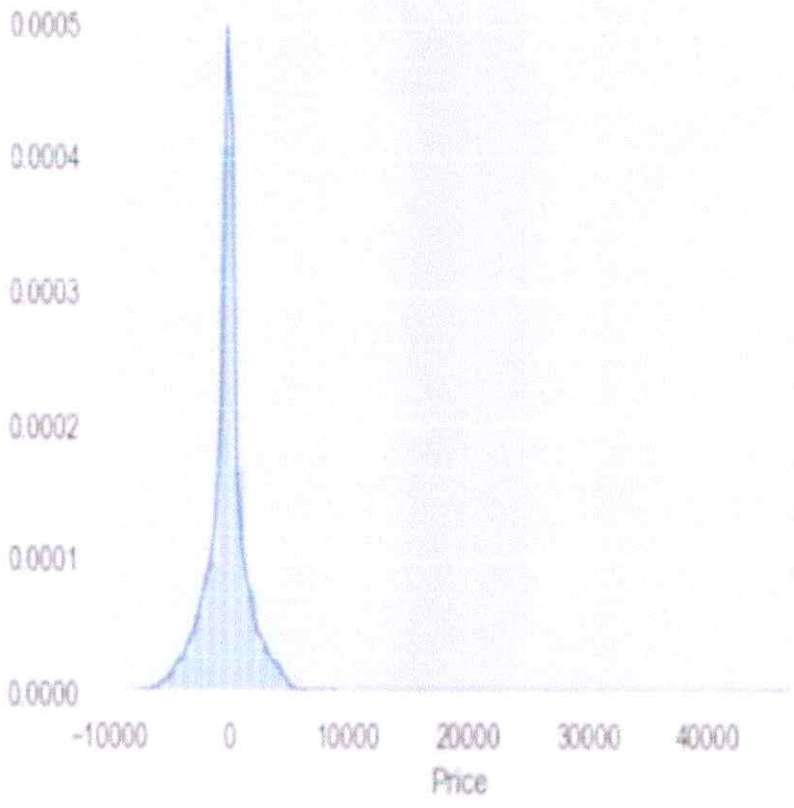

Fig. 4. The displot shows the univariate data distribution

In figure 4 the fitting model is the displot which depicts the univariate data distribution, that is, the data distribution of a variable vs the density distribution. The data variable is sent to the sns.displot() method, which provides a plot with the density distribution.

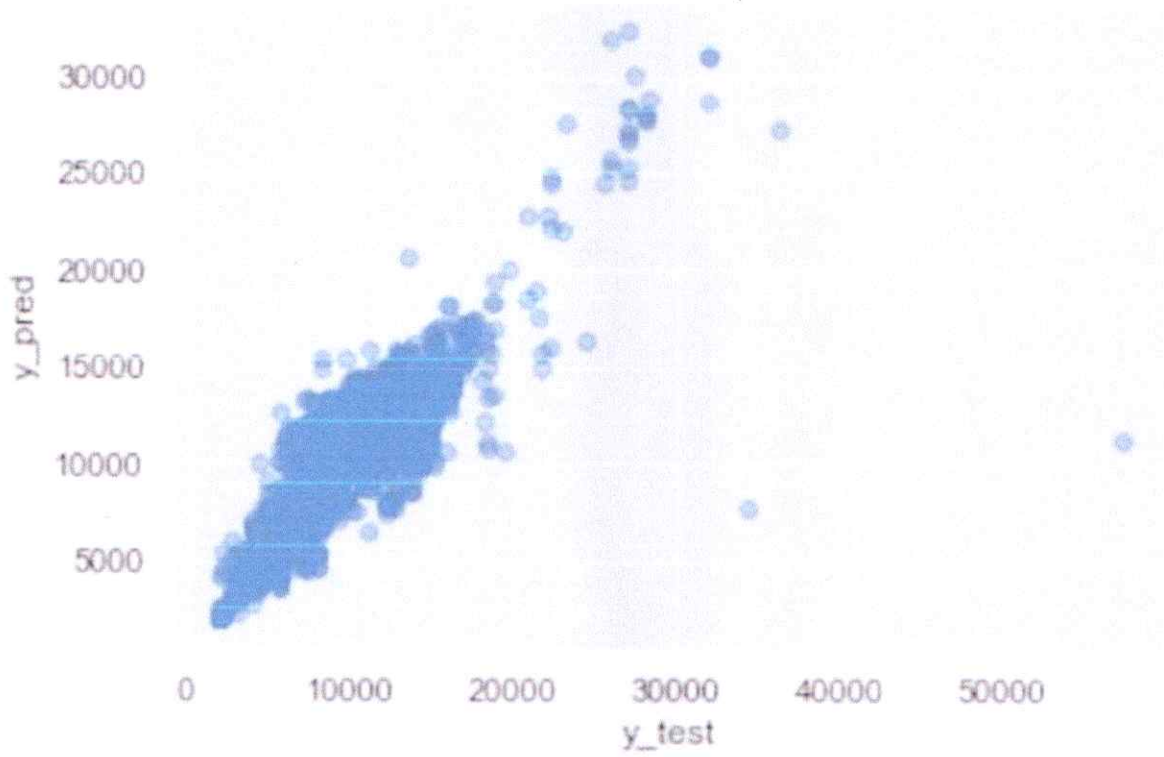

Fig. 5. Scatter plot1

Figure 5 is a scatter plot, which is a two-dimensional graph that depicts the amount of influence one variable has on another or the relationship between them. Scatter plots, like line graphs, depict data points on vertical & horizontal axes.

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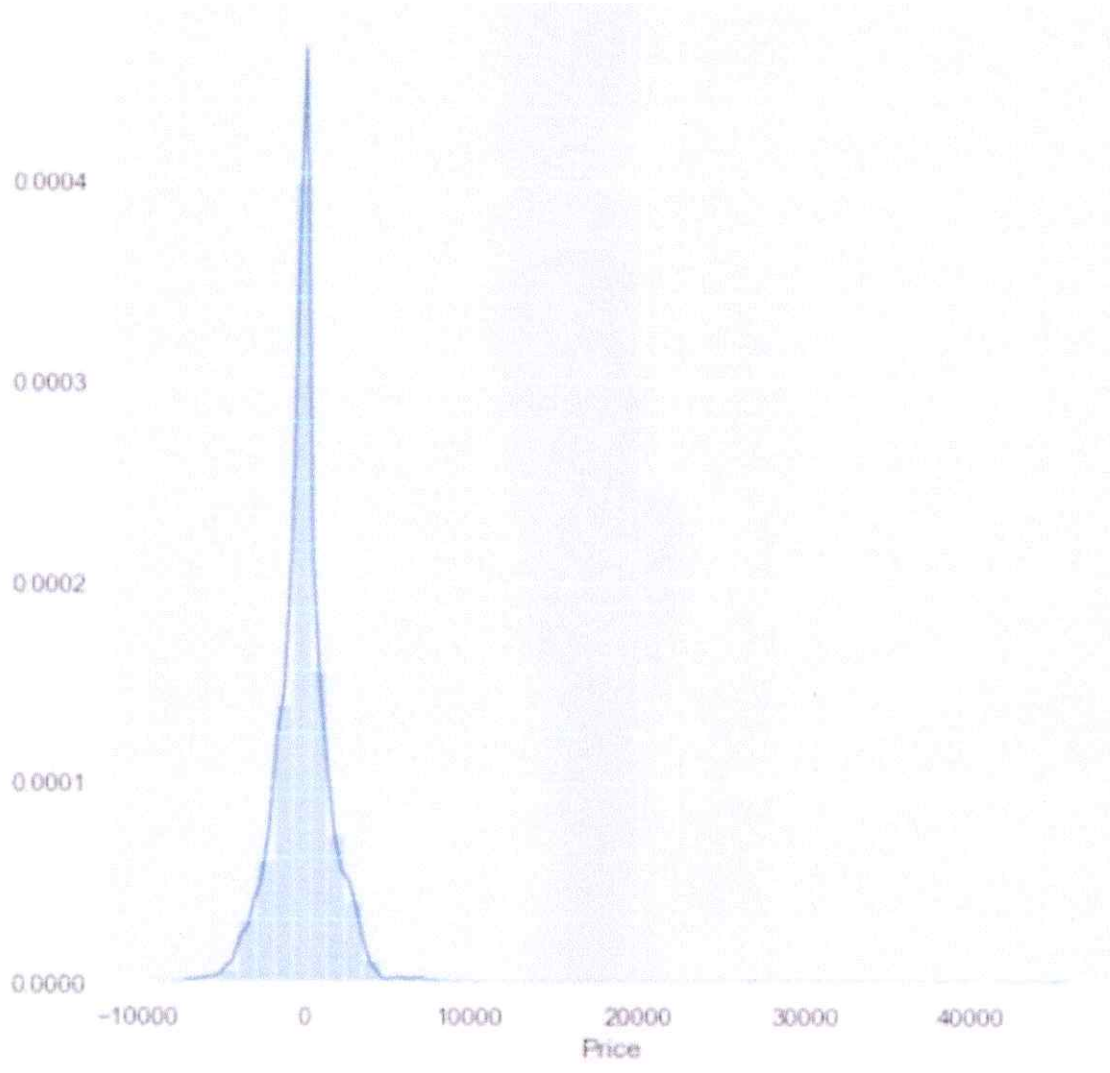

Fig. 6. The univariate data distribution

Figure 6 explains the displot which depicts the univariate data distribution in hyper parameter tuning importing randomized search CV to despot the test prediction.

Figure 7 explains the scatter plot to know how one variable is affected by another variable in hyper parameter tuning importing randomized search CV to scatterplot the test prediction.

