





	Visvesvaraya Technological University “JnanaSangama” Belagavi: 590018 Karnataka, India. Tele: 0831-2498225 ,2405454
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VTU Sponsored Student Project Proposal Format

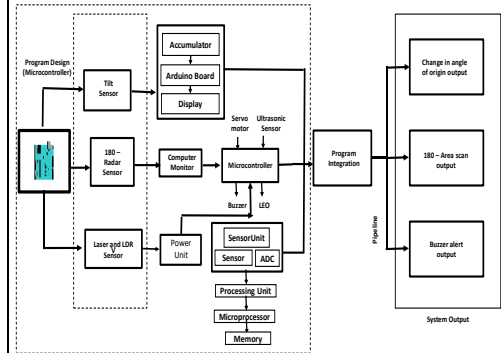
01	Academic Year :	2020-2021	
02	Semester :	8	
03	Name of the College :	Sri Sai Ram College of Engineering	
04	Branch:	Computer Science And Engineering	
05	Project Title:	Portable TLR Combinational Sensor (T-Tilt, L-Laser,R-Rader) for enhanced security	
06	Project Discipline:	Drone Technology	
07	Principal	Name:	Dr. Shadaksharappa
		Contact No:	9900545101
		Email id:	Principal@sairamce.edu.in
08	HOD	Name:	Dr.P Bindhu madhavi
		Contact No:	9986646072
		Email id:	Hod.cse@sairamce.edu.in
09	Project Guide	Name:	Dr.P Bindhu madhavi
		Contact No:	9986646072
		Email id:	hod.cse@sairamce.edu.in
10	Project Co-Guide(If any)	Name:	NA
		Contact No:	
		Email id:	
11	Project Committee coordinator (Identified by the college) :	Name:	Mr. Harish Babu L
		Contact No:	9036527118
		Email id:	harishbabu.mech@sairamce.edu.in

12	Name of project group Members	
	1.Group leader and Member	
	Name:Ruchitha C	
	USN No. :1SB17CS071	
	Contact No:8296602057	
	Email id:sce17cs015@sairamtap.edu.in	
	2.Member	
	Name:Sangeetha M	
	USN No. :1SB17CS076	
	Contact No:8147225910	
	Email id:sce17cs014@sairamtap.edu.in	
	3.Member	
	Name: Akshaya babu	
	USN No. :1SB17CS010	
	Contact No:9940164956	
	Email id:sce17cs090@sairamtap.edu.in	
	4.Member	
	Name:Deeksha S	
	USN No. :1SB18CS402	
	Contact No: 8861984139	
Email id:deekshagowda789@gmail.com		

13	Scope / Objectives of the project:	<p>A portable TRL combinational sensor is a carry around device. That detects the angle of deflection or deviation from the origin, increases the security path or the area by via laser systems, and to detect elements/objects that are constant or coming towards by a 180-degree radar. which is done with the combination of different sensors that includes a tilt sensor, a laser-based security sensor with two mirror principles, and a 180-degree ultrasonic-based radar sensor. We find the device is portable, which is not desk suited, benefits in using the same device in different areas.</p>
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14

Methodology of work:
(Including diagram, flow chart and design calculations)



180-degree radar module:

As the motor started to rotate, our monitor started to display the output through processing IDE. Hence, when the sensor crossed over the object it showed a red segment with the distance and angle where the object is placed.

Tilt module:The acceleration (change in motion) or the vibration generates the force that causes the piezoelectric material to be stressed. The microscopic crystal structure present in it creates the voltage from the stress. The accelerometer interprets this voltage. The voltage is further used to determine the orientation and velocity.

Two mirrors principle-based laser module:The sensor node consists of an Arduino micro-controller board, LASER & LDR array, and a buzzer where the 2 mirrors are placed in

		<p>zig-zag way. Which the three different sensors is combined to one which gives security for the device with detects objects of 180 degree radar and angle of the device is shown in LCD display in x,y,z- axis.</p>
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15	Expected Outcome of the project:	At present the technology developed is with 2 combination I.e., laser & radar ,radar&tilt,tilt&laser. So with those combined technology we tried to implement with the Combining of three sensor(T-Tilt,L-Laser S-Sensor). and which gives 3 different advantages such as detection of object and distance with angle of deviation with x,y,z-axis and with 2 mirrors provides more security.
16	Application of the project :	<ul style="list-style-type: none"> ● Drone- We are implementing on drone which our project helps in which detection of object and distance with angle of deviation with x,y,z-axis and with 2 mirrors provides more security. ● Vehicles- It can also be implemented on this device.as now we have made it wired and As for future implementation it will be wireless ,not only on vehicles can be portable on any industrial areas.
17	Budget details with Materials required:	Laser module = Rs.397 LDR sensor = Rs.482 Buzzer for Arduino = Rs.249

		Arduino mega with cable = Rs.1398 Led display = 489 Ax1345 acceleration sensor = Rs.655 Jumper wires m-f,m-m,f-f = Rs.580 Servo = Rs.489 Ultrasonic sensor = Rs.610 Total = Rs.5322
18	Date of commencement of the Project :	15/12/2020
19	Probable date of completion of the project :	15/07/2021
20	Duration of project work :	8 months
21	Pert chart for completion of the project in said duration as per	

	planned activities:
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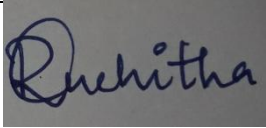
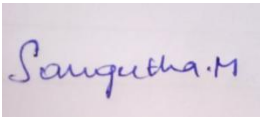