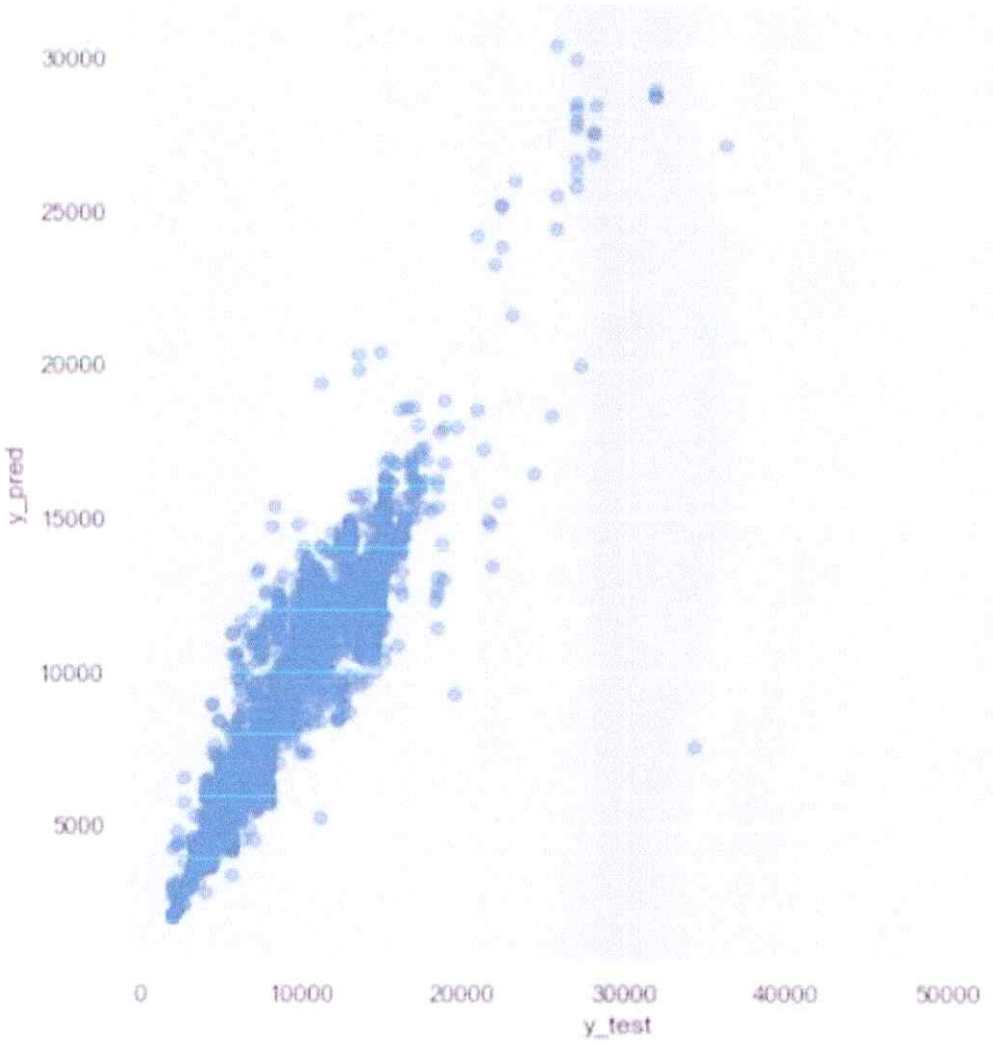

Fig. 7. Scatter plot2

VI. CONCLUSION

In this research paper we performed machine learning models to find the cheapest ticket price. In a literary review, ticket anticipation and demand forecast algorithms are utilized. We began with a summary of airline pricing policies, which involves periodic ticket price adjustments based on internal and external factors. We described how customers and airlines interact to determine dynamic ticket costs. We imported the data set and performed exploratory data analysis to predict the outcome. We converted all text data types into numerical datatype as machine learning is the study of computer algorithms. We dropped the columns which are of no use and handled the categorical data. The training and test datasets have been split. This strategy will be utilized to prevent data leaking, and the model will be fitted using the Random Forest Regressor, For Classification and Regression, ensemble learning is used. The data is imported and pre-processed. based on our hyperparameter tuning, we've improved the result.

By using the Randomized Search CV as our hyperparameter tuning, we have already improved our score from 79 to 81 percent.

REFERENCES

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PRINCIPAL
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www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the software development project being carried out at Avanthi Institute of Engineering and Technology Computer Science Engineering Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	Airline Fare Prediction Using Machine Learning Algorithms	1,45,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be returned as per the agreement.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

Principal

PRINCIPAL
Avanthi Institute of Engineering & Technology
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Ranga Reddy (Dist.)

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www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 20.02.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
SHELLX Software solutions Pvt Ltd,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

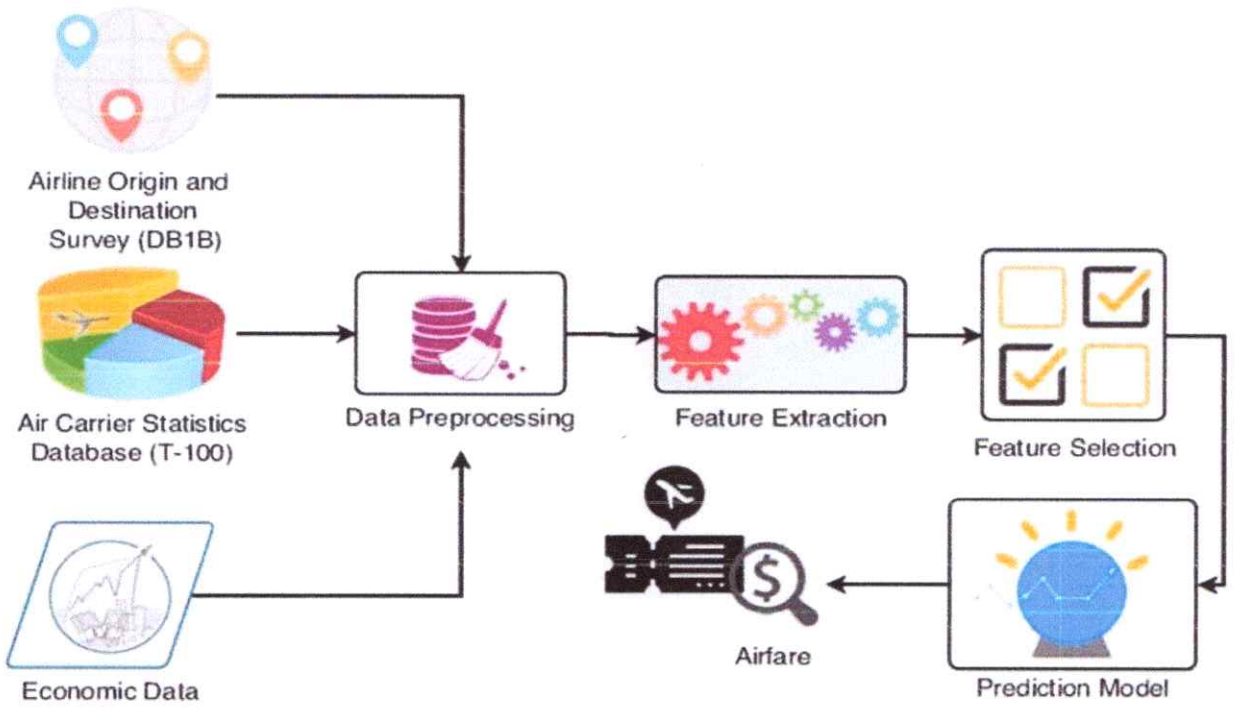
The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

Principal

PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthaplly (V), Hayathnagar,
Ranga Reddy (Dist.)



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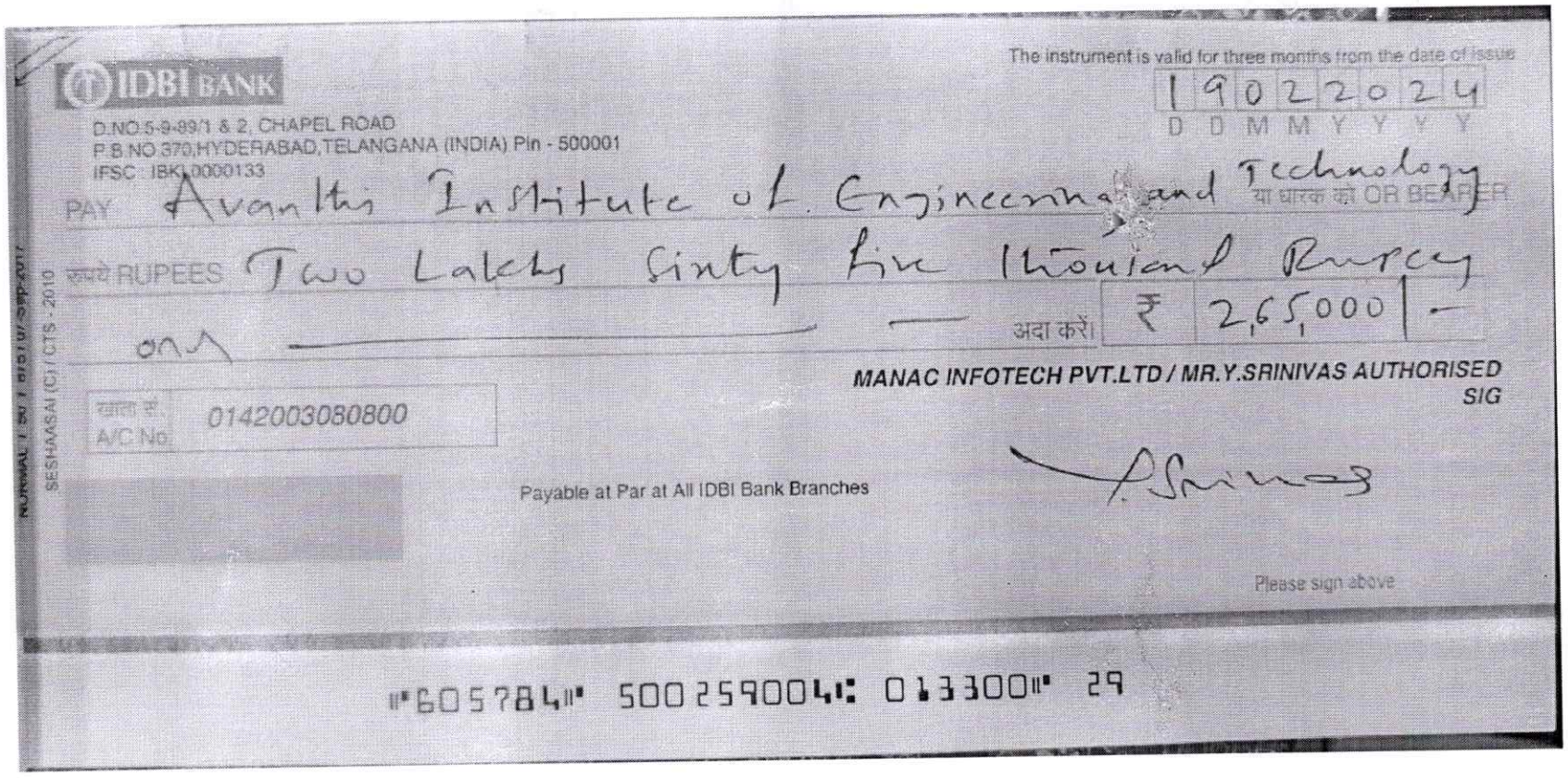

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PRINCIPAL
Avanthi Institute of Engineering & Technology
Gunthaplly (V), Hayathnagar,
Ranga Reddy (Dist.)

MIND WAVE *Informatics*

Date: 07/08/2023,

To
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Approval Letter for Financial Assistance for Project work entitled **"Remote controlled Waiter Robot for Restaurant Automation"**

Dear Sir,

I'm Dr G. Chandrashekar Reddy, working as one of the Directors of MIND WAVE Informatics Ltd. which is located at 2nd Floor, SVR Towers, 8-2-1/A, Srinagar Colony Main Rd, , Venkateshwara Hills, Punjagutta, Hyderabad, Telangana, India.

Our nature of business is to design Humanoid Robots Manufacturing, Training & Development of 3DPrinting Technology, with experience in outcome based programmer's Workshops, Seminars, Guest Lectures, Virtual training for Government, Industries & Academic Institutions.

We are looking for team of professors at your college in Electronics and Communication Engineering who can work for our advance research project in developing critical software for Medical Robotics in processing of Contact less human health diagnostic system. If your college is interested to work in collaboration, we forward further documentation& NDA Le (Non Disclosure Agreement).

Looking forward to a meaningful collaboration with AVIH, Gunthapally

Thanks&Regards

MIND WAVE INFORMATICS HYDERABAD

#.2nd Floor, SVR Towers, Opp: AXIS Bank, Srinagar Colony, Punjagutta, Hyderabad-16
Ph.No. 040-40041005 || Email: mr@mindwaveinformatics.com || www.mindwaveinformatics.com

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. RamaChandra Reddy, M.Tech, Ph.D
Principal
AVIH/2023/R&DPROJECT Dt: 10.08.2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Sub: Submission of detailed proposal of **Design of Intelligent Robots Based on Body Sense Control.**

Respected Sir,

With reference to letter received from your end regarding Design of Intelligent Robots Based on Body Sense Control.. We are happy to submit detailed proposal along with the milestones of Design and hardware Control of Design of Intelligent Robots Based on Body Sense Control.. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech.
Gunthapally (V), Abdullapurmet (Mdl) R R.Dist.

Section A: General Information:

Project Title	**Design of Intelligent Robots Based on Body Sense Control.**
Project Type Research Design &Control of Floor Cleaning Robot Research Other	Design of Intelligent Robots Based on Body Sense Control.
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	6,30,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	6,30,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R R.Dis.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	1,70,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	90,000/-
A	Subtotal (Capital Items)	2,60,000/-
General Component		
1	Manpower and Contingencies	1,45,000/-
2	Consumables	2,05,000/-
3	Travel	15,000/-
4	Overhead	-------
5	PC	--------
6	Printer and Scanner	5,000/-
B	Subtotal (General)	3,70,000/-
C	**Total cost of the project (A+B)**	6,30,000/-

I. **Project Cost:2,60,000/-**
II. **Contribution of consortium (if any):3,70,000/-**
III. **Total Budget (I+II):6,30,000/-**

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr G. Chandrashekar Reddy
	Designation	ASSOCIATE PROFESSOR
	Email	Avanthiece2005@gmail.com
	Telephone	9133553324
Secondary Point of Contact	Name:	Dr RamaChandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

Information on Lead PI	**Expertise available with the Principal Investigator**
	Dr G. Chandrashekar Reddy, Associate Professor Dept. Of ECE, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided two M. Tech project students based on his research area. Guided seven B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of to words GPRS model & used them for the above said project works. The tools learned by PI are as follows: The intelligent robots based on motion sensing can be equipped with automatic and manual control, motor driver, and motors work on 5 volts Word Processing: MS Office

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram					
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme				
2	Procurement of experimental equipment and installation				
3	Design of basic simulation of the project and control strategy using intelligent robots, Ultrasonic modules, motor drives				
4	Implementation of research project and operational control of the test facility using intelligent robots , Ultrasonic modules, motor drives				
5	Annual review of the progress of the project and effective guidance for implementation				
6	Commissioning of the project hardware				
7	Testing of the project and code				
8	Experimental validation of the project				
9	Report Writing				

PRINCIPAL
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Gurtihapally (V), Abdullapurmet (Mdl) R R.Dist.

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	R&d Lab

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www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/R&D PROJECT Dt:14 .08.2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Sub: Details of Project Design of Intelligent Robots Based on Body Sense Control..

Respected Sir,

We are pleased to appoint faculty for coordination of Design of Intelligent Robots Based on Body Sense Control.. We are happy to submit detailed proposal along with the milestones of Remote controlled Waiter Robot for Restaurant Automation.

Details of the Faculty:
Dr G. Chandrashekar Reddy,
Associate Professor
Department of ECE
Phone Number: 99133553324

Thank you and looking forward for your collaboration.

Principle Investigator
PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R R.Dis.

MIND WAVE
Informatics

Date: 21.08.2023,

To,
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Design of Intelligent Robots Based on Body Sense Control.

We request you to periodically submit progress reports regarding the project. After discussion with our committee members the budget is finalized for the mentioned project proposal in attached. As per your communication the concerned faculty members are Principal Investigator Dr G. Chandrashekar Reddy, Associate Professor and Department of ECE, AVIH, and Hyderabad. In this regard, we extend our facilities as well as sponsorship of Rs.6,30,000/-(Six Lakhs Thirty Thousand Rupees only).

Details of the Engineer: Mr. Amaranth

Phone Number: 9505379414
Thank you and looking forward for your response.
Regards
Ravi
Managing Partner
MIND WAVE INFORMATICS

MIND WAVE INFORMATICS HYDERABAD

2nd Floor, SVR Towers, Opp: AXIS Bank, Srinagar Colony, Punjagutta, Hyderabad-16
Ph.No. 040-40041005 || Email: hr@mindwaveinformatics.com || www.mindwaveinformatics.com

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www.aietg.ac.in email: principal.avanthi@gmail.com

Date:04/12/2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Dear sir

The college does not have sufficient working capital to complete the next half of proposed project which we have been discussed. We are therefore requesting for advance funds to the staff and other expenses required to work on this project. Therefore we urge you to consider our request for approval to receive funding in advance for this project. Thank you for your consideration of this request. Sincerely,

Thanking you,

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V) Abdullapurmet

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www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the Al hased software development project being carried out at Avanthi Institute of Engineering and Technology Electronics and Communication Engineering Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	Design of Intelligent Robots Based on Body Sense Control.	6,30,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be rcturncd as pcr thc agrccmcnt.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

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www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 18.12.2023,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R R Dist.

DESIGN OF INTELLIGENT ROBOTS BASED ON BODY SENSE CONTROL

Abstract. Recognizing human actions to control the robot has become a challenging task. His paper provides a manipulator control system based on a mobile platform. The bending Angle of the specific connecting rod mechanism is collected to obtain the bending degree of the finger. The nine-axis gyroscope is used to detect the attitudes of the hand and the arm, and the data is transmitted to the HT32F5352 control board. Experimental results show that intelligent robots based on motion sensing can be equipped with automatic and manual control, environmental detection, and other functions.

1. Introduction

With the development of science and technology, our life is becoming more and more intelligent. The development and use of various sensors and the rapid development of computer technology and chip integration make automation technology increasingly mature in our life, and the increasing application of artificial intelligence is rapidly changing our way of life. Intelligent robots are prominent in industrial production, and the requirements for intelligence and reliability are getting higher and higher. The design of intelligent robots based on motion sensing is based on the development of electronic information technology, making full use of various sensors and the high-speed combination of the computer and communication network. Intelligent robots based on motion sensing are suitable for today's automatic control technology, and it is ready for the development of intelligent future and research .,At present, intelligent robots based on motion sensing is in the development stage. Xu et al. developed the design of a wireless car motion system based on gesture control.

The system can control the car with gloves, but its function is single, the data transmission distance is short, and the application range is limited. Luo et al. developed a motion interactive control system design for unmanned vehicles based on YOLOv5 gesture recognition, which has improved gesture recognition. The method of hand ratio 1 to 10 recognition is adopted to control the mechanical arm car, respectively. However, it cannot control the mechanical arm and the car separately; it is unable to perceive the hand action, which is difficult in practical operation and application; it cannot adjust the speed of the device . Wen et al. developed a gesture recognition manipulator control system based on an application control platform. They used a Leap Motion infrared gesture sensor to collect hand gestures to control the manipulator and an application to control the car so as to achieve separate control of the manipulator and the car, but Leap Motion's cost was high. The application and Leap Motion are used for control, respectively, at the same time. As a result, when operating, people need to look at the phone screen and the movement of the mechanical arm at the same time, which is difficult to operate.

More and more scholars have focused their research on accelerometers and gyroscopes to sense body movements. The robot's actions are controlled by human motion to increase the robot's capability of human-computer interaction and cooperation. On the basis of robot technology and intelligent car technology, this intelligent robot has acquired new functions. The robot is designed based on motion mechanical arm to complete the task. It can also realize the automatic and manual functions of the machine on the host computer. In manual mode, the mechanical arm can be controlled remotely by humans through visual recognition or smart gloves to complete a series of tasks. The robot can capture the user's hand movement trajectory and convert its movement information into the control signal that can be recognized by the body to make a series of actions and reactions.

2. Design of the intelligent robot

The intelligent robot in this paper is a tracked mobile robot with a mechanical arm. The overall size of the robot is about 29*29*57 cm (length, width, height), and the physical appearance is shown in Figure

2.1. Mechanical design

The main part of the robot is mainly composed of five acrylic plates, including two side plates, a bottom plate, a middle plate, and an upper plate. The five plates form the basic skeleton of the robot through bending parts and other connectors. The support device of the robot is composed of the track wheel and the track, which is connected to the side plate of the robot through bolts, nuts, and other connectors to support the whole robot and bear the weight of the whole robot. Functional accessories include a robotic arm and a storage box. The mechanical arm is used for the clamping of items, which is installed in the front end of the middle plate for the placement of the clamped items, and is installed at the upper plate.

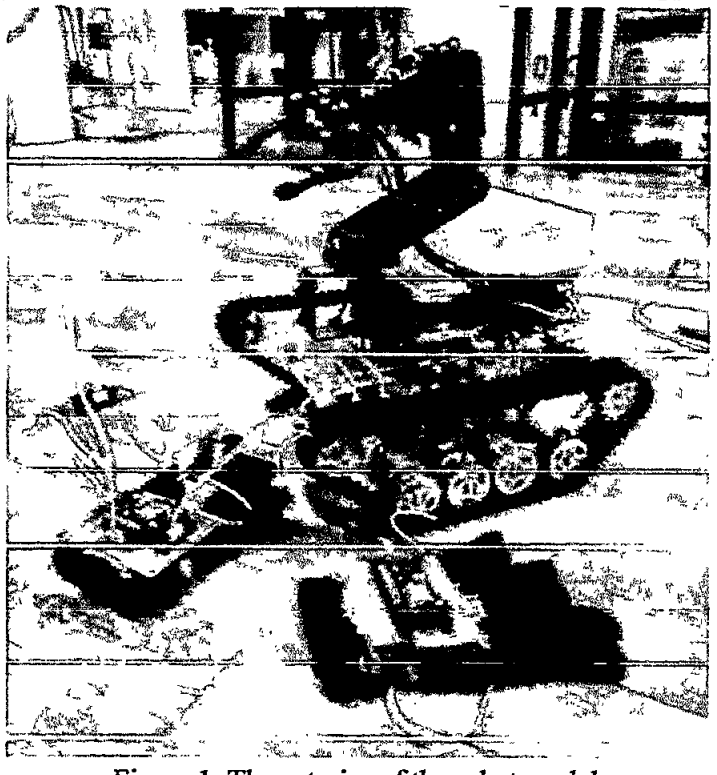


Figure 1. The exterior of the robot model

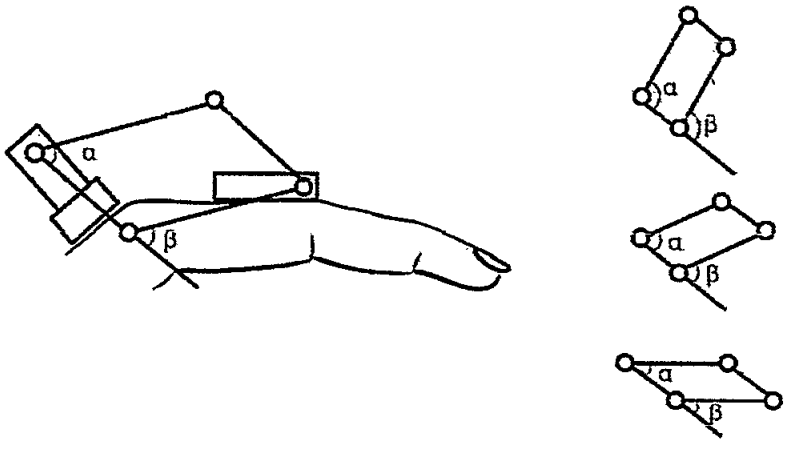


Figure 2. Design of intelligent glove finger joint

The intelligent glove finger joint monitoring device uses the linkage mechanism to monitor the finger bending angle α or β , and the movement of the fingers is sensed by sensing the change of the angle of the left and right fingers. Furthermore, various motion forms of the robot are controlled by sensing finger movements.

2.2. Hardware design

The Holtek microcontroller of HT52352 is a 32-bit, high-performance, low-power microcontroller based on the Arm® Cortex®-M0+ processor core. The wireless transmission module adopts ESP32 and ESP8266. ESP32 is another microcontroller with an integrated WIFI function launched by ESPRESSIF after ESP8266. ESP32 has more powerful performance than the ESP8266 and can be used to develop more complex applications. The selected motor is a JGB37-520 encoder deceleration otor. In order to realize PID control of the speed of the multi-functional intelligent exploration car, it is necessary to collect the current speed information of the car as feedback. In the design, the Hall encoder (as shown in Figure 3) is selected as the speed detection element to measure the speed of the intelligent car in real time. There are four lines in the encoder: red is the power line, black is the ground line, and the green and white lines are the Phase A and B outputs, respectively. The Hall encoder is a kind of sensor that converts the mechanical geometric displacement on the output shaft into a pulse or digital quantity through magnetoelectric conversion. The Hall code plate is coaxial with the motor. When the motor rotates, the Hall element detects and outputs a number of pulse signals; in order to judge the turn, two sets of square wave signal with a certain phase difference are usually output.

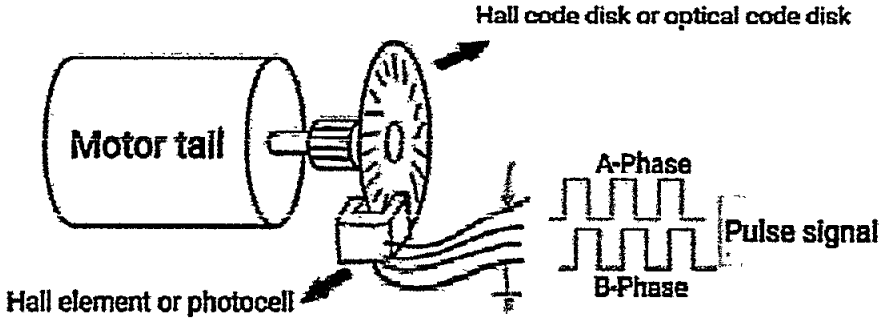
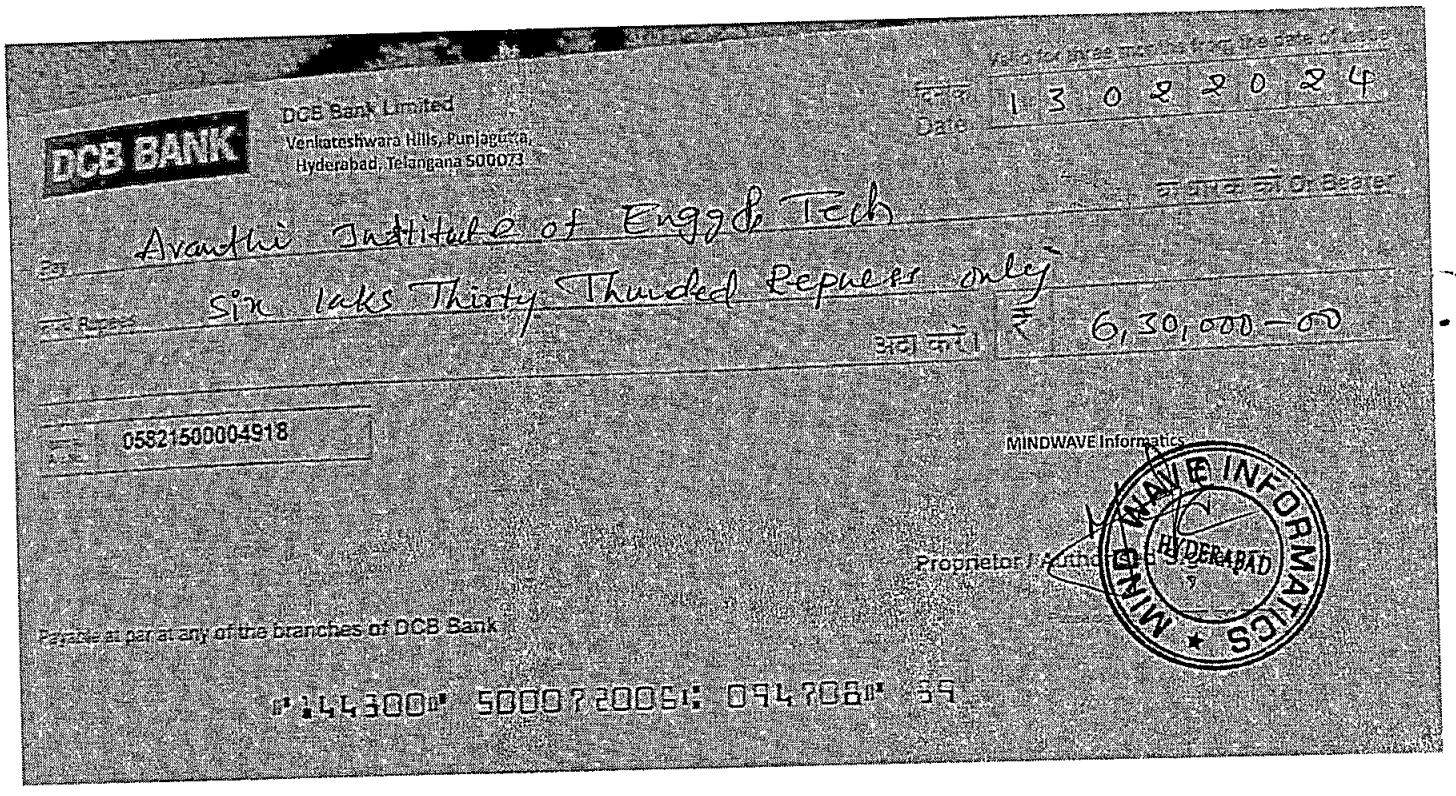


Figure 3. Hall encoder

The RM065 potentiometer is installed on the arm. After we read the position of the potentiometer, the information is transmitted to the MCU so as to control the movement of the mechanical arm on the car. The robot is equipped with two tracks; compared with the ordinary wheel, the contact area with the ground is increased, thus increasing the friction to a certain extent, which can prevent the robot from

slipping.



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SHELLX
Software Solutions Pvt. Ltd.

Date: 05/08/2023.

To
The Principal
Avanthi institute of Engineering & Technology, Hyderabad.

Sir

Subject: - Approval Letter for Financial Assistance for Project work entitled **"Design and fabrication of 3D printer"**-RCg

SHELLX Software Solutions pvt. Ltd are very much pleased to see your application and are very much impressed with your faculty profile and research field. We are happy to inform you that the manager has approved your project proposal entitled " **Design and fabrication of 3D printer** ". We anticipate this project proposal may be of greater signifu concerto the people in this era.

Complete details of corresponding project proposal are mentioned, check it and plan accordingly .the project proposal should complete in specified time and should submit the complete information on time.

As mentioned in the proposal he duration of the project is of six months. We wish you all the very best to finish the task in the given time. We request you to periodically submit progress reports regarding the project. After discussion with our committee members the budget is finalized for the mentioned project proposal in attached. As per your communication the concerned faculty members are Principal Investigator Dr Y Ramesh Babu, Associate Professor &Department of Mechanical Engineering. AVIH, Hyderabad. In this regard, we extend our facilities as well as sponsorship of Rs.4,20,000/-(Four Lakh Twenty Thousands Rupees only).

SHELLX SOFTWARE SOLUTIONS PVT. LTD. HYDERABAD

Thanks&Regards

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R&D PROJECT Dt:23 .08.2023,

To
The Manager,
SHELLX Software Solutions pvt. Ltd,
Hyderabad.

Sub: Design and fabrication of 3D printer.

Respected Sir,

With reference to letter received from your end regarding **"Design and fabrication of 3D printer"**. We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Design of Automatic solar street lights. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R R.Dist

Section A: General Information:

Project Title	**Design and fabrication of 3D printer**
Project Type Research Design &Demonstration of Automated Street Light Controller Research Other	Design and fabrication of 3D printer
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakhs)	4,20,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	4,20,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	40,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	65,000/-
A	Subtotal (Capital Items)	1,05,000/-
General Component		
1	Manpower and Contingencies	95,000/-
2	Consumables	2,00,000/-
3	Travel	10,000/-
4	Overhead	--------
5	PC	--------
6	Printer and Scanner	10,000/-
B	Subtotal (General)	3,15,000/-
C	**Total cost of the project (A+B)**	4,20,000/-

I. **Project Cost:4,20,000/-**
II. **Contribution of consortium (if any):**
III. **Total Budget (I+II):4,20,000/-**

PRINCIPAL
Vanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dis.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address,Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant TypeBroad: Government/Non-Government Sub entity:Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr Y Ramesh Babu
	Designation	Associate Professor
	Email	Avanthieee2005@gmail.com
	Telephone	9492492031
	Mobile	9492492031
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

Information on Lead PI	**Expertise available with the Principal Investigator**
	Dr Y Ramesh Babu, Associate Professor, Dept. Of Mechanical Engineering, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Power systems and its related areas. 1.Guided five M. Tech project students based on his Research area. Guided four B. Tech project students out of his research Area. 2) During his research, PI has acquired knowledge of automatic control and fault and obstacle detection system for street lamps & used them for the above said project works. The tools learned by PI are as follows: Computational skills: Simulation Software: the microcontroller used is Arduino mega 2560 which has to be programmed for these tasks. Word Processing: MS Office.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram					
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme				
2	Procurement of experimental equipment and installation				
3	Design of basic simulation of the project and control strategy using C , C Programming & Embedded RTOS				
4	Implementation of research project and operational control of the test facility using Embedded C & Embedded RTOS				
5	Annual review of the progress of the project and effective guidance for implementation				
6	Commissioning of the project hardware				
7	Testing of the project and code				
8	Experimental validation of the project				
9	Report Writing				

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	R&D Lab

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/ R&D PROJECT/01 Dt: 02.09.2023

To
The Manager,
SHELLX Software Solutions pvt. Ltd,
Hyderabad.

Sub: Design and fabrication of 3D printer.

Respected Sir,

We are pleased to appoint faculty for coordination of Design and fabrication of 3D printer. We are happy to submit detailed proposal along with the Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

Details of the Faculty:
Dr Y Ramesh Babu, Associate Professor
Department of Mechanical Engineering
Phone Number: 9492492031

Thank you and looking forward for your collaboration.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dis.

SHELLX
Software Solutions Pvt. Ltd.

Date: 09.09.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: **Design and fabrication of 3D printer** - Regarding

With reference to communication along with detailed submission of project milestones . We are pleased to invite for an internal discussion on execution of the project and other design and implementation regarding development of Design and fabrication of 3D printer. We are deputing Engineer for the above state of project.

Details of the Engineer:

Mr.K.Rangaswamy

Phone Number: 7702271437

Thank you and looking forward for your response.

Regards

Managing Partner Conscience Technology

SHELLX
Software Solutions Pvt. Ltd.

WORK ORDER

Date: 30/09/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Design and fabrication of 3D printer.

Further to your offer for preparing of 3D Printer, fabrication, analysis, Design of Experiments, Taguchi Method, travel speed, nozzle diameter, layer height, machining time as per the quotation, we are pleased to place the work order as below.

S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	Design and fabrication of 3D printer	2	2,10,000	4,20,000/-

Work Order Valid: One Year (12th June 2023 to 11th June 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For SHELLX Software Solutions pvt. Ltd,

MANAGER

SHELLX SOFTWARE SOLUTIONS PVT. LTD. HYDERABAD

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S. & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 22.2.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
SHELLX Software Solutions pvt. Ltd,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R R.Dis.

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Greenlife Energy Solutions LLP

making renewable energy work for you

Date: 11/09/2023,

To

The principal,

Avanthi Institute of Engineering and Technology,

Gunthapally (V), Abdullapurmet (M), Hyderabad, Telangana.

Subject: Request for Enhancements of project" **Design solar street light pole"**

Dear Sir,

M/s GREEN LIFE ENERGY SOLUTIONS LLP located at First Floor, 34/3, Lalitha Nagar Colony, West Maredpally, Secundcrabad, is duly incorporated business house of long standing and reputed manufacturer of quality electronic equipments. With an innovative and in house R & D team, the company continues to bring in latest and state of the art instrumentations to serve its clientele. As a result, the company enjoys unstinted and continuous support from its satisfied customers Regions, as per the specification mentioned by Concerned Electricity Authority/Board. The design of substation equipment should match with equipotent ratings. Our company plays a major role in power distribution equipment supplies and services. Therefore, the company is interested for long lasting technical collaborations, with organizations and situations for generating awareness and promoting technologies, through R & D and/or consultancy.

In this process, we need the assistance from your faculty experts for our industry in the form of consultancy work. Please extend your Technical Expertise accordingly.

Waiting for your reply

GREENLIFE ENERGY SOLUTIONS LLP Secunderabad

Managing Director

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R & D PROJECT

Dt: 15/09/2023,

TO
The Manager,
M/s GREEN LIFE ENERGY SOLUTIONS LLP,
Secunderabad.

Sub: Design solar street light pole.

Respected Sir,

With reference to letter received from your end regarding Design solar street light pole, We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Detection Of Chronic Kidney Disease Using Machine Learning Algorithm. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principal Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section A: General Information:

Project Title	**Design solar street light pole**
Project Type Research Design & Demonstration of Automated Street Light Controller Research Other	Design solar street light pole
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	6,60,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	6,60,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	70,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	90,000/-
A	Subtotal (Capital Items)	1,60,000/-
General Component		
1	Manpower and Contingencies	1,00,000/-
2	Consumables	3,80,000/-
3	Travel	15,000/-
4	Overhead	------
5	PC	-------
6	Printer and Scanner	5,000/-
B	Subtotal (General)	5,00,000/-
C	**Total cost of the project (A+B)**	6,60,000/-

I. Project Cost:1,60,000/-

II. Contribution of consortium (if any):

III. Total Budget (I+II):6,60,000/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V). Abdullapurmet (Mdl) R R.Dis.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr.T .Kranti Kumar
	Designation	Associate Professor
	Email	Avanthieee2005@gmail.com
	Telephone	9652224466
	Mobile	8099998606
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

PRINCIPAL
Avanthi Institute of Engg & Tech

Information on Lead PI	Expertise available with the Principal Investigator
	Dr.T .Kranti Kumar, Associate Professor Dept. Of EEE, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided Two M. Tech project students based on his research area. Guided Five B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of to words GPRS model & used them for the above said project works. The tools learned by PI are as follows: Terms—Energy, Light Emitting Diode(LED), power, solar , motor driver, and motors work on 5 volts Word Processing: MS Office

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurijhapally (V), Abdullapurmet (Mdl) R R.Dis

1. Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram				
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme			
2	Procurement of experimental equipment and installation			
3	Design of basic simulation of the project and control strategy using LightEmitting Diode(LED), power, solar			
4	Implementation of research project and operational control of the test facility using LightEmitting Diode(LED), power, solar			
5	Annual review of the progress of the project and effective guidance for implementation			
6	Commissioning of the project hardware			
7	Testing of the project and code			
8	Experimental validation of the project			
9	Report Writing			

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	Dedicated Embedded C Lab

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/R&D PROJECT Dt: 25.09.2023,

TO

The Manager,

M/s GREEN LIFE ENERGY SOLUTIONS LLP,

Secunderabad.

Sub: Details of Project coordinator of **Design solar street light pole.**

Respected Sir,

We are pleased to appoint faculty for coordination of **Design solar street light pole,** We are happy to submit detailed proposal along with the milestones of Power systems Automation Design and Prototype.

Details of the Faculty:
Dr.T .Kranti Kumar, Associate Professor
Department of EEE
Phone Number: 8099998606/9652224466
Thank you and looking forward for your collaboration.

PRINCIPAL
Principal Investigator
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R R.Dis.

Greenlife Energy Solutions LLP

making renewable energy work for you

Research Project – Sanction Letter

Date: 11.12.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: Acceptance and Granting of Research Project-reg.

Sir/Madam,

With reference to your interest and MOM held between us on 25/09/2023, we are pleased to accept and grant the project for its development in your esteemed organization as per details given below.

The general instructions to be followed:

Details of the Engineer:
Mr. A. Mahesh
Phone Number: 9705721157

Thank you and looking forward for your response.

Regards

Greenlife Energy Solutions LLP

making renewable energy work for you

WORK ORDER

Date: 22/09/2023,

IIYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Design solar street light pole Further to your offer for preparing of Portal/Control for face recognition as per the Telephone Discussion quotation, we are pleased to place the work order as below

S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	**Design solar street light pole**	10	66,000	6,60,000

Work Oder Valid: One Year (15 Sept 2023 to 14 SEpt 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site

For M/S GREEN LIFE ENERGY SOLUTIONS LLP,

MANAGER

GREENLIFE ENERGY SOLUTIONS LLP * Hyderabad

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the software development project being carried out at Avanthi Institute of Engineering and Technology ECE Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	**Design solar street light pole**	6,60,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be returned as per the agreement.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl), R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 08.01.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

TO
The Manager,
M/s GREEN LIFE ENERGY SOLUTIONS LLP,
Secunderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

PRINCIPAL
Avanthi Institute of Engg. & Tech
Principal
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

New Account

Date: 08/02/2024

Pay Avanthi Institute of Engg & Tech. OR BEARER

Rupees Six lacks Sixty Thousand Rupees only

Rs. 6,60,000

A/c No. 068010100402140

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UTI BANK LTD.

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SECUNDERABAD 500003

GREEN LIFE ENERGY SOLUTIONS LLP * Secunderabad

IFS CODE - UTIB0000068 Payable at par at all Branches of UTI Bank in India. Not to exceed Rs.50,000/- for clearing payments at outstation centres.

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Innovative Systems

Towards Quality Service

E-mail: innovative_systems@rediffmail.com

H. No.1-7-202, South Kamalanagar,
E.C.I.L. Post, Hyderabad - 500062

Date: 11/09/2023,

To

The principal,

Avanthi Institute of Engineering and Technology,

Gunthapally (V), Abdullapurmet (M), Hyderabad, Telangana.

Subject: Request for Enhancements of project" **Design green auto"**

Dear Sir,

M/s INNOVATIVE SYSTEMS located at 4-4-70/46, Koundinya Nagar, Nacharam, Hyderabad - 500076, is duly incorporated business house of long standing and reputed manufacturer of quality electronic equipments. With an innovative and in house R & D team, the company continues to bring in latest and state of the art instrumentations to serve its clientele. As a result, the company enjoys unstinted and continuous support from its satisfied customers Regions, as per the specification mentioned by Concerned Electricity Authority/Board. The design of substation equipment should match with equipotent ratings. Our company plays a major role in power distribution equipment supplies and services. Therefore, the company is interested for long lasting technical collaborations, with organizations and situations for generating awareness and promoting technologies, through R & D and/or consultancy.

In this process, we need the assistance from your faculty experts for our industry in the form of consultancy work. Please extend your Technical Expertise accordingly.

Waiting for your reply

INNOVATIVE SYSTEMS Hyderabad

Managing Director

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R & D PROJECT

Dt: 15/09/2023,

TO
The Manager,
Innovative Systems
Hyderabad ,

Sub: Design green auto

Respected Sir,

With reference to letter received from your end regarding Design green auto, We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Detection Of Chronic Kidney Disease Using Machine Learning Algorithm. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principal Investigator

PRINCIPAL
PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

Section A: General Information:

Project Title	**Design green auto**
Project Type Research Design & Demonstration of Automated Street Light Controller Research Other	Design green auto
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	5,35,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	5,35,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V). Abdullapurmet (Mdl) R R.Dis

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	70,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	90,000/-
A	Subtotal (Capital Items)	1,60,000/-
General Component		
1	Manpower and Contingencies	1,00,000/-
2	Consumables	2,55,000/-
3	Travel	15,000/-
4	Overhead	--------
5	PC	---------
6	Printer and Scanner	5,000/-
B	Subtotal (General)	3,75,000/-
C	**Total cost of the project (A+B)**	5,35,000/-

I. **Project Cost:5,35,000/-**
II. **Contribution of consortium (if any):**
III. **Total Budget (I+II):5,35,000/-**

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V). Abdullapurmet (Mdl) R R.Dist.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr. M.Surender
	Designation	Associate Professor
	Email	Avanthieee2005@gmail.com
	Telephone	9652224466
	Mobile	8099998606
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Information on Lead PI	Expertise available with the Principal Investigator
	Dr. M.Surender, Associate Professor Dept. Of EEE, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided Two M. Tech project students based on his research area. Guided Five B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of to words GPRS model & used them for the above said project works. The tools learned by PI are as follows: Green energy, renewable energy, solar auto , and motors work on 5 volts Word Processing: MS Office

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R.R.Dis.

1. **Annexure 1:Monitoring & Evaluation approach**

Time Schedule of Activities Giving milestones through BAR Diagram				
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme			
2	Procurement of experimental equipment and installation			
3	Design of basic simulation of the project and control strategy using LightEmitting Diode(LED), power, solar			
4	Implementation of research project and operational control of the test facility using LightEmitting Diode(LED), power, solar			
5	Annual review of the progress of the project and effective guidance for implementation			
6	Commissioning of the project hardware			
7	Testing of the project and code			
8	Experimental validation of the project			
9	Report Writing			

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	Dedicated Embedded C Lab

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R R.Dist

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/R&D PROJECT Dt: 25.09.2023,

TO
The Manager,
Innovative Systems,
Hyderabad.

Sub: Details of Project coordinator of **Design green auto**.

Respected Sir,

We are pleased to appoint faculty for coordination of **Design green auto,** We are happy to submit detailed proposal along with the milestones of Power systems Automation Design and Prototype.

Details of the Faculty:
Dr. M.Surender, Associate Professor
Department of EEE
Phone Number: 8099998606
Thank you and looking forward for your collaboration.

Principal Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Innovative Systems

Towards Quality Service

E-mail: innovative_systems@rediffmail.com

H. No.1-7-202, South Kamalanagar,
E.C.I.L. Post, Hyderabad - 500062

Research Project – Sanction Letter

Date: 11.12.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: Acceptance and Granting of Research Project-reg.

Sir/Madam,

With reference to your interest and held between us on 11/09/2023, we are pleased to accept and grant the project for its development in your esteemed organization as per details given below.

The general instructions to be followed:

Details of the Engineer:
Mr.D. RAJESH
Phone Number: 9640323905

Thank you and looking forward for your response.

Regards

Innovative Systems

Towards Quality Service

E-mail: innovative_systems@rediffmail.com

H. No.1-7-202, South Kamalanagar,
E.C.I.L. Post, Hyderabad - 500062

WORK ORDER

Date: 22/09/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Design green auto Further to your offer for preparing of Green energy, renewable energy, solar auto, we are pleased to place the work order as below

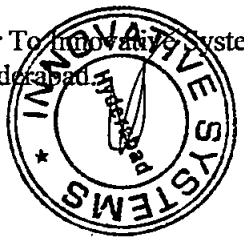
S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	**Design green auto**	10	53,500	5,35,000

Work Oder Valid: One Year (15 Sept 2023 to 14 SEpt 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For Innovative Systems,
Hyderabad.



AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the software development project being carried out at Avanthi Institute of Engineering and Technology ECE Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	**Design green auto**	5,35,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be returned as per the agreement.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

Principal

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 08.01.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

TO
The Manager,
Innovative Systems,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl), R.R.Dist

AXIS BANK LTD

VANASTHALIPURAM HYD TG, HYDERABAD, 500070
IFS CODE - UTIB0002738

VALID FOR THREE MONTHS FROM THE DATE OF ISSUE

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PAY AVANTHI INSTITUTE of ENGG & TECH OR BEARER / या धारक को

RUPEES Five Lacks Thirty Five Thousand Rupees only
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A/C NO. 918010018187435

Innovative Systems

INNOVATIVE SYSTEMS Hyderabad

Please Cross above

Payable at par at all branches of Axis Bank Ltd in India.

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MIND WAVE *Informatics*

Date: 08/08/2023,

To
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Approval Letter for Financial Assistance for Project work entitled **"Remote controlled Waiter Robot for Restaurant Automation"**

Dear Sir,

I'm Dr.V.Nagaraju, working as one of the Directors of MIND WAVE Informatics Ltd. which is located at 2nd Floor, SVR Towers, 8-2-1/A, Srinagar Colony Main Rd, , Venkateshwara Hills, Punjagutta, Hyderabad, Telangana, India.

Our nature of business is to design Humanoid Robots Manufacturing, Training & Development of 3DPrinting Technology, with experience in outcome based programmer's Workshops, Seminars, Guest Lectures, Virtual training for Government, Industries & Academic Institutions.

We are looking for team of professors at your college in Electronics and Communication Engineering who can work for our advance research project in developing critical software for Medical Robotics in processing of Contact less human health diagnostic system. If your college is interested to work in collaboration, we forward further documentation& NDA Le (Non Disclosure Agreement).

Looking forward to a meaningful collaboration with AVIH, Gunthapally

Thanks&Regards

MIND WAVE INFORMATICS HYDERABAD

2nd Floor, SVR Towers, Opp: AXIS Bank, Srinagar Colony, Punjagutta, Hyderabad-16
Ph.No. 040-40041005 || Email: in@mindwaveinformatics.com || www.mindwaveinformatics.com

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. RamaChandra Reddy, M.Tech, Ph.D
Principal
AVIH/2023/R&DPROJECT Dt: 10.08.2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Sub: Submission of detailed proposal of **Remote controlled Waiter Robot for Restaurant Automation.**

Respected Sir,

With reference to letter received from your end regarding Automated irrigation system using a wireless sensor network & GPRS model. We are happy to submit detailed proposal along with the milestones of Design and hardware Control of Automated irrigation system using a wireless sensor network & GPRS model. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

V. Naga

Principle Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section A: General Information:

Project Title	**Remote controlled Waiter Robot for Restaurant Automation**
Project Type Research Design &Control of Floor Cleaning Robot Research Other	Remote controlled Waiter Robot for Restaurant Automation
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakh)	6,25,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	6,25,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dis.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	1,45,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	90,000/-
A	Subtotal (Capital Items)	2,35,000/-
	General Component	
1	Manpower and Contingencies	1,45,000/-
2	Consumables	2,25,000/-
3	Travel	15,000/-
4	Overhead	--------
5	PC	--------
6	Printer and Scanner	5,000/-
B	Subtotal (General)	4,10,000/-
C	**Total cost of the project (A+B)**	6,25,000/-

I. **Project Cost:2,35,000/-**
II. **Contribution of consortium (if any):4,10,000/-**
III. **Total Budget (I+II):6,25,000/-**

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R.R.Dis.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address, Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant Type Broad: Government/Non-Government Sub entity: Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr.V.Nagaraju
	Designation	ASSOCIATE PROFESSOR
	Email	Avanthiece2005@gmail.com
	Telephone	9912499292
	Mobile	9849714307
Secondary Point of Contact	Name:	Dr RamaChandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

Information on Lead PI	**Expertise available with the Principal Investigator**
	Dr.V.Nagaraju, Associate Professor Dept. Of ECE, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Robotic Controllers design and its related areas. 1.Guided four M. Tech project students based on his research area. Guided seven B. Tech project students out of his research area. 2) During his research, PI has acquired knowledge of to words GPRS model & used them for the above said project works. The tools learned by PI are as follows: The social robotics, ultrasonic modules, motor driver, and motors work on 5 volts Word Processing: MS Office

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Md), R.R.Dist.

1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram						
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**	**5th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme					
2	Procurement of experimental equipment and installation					
3	Design of basic simulation of the project and control strategy using the social robotics, Ultrasonic modules, motor drives					
4	Implementation of research project and operational control of the test facility using the social robotics, Ultrasonic modules, motor drives					
5	Annual review of the progress of the project and effective guidance for implementation					
6	Commissioning of the project hardware					
7	Testing of the project and code					
8	Experimental validation of the project					
9	Report Writing					

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R R.Dis-

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	R&d Lab

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/R&D PROJECT Dt:17 .08.2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Sub: Details of Project Remote controlled Waiter Robot for Restaurant Automation.

Respected Sir,

We are pleased to appoint faculty for coordination of Remote controlled Waiter Robot for Restaurant Automation. We are happy to submit detailed proposal along with the milestones of Remote controlled Waiter Robot for Restaurant Automation.

Details of the Faculty:
Dr.V.Nagaraju,
Associate Professor
Department of ECE
Phone Number: 9912499292

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

MIND WAVE
Informatics

Date: 24.08.2023,

To,
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Subject: Remote controlled Waiter Robot for Restaurant Automation

We request you to periodically submit progress reports regarding the project. After discussion with our committee members the budget is finalized for the mentioned project proposal in attached. As per your communication the concerned faculty members are Principal Investigator Dr.V.Nagaraju, Associate Professor and Department of ECE, AVIH, and Hyderabad. In this regard, we extend our facilities as well as sponsorship of Rs.6,25,000/-(Six Lakhs Twenty Five Thousand Rupees only).

Details of the Engineer: Mr. Amaranth

Phone Number: 9505379414

Thank you and looking forward for your response.

Regards
Ravi
Managing Partner
MIND WAVE INFORMATICS

MIND WAVE INFORMATICS * HYDERABAD

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Date:19/12/2023,

TO
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Dear sir

The college does not have sufficient working capital to complete the next half of proposed project which we have been discussed. We are therefore requesting for advance funds to the staff and other expenses required to work on this project. Therefore we urge you to consider our request for approval to receive funding in advance for this project. Thank you for your consideration of this request. Sincerely,

Thanking you,

Principal

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

UTILITY CERTIFICATE

We, the undersigned, Principal Investigator and Co-Investigators of the Al hased software development project being carried out at Avanthi Institute of Engineering and Technology Electronics and Communication Engineering Department, hereby certify that we have examined the financial details provided for the project follows:

S.no	Project Name	Project Cost
1	Remote controlled Waiter Robot for Restaurant Automation	6,25,000/-

We assure you that the funds have been used diligently and in accordance with the guidelines provided by Fly Academy. Any remaining finds have been duly adjusted or will be returned as per the agreement.

Should you require any further supporting documentation or information, please do not hesitate to contact us. We appreciate your support and the opportunity to carry out this important project.

Thank you for your attention to this matter.

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 28.12.2023,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
MIND WAVE INFORMATICS,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

Principal
PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R R Dist

REMOTE CONTROLLED WAITER ROBOT FOR RESTAURANT AUTOMATION

Abstract:

This paper describes the design and development of a waiter robot which is considered as a possible solution to restaurant automation. The robotics technology is replacing manual work at a fast pace throughout the world. In classical café, restaurants and hotels, the customers face a lot of problems due to congestion at peak hours, unavailability of waiters and due to manual order processing. These shortcomings can be handled by using a restaurant automation system where „Waiter Robots□ are used for ordering food and beverages. The desired order is also transmitted on wireless network to the kitchen via menu bar. The menu bar is based on the LCD, Keypad and the Bluetooth module. The customer places the order using electronic menu bar. This order is sent to the kitchen and reception using communication network. The waiter robot then transfers food from the kitchen to the customer.

Keywords: Waiter Robot, restaurant automation, Line following, Menu card.

1. INTRODUCTION

Robots are used to serve humanity. The branch of robotics that plays such a vital role is called "social robotics". Social robots in today's scenario are now communicating with human, interacting and relating to society in all aspect and are capable of understanding social terms. Due to the modernization in robotic technologies, many new designs and mechanisms are being implemented which are able to read human thoughts and understand actions. Such robots find vast applications in robotics e.g. to help out injured, sick and elder people. Theses robots are adaptive, i.e. they can be used in multi-mode as per scenario. So far, the robots are those who learn from us, but that time will not be so far when the teacher will then be learner. There is an ever rising trend in using robots in restaurants for automation .These robots can welcome guests, take orders, and serve food to customers. Designing such robots can be effective to learn advance concepts in human-robot interaction, develop new models and protocols for communication as well as use new architectures for real time path planning, guidance and control. This paper is structured as follows:

This proposed work is based on the wireless communication with help of TSOP 1738 module (Infrared Receiver Module). This proposed work t include AVR ROBOT, TSOP IR receiver, Remote, buzzer, RC-5 Decoder. TSOP sensor is designed to receive the coded infrared pulses from the transmitter and directs the function of the device. Here Coded Infrared pulses are the commands from the operator then internally these commands are served as various activity of ROBOT.

Here we are using ROBOT for mankind operations in big restaurants as waiter or as employee. This ROBOT can able to do functions like taking orders from each tables ,passing to the operator and sweep out and make clean an area after the table is empty.

2. PROBLEM DEFINITION

Robots can be divided in two main types. The first one deals with the teleported robots while the second one is autonomous robots. Teleported robot is remotely controlled and guided by a human operator who views and senses the environment through the robot sensors. Where as, the autonomous robot has multiple sensors to detect events and measure state information which is then used to apply control logic.The problem of restaurant automation deals with the design of a communication system and a waiter robot which can coordinate with rest of the players in the system

3. DESIGN OF WAITER ROBOT

The robotic technology takes the place of manual work. In manual café systems. One can witness a lot of problems. The robot waiter is an innovation and the concept can be used for restaurant automation in various fast food chains. The robot waiter works as a line following robot for which sensors are used. The project has two important parts namely the Menu Bar and the Robot itself.

The robot waiter will work on the phenomenon of line following, we have used six IR sensors; the three sensors in the centre are used for line following and set the robot waiter on line. The other two sensors installed on sides are used for table counting, i.e. if the robot count one, it means that it has stopped on the first table, and if the robot count two, the robot has stopped on the second table for few seconds and so on. And third sensor present on front side of robot will detect the objects coming in path of robot.

3.1 Menu card

The menu card is based on the LCD and Keypad. The LCD is used to display the order of menu card, while the Keypad is used to select the order. The customer places the order using keypad. The same order is displayed to the kitchen using robot.

3.2 Keypad Interface:

The keypad is used for placing the order. It is a simple 4x4 keypad which is used for the selection of order. Keypad is the easiest and the cheapest way to give the commands to the instructions to an electronic system. Whenever a key is pressed on the keypad module, the Arduino Uno detects the key and shows the corresponding key on 16x2 LCD.

3.3 Lcd Interface:

We interface the LCD with keypad so that the customer can see his order. The R/W (read/write) pin of the LCD is used to display messages. Since, the LCD is used to display the order which the customer wants, we only require write mode by displaying the order to customer when he is typing keys. The LCD has 16 columns and two rows and is monochrome display. The 16x2 LCD will have total 32 characters in, 16 in 1st line and another 16 in 2nd line.

3.4 Tsop 1738:

TSOP sensor is designed to receive the coded infrared pulses from the transmitter and directs the function of the device. The TSOP 1738 is a member of IR remote control receiver series. The IR sensor module consists of a PIN diode and preamplifier which are embedded into a single package. The output of TSOP is active low and it gives +5V in off state.

When IR waves from a source with a centre frequency of 38 kHz incident on it then its output goes low. Coded pulses from the IR transmitter are amplifying by inbuilt control circuit of TSOP1738 module. A signal is generated when PIN photodiode receives the signals. This input signal is received by an automatic gain control (AGC). For a range of inputs, the output is fed back to AGC in order to adjust the gain to a suitable level. The signal from AGC is passed to a band pass filter to filter undesired frequencies. After this, the filtered signal goes to a demodulator and this demodulated output drives an NPN transistor. The collector output of the NPN transistor is obtained at pin 3 of TSOP module.

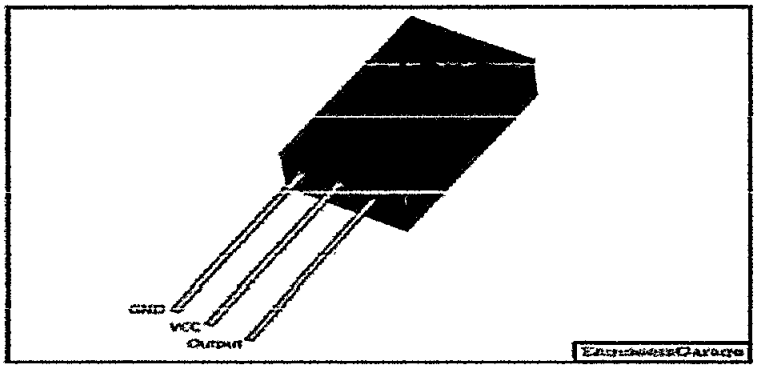


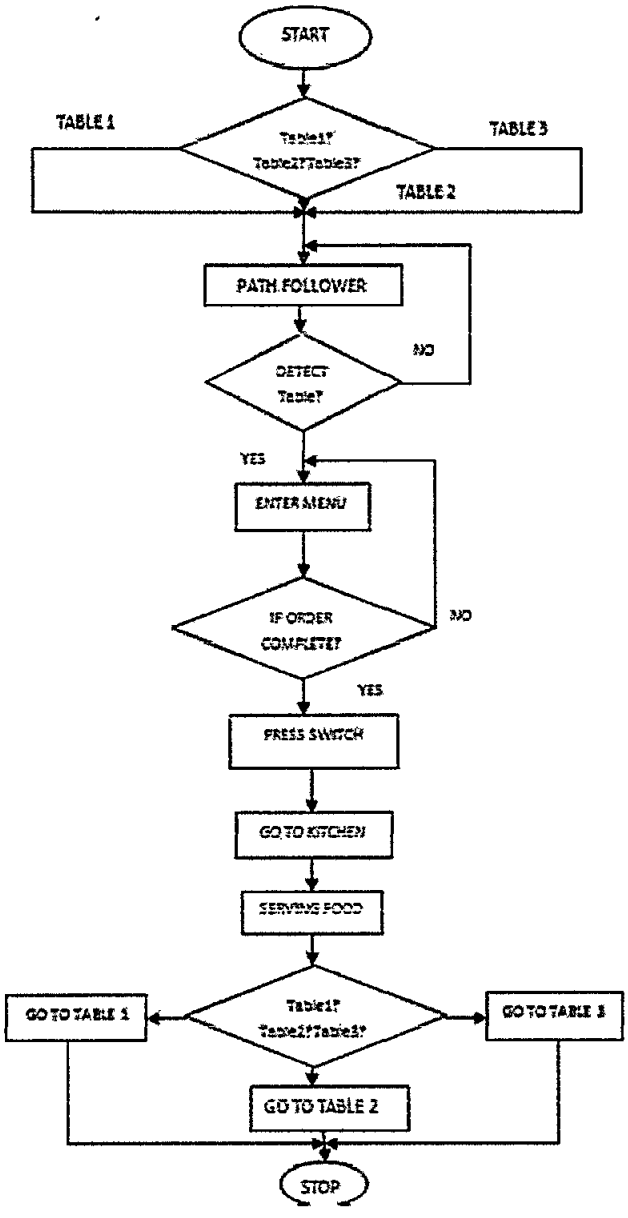
Figure 1 T sop 1738

3.4.1 RC5 Decoder:

RC-5 only provides a one-way link, with information travelling from the handset to the receiving unit. The RC5 is a cost effective solution that can replace braking transistor/resistor networks in high duty cycle braking applications. The RC5 can be sized based on the application, from continuous to intermittent. The RC5 is wired in parallel to the drive and only handles regeneration power.

4. WORKING

4.1 Flow Chart



Robot waiter will work on the phenomenon of Line following. Block diagram as shown in figure2, explain our proposed work. we have used three white line sensors and are used for line following and set the waiter robot on line, other two sharp sensors installed on sides are used for table detection. Once the robot is set on the line, now we need to give the command to waiter robot to do the work.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dist.

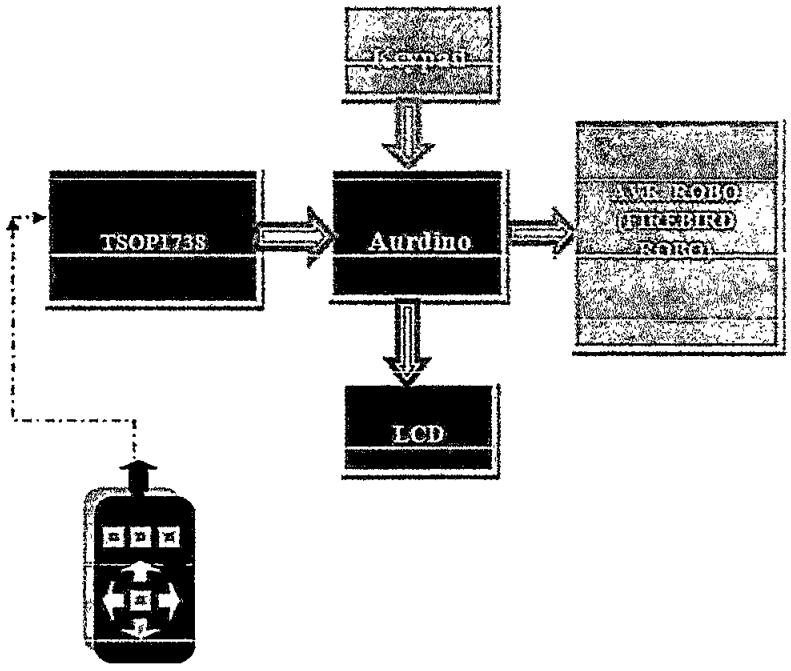


Figure 2 Waiter Robot Block Diagram

We have used IR remote to give the command to waiter robot. If the command is forTable1 then following operation will take place:

a. Robot take the path for table1, robot will detect the table depending on two side sharp sensor values.

b. Once it reach to table1 robot will stop there, and ask the customer to enter the menu.(ie message will be displayed on lcd as enter the menu).

c. When customer finish the order again message will display on lcd as ,whether customer want to continue ,if no then press NO button on keypad or else continue with giving the order.

d. After finishing the order, ordered menu with quantity will display on lcd after that last message is to press the switch button on waiter Robot.

e. Switch button is to indicate robot that it is done with taking the order and take the path to kitchen.

f. In kitchen robot will give the beep and it will display the ordered menu with quantity and it takes the ordered food and serve to the table1.

g. After that waiter robot will come back to its initial position. If the command is forTable2 then waiter robot takes the path to table2 and further steps are same as mentioned above. One more possibility is, if there is order from both the table then waiter robot starts from table1 takes the order, at the same time follow the path and takes order from table2 as well and then robot enters into kitchen, takes the food from kitchen and serve to the respective table.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V), Abdullapurmet (Mdl) R.R.Dist.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), [illegible] R.R.Dist.

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CONSCIENCE TECHNOLOGIES
A Right Platform For All Engineers...

Date: 07/07/2023,

To,
The Principal,
Avanthi Institute of Engineering and Technology,
Gunthapally, Hyderabad.

Attention: Dr Shahebaz Khan, Associate Professor of Department of Computer Science Engineering.

Subject: Design of Automatic solar street lights- Regarding

I am pleased to inform you that the R&D Team at CONSCIENCE TECHNOLOGIES, Hyderabad is pleased to approve a grant of INR 3.15 lakhs for the project "Phishing Detection System Through Hybrid Machine Leaning Based On Url "

You are requested to prepare a detailed schedule and roadmap for the project. Completion and also the detailing on the utilization of funds within 15 days to release the payment

Looking forward to a meaningful collaboration with AVIH, Gunthapally

Regards

Conscience Technologies PSNR, HYD-50

#17-83/2C, 3rd Floor, Opp:Bank of Maharashtra,
Annapurna Function Hall Line, Dilsukhnagar, Hyderabad-500060 Email: info@consciencetechnologies.com
www.consciencetechnologies.com Ph: 040 60 12 11 99

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R&D PROJECT Dt:14 .07.2023,

TO
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Sub: Phishing Detection System Through Hybrid Machine Learning Based On Url.

Respected Sir,

With reference to letter received from your end regarding **"Phishing Detection System Through Hybrid Machine Learning Based On Url"**. We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Design of Automatic solar street lights. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

S. Kaly
Principle Investigator

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section A: General Information:

Project Title	Phishing Detection System Through Hybrid Machine Learning Based On Url
Project Type Research Design &Demonstration of Automated Street Light Controller Research Other	Phishing Detection System Through Hybrid Machine Learning Based On Url
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakhs)	3,15,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	3,15,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl.), R.R.Dist.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	40,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	75,000/-
A	Subtotal (Capital Items)	1,15,000/-
General Component		
1	Manpower and Contingencies	1,05,000/-
2	Consumables	75,000/-
3	Travel	10,000/-
4	Overhead	--------
5	PC	--------
6	Printer and Scanner	10,000/-
B	Subtotal (General)	2,00,000/-
C	**Total cost of the project (A+B)**	3,15,000/-

I. Project Cost:3,15,000/-

II. Contribution of consortium (if any):

III. Total Budget (I+II):3,15,000/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurtihapally (V). Abdullapurmet (Mdl) R R.Dis-

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address,Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant TypeBroad: Government/Non-Government Sub entity:Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr Shahebaz Khan
	Designation	Associate Professor
	Email	Avanthieee2005@gmail.com
	Telephone	9848106792
	Mobile	9848106792
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

Information on Lead PI	**Expertise available with the Principal Investigator**
	Dr Shahebaz Khan, Associate Professor, Dept. Of Computer Science Engineering, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Power systems and its related areas. 1.Guided five M. Tech project students based on his Research area. Guided four B. Tech project students out of his research Area. 2) During his research, PI has acquired knowledge of automatic control and fault and obstacle detection system for street lamps & used them for the above said project works. The tools learned by PI are as follows: Computational skills: Simulation Software: the microcontroller used is Arduino mega 2560 which has to be programmed for these tasks. Word Processing: MS Office.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram						
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**	**5th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme					
2	Procurement of experimental equipment and installation					
3	Design of basic simulation of the project and control strategy using C , C Programming & Embedded RTOS					
4	Implementation of research project and operational control of the test facility using Embedded C & Embedded RTOS					
5	Annual review of the progress of the project and effective guidance for implementation					
6	Commissioning of the project hardware					
7	Testing of the project and code					
8	Experimental validation of the project					
9	Report Writing					

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R.R.Dis.

Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	R&D Lab

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/ R&D PROJECT/01 Dt: 29.08.2023

TO
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Sub: Phishing Detection System Through Hybrid Machine Learning Based On Url

.

Respected Sir,

We are pleased to appoint faculty for coordination of Phishing Detection System Through Hybrid Machine Learning Based On Url. We are happy to submit detailed proposal along with the Phishing Detection System Through Hybrid Machine Learning Based On Url.

Details of the Faculty:

Dr Shahebaz Khan, Associate Professor
Department of CSE
Phone Number: 9848106792

Thank you and looking forward for your collaboration.

PRINCIPAL
Principal Investigator
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

CONSCIENCE TECHNOLOGIES

A Right Platform For All Engineers...

Date: 08.09.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: Design of Automatic solar street lights - Regarding

With reference to communication along with detailed submission of project milestones . We are pleased to invite for an internal discussion on execution of the project and other design and implementation regarding development of Phishing Detection System Through Hybrid Machine Learning Based On Url . We are deputing Engineer for the above state of project.

Details of the Engineer:

Mr.M.Manohar Babu

Phone Number: 9505379414

Thank you and looking forward for your response.

Regards

Managing Partner Conscience Technology

CONSCIENCE TECHNOLOGIES
A Right Platform For All Engineers...

WORK ORDER

Date: 16/09/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Phishing Detection System Through Hybrid Machine Learning Based On Url.

Further to your offer for preparing of Phishing Detection System Through Hybrid Machine Learning Based On Url as per the quotation, we are pleased to place the work order as below.

S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	Phishing Detection System Through Hybrid Machine Learning Based On Url	2	1,57,500	3,15,000/-

Work Order Valid: One Year (12th August 2021 to 11th August 2022)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For CONSCIENCE TECHNOLOGIES

MANAGER

Conscience Technologies DSNR, HYD-50

#17-83/2C, 3rd Floor, Opp:Bank of Maharashtra,
Annapurna Function Hall Line, Dilsukhnagar, Hyderabad-500060 Email: info@consciencetechnologies.com
www.consciencetechnologies.com PH: 040 60 12 11 99

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NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 29.12.2023,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

Principal
PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R R.Dis.

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PARTNER(S)/AUTHORISED SIGNATORY

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DSNR, HYD-50

000300 500053010: 000000* 29

PRINCIPAL
Avanthi Institute of Engg. & Tech

CONSCIENCE TECHNOLOGIES

A Right Platform For All Engineers...

Date: 03/07/2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Attention: Dr. Shakeer basha, Associate Professor of Department of Computer Science Engineering.

Subject: Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

I am pleased to inform you that the R&D Team at CONSCIENCE TECHNOLOGIES, Hyderabad is pleased to approve a grant of INR 2.55 lakhs for the project "Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques"

You are requested to prepare a detailed schedule and roadmap for the project. Completion and also the detailing on the utilization of funds within 15 days to release the payment

Looking forward to a meaningful collaboration with AVIH, Gunthapally

Conscience Technologies * DSNR, HYD-50 *

Regards

K. V. Reddy

#17-83/2C, 3rd Floor, Opp:Bank of Maharashtra,
Annapurna Function Hall Line, Dilsukhnagar, Hyderabad-500060 Email: info@consciencetechnologies.com
www.consciencetechnologies.com Ph: 040 60 12 11 99

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

Dr.G. Ramachandra Reddy, M.Tech, Ph.D
Principal

AVIH/2023/R&D PROJECT Dt:11 .07.2023,

TO
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Sub: Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

Respected Sir,

With reference to letter received from your end regarding **"Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques"**. We are happy to submit detailed proposal along with the milestones of Design and hardware Implementation of Design of Automatic solar street lights. We request you to discuss with your internal R&D team and communicate for further discussion.

Thank you and looking forward for your collaboration.

Principle Investigator

PRINCIPAL
PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dist.

Section A: General Information:

Project Title	Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques
Project Type Research Design &Demonstration of Automated Street Light Controller Research Other	Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques
Project Location/s (District State)(Must be in India)	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Stage of development (initial concept proof of demonstration/scale up)	Proof of Concept - Demonstration
Lead Implementing Organization	Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad
Any Partnering: Organization: In INDIA	NO
(1) Total Funding Request(INR In lakhs)	2,55,000 Rs/-
(II) Contribution in Cash/kind from lead/partnering institution if any	NO
Total cost (I+II)=	2,55,000 Rs/-

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R R.Dis.

Section C: Financial requirement (all figure must be INR)

S. No	Item Head	Total (in Lakh)
Capital Component		
1	Permanent Equipment (Located in lab/implementing organization) as per billing	30,000/-
2	Fabricated systems/demonstration models (located at beneficiary location)	55,000/-
A	Subtotal (Capital Items)	85,000/-
General Component		
1	Manpower and Contingencies	95,000/-
2	Consumables	55,000/-
3	Travel	10,000/-
4	Overhead	--------
5	PC	--------
6	Printer and Scanner	10,000/-
B	Subtotal (General)	1,70,000/-
C	**Total cost of the project (A+B)**	2,55,000/-

I. **Project Cost:2,55,000/-**
II. **Contribution of consortium (if any):**
III. **Total Budget (I+II):2,55,000/-**

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gurthapally (V), Abdullapurmet (Mdl) R R.Dis.

Section D: Applicant Details

Name of the Lead Organization	Avanthi Institute of Engineering and Technology	
Address,Please include phone numbers, fax, emails and website	Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512. email: principal.avanthi@gmail.com Ph No:9849714307 www.aietg.ac.in	
Applicant TypeBroad: Government/Non-Government Sub entity:Academic or research institution	ACADEMIC INSTITUTION	
Primary Point of Contact Lead Principal investigator (PI)	Name:	Dr Shakeer basha
	Designation	Associate Professor
	Email	Avanthieee2005@gmail.com
	Telephone	9885239131
	Mobile	9885239131
Secondary Point of Contact	Name:	Dr Ramachandra Reddy
	Designation	Associate Professor
	Email	principal.avanthi@gmail.com
	Telephone	9849714307
	Mobile	9849714234

Information on Lead PI	**Expertise available with the Principal Investigator**
	Dr Shakeer basha, Associate Professor, Dept. Of Computer Science Engineering, he would mentor the proposed research project from time to time. The Principal Investigator has gained good knowledge on Power systems and its related areas. 1.Guided five M. Tech project students based on his Research area. Guided four B. Tech project students out of his research Area. 2) During his research, PI has acquired knowledge of automatic control and fault and obstacle detection system for street lamps & used them for the above said project works. The tools learned by PI are as follows: Computational skills: Simulation Software: the microcontroller used is Arduino mega 2560 which has to be programmed for these tasks. Word Processing: MS Office.

PRINCIPAL
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

1.Annexure 1:Monitoring & Evaluation approach

Time Schedule of Activities Giving milestones through BAR Diagram					
S.No	**WORKPLAN**	**1ST Month**	**2nd Month**	**3rd Month**	**4th Month**
1	Basic Study of the literature related for the project implementation consolidation of the available expertise. Planning of execution of the proposed project scheme				
2	Procurement of experimental equipment and installation				
3	Design of basic simulation of the project and control strategy using C , C Programming & Embedded RTOS				
4	Implementation of research project and operational control of the test facility using Embedded C & Embedded RTOS				
5	Annual review of the progress of the project and effective guidance for implementation				
6	Commissioning of the project hardware				
7	Testing of the project and code				
8	Experimental validation of the project				
9	Report Writing				

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Avanthi Institute of Engineering and Technology, Gunthapally, Hyderabad

S No	Infrastructure Facility	Yes/No/Not required/Full or Sharing Bases
1	Workshop Facility	Yes
2	Water & Electricity	Yes
3	Laboratory Space/Furniture	Yes
4	Power Generator	Yes
5	AC Room or AC	Yes
6	Telecommunication including e-mail &fax	Yes
7	Transportation	Yes
8	Administrative/ Secretarial support	Yes
9	Information facilities like Internet Library	Yes
10	Computational facilities	Yes
11	Animal/Glass House	Not required
12	Any other special facility being provided	R&D Lab

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AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
Gunthapally (V), Abdullapurmet(M), RR Dist, Near Ramoji Film City, Hyderabad -501512.
www.aietg.ac.in email: principal.avanthi@gmail.com

AVIH/2023/ R&D PROJECT/01 Dt: 21.08.2023

TO
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Sub: Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

Respected Sir,

We are pleased to appoint faculty for coordination of Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques. We are happy to submit detailed proposal along with the Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

Details of the Faculty:
Dr.Shakeer basha, Associate Professor
Department of CSE
Phone Number: 9848106792

Thank you and looking forward for your collaboration.

PRINCIPAL
Principal Investigator
Avanthi Institute of Engg & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

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Date: 28.08.2023,

To,

The Principal,

Avanthi Institute of Engineering and Technology,

Gunthapally, Hyderabad.

Subject: **Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques** - Regarding

With reference to communication along with detailed submission of project milestones . We are pleased to invite for an internal discussion on execution of the project and other design and implementation regarding development of Phishing Detection System Through Hybrid Machine Learning Based On Url . We are deputing Engineer for the above state of project.

Details of the Engineer:
Mr.M.Manohar babu
Phone Number: 9505379414
Thank you and looking forward for your response.
Regards
Managing Partner Conscience Technology

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WORK ORDER

Date: 18/09/2023,

HYDERABAD,

To
The Principal,
Avanthi Institute of Engineering& Technology,
Gunthapally, Abdullapurmet Mandal, Hyderabad.

Sub: Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques.

Further to your offer for preparing of Phishing Detection System Through Hybrid Machine Learning Based On Url as per the quotation, we are pleased to place the work order as below.

S.NO	Description	Quantity in no	Unit Cost Rs.	Total Cost in Rs.
1	Road Accident Severity & Hospital Recommendation Using Deep Learning Techniques	2	1,25,500	2,55,000/-

Work Order Valid: One Year (12th June 2023 to 11th June 2024)

Terms& Conditions:

- Preparation of detailed drawings/Lay outs based on the reference design provided by the customer.
- Taking physical design for review and approval of our customer
- Submission of designs/lay outs for review and approval of our customer
- Incorporate any comments/feed back given by customer in the design/layouts
- Preparation of designs, lay outs, algorithms, part design, bill of materials for all designs.
- Preparation of built up designs, lay outs after completion of fabrication/Installation at site.

For CONSCIENCE TECHNOLOGIES

MANAGER

#17-83/2C, 3rd Floor, Opp:Bank of Maharashtra,
Annapurna Function Hall Line, Dilsukhnagar, Hyderabad-500060 Email: info@consciencetechnologies.com
www.consciencetechnologies.com PH: 040 60 12 11 99

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www.aietg.ac.in email: principal.avanthi@gmail.com

Hyderabad,
Date: 5.2.2024,

From
The Principal,
Avanthi Institute of Engineering and Technology,
Hyderabad.

To
The Manager,
CONSCIENCE TECHNOLOGIES,
Hyderabad.

Respected Sir,

Sub: Project Completion-reg.

The project has been completed on a given time bond. It has been a great achievement by us to complete the prestigious project on time. It has been a great privilege, working in association with you and looking forward to working with you in future projects. We request you to please come along with your team for collecting, retrieving of important and confidential data.

Looking forward to a quick response from your side

Thanking you,

PRINCIPAL
Principal
Avanthi Institute of Engg. & Tech
Gunthapally (V), Abdullapurmet (Mdl) R.R.Dis.

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FOR CONSCIENCE TECHNOLOGIES

A/c.No. खाता क्र	1456135000003912	INITIAL आद्यक्षर

D.V. [signature]

Conscience Technologies DSNR HYD-50

PARTNER AUTHORISED SIGNATORY

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