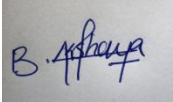
Sl.No	Activities Planned	1 Month	2 Month	3 Month	4 Month	5 Month	6 Month
01	Literature review						
02	Planning/ Designing						
03	Assembly/ Fabrication work						
04	Final Testing						
05	Result & Calculation/ Conclusion						
06	Preparation of Report & Submission						

DECLARATION BY THE STUDENTS

We, the project group members hereby declare that the details enclosed in the project proposal are true and correct to the best of our knowledge. We undertake to inform VTU, of any changes there in the project title, students name will be intimated immediately. In case, any of the above information is found to be false or untrue or misleading, we are aware that we may be held liable for it.

We are aware that the project group has to exhibit / demonstrate the project for evaluation in the VTU Regional centre and for exhibition at VTU, Belagavi. If the project group fails to attend the evaluation in Regional centre and for Exhibition in VTU Belagavi, the sponsored project amount will be returned back to VTU immediately

We also hereby, enclose the endorsement form to VTU, Belagavi.

SL.No	Name of the Student	Signature with date
01	Ruchitha C	
02	Sangeetha M	
03	Deeksha S	
04	Akshaya babu	



S^W SAIRAM COLLEGE OF ENGINEERING

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(Managed by Saptagiri Educational & Charitable Trust, Bengaluru - 11)

Sai Leo Nagar, Anekal, Bengaluru - 562 106. Tel : +91 - 80 - 2783 0221 / 2784 0631 www.sairamce.edu.in



ENDORSEMENT

This is to certify that

- 1] RUCHITHA C
- 2] SANGEETHA M
- 3] DEEKSHA S
- 4] AKSHAYA BABU

Are bonafide students of Department of Computer Science and Engineering in of our institution. If the project proposal submitted by these students under VTU Sponsored Student Project Proposal is selected by VTU, we will provide the required laboratory/Computer/infrastructure support in our college/Institution. Further we also take necessary steps that the project group will exhibit / demonstrate their project in the regional centre and for exhibition at VTU, Belagavi. If the student group fails to attend the evaluation in regional centre and exhibition at VTU Belagavi, the supported project amount will be returned back to VTU immediately.

Signature of Project Guide with date	Signature of HOD with Seal and date	Signature of Principal with seal and date
Dr. Bindhu Madhavi	Dr. Bindhu Madhavi	Dr. B. Shadaksharappa

Head of the Department
Dept. of Computer Science & Engineering
Sri Sairam College of Engineering
Anekal, Bengaluru - 562 106.

PRINCIPAL
Sri Sairam College Of Engineering
Sai Leo Nagar, Guddanahalli Post,
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Tel : +91-80-26635623 / 22455361 /SairamBengaluru







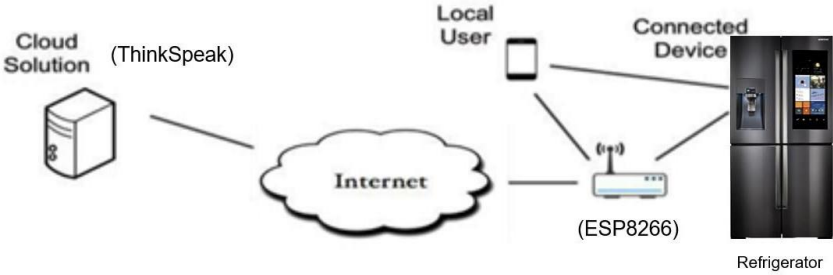
www.sairamgroup.in

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VTU Sponsored Student Project Proposal Format

01	Academic Year:	2020-21	
02	Semester:	VIII	
03	Name of the College:	Sri Sairam College of Engineering	
04	Branch:	Computer Science	
05	Project Title:	IoT based Smart Refrigerator	
06	Project Discipline:	Food & health	
07	Principal	Name:	Dr. B Shadaksharappa
		Contact No:	9900545101
		Email id:	principal@sairamce.edu.in
08	HOD	Name:	Dr. Bindu Madavi
		Contact No:	9986646072
		Email id:	hod.cse@sairamce.edu.in
09	Project Guide	Name:	Prof. Lorate Shiny
		Contact No:	9940535422
		Email id:	lorateshiny.cse@sairamce.edu.in
10	Project Co-Guide (If any)	Name:	NA
		Contact No:	
		Email id:	
11	Project Committee coordinator (Identified by the college):	Name:	Mr. Harish Babu L
		Contact No:	9036527118
		Email id:	harishbabu.mech@sairamce.edu.in

12	Name of project group Members	
	1.Group leader and Member	
	Name: Ruthvik Jhingade	
	USN No.: 1SB17CS073	
	Contact No.: 9590768829	
	Email id: ruthvikjhingade@gmail.com	
	2.Member	
	Name: Shivam Shukla	
	USN No.: 1SB17CS080	
	Contact No.: 8978868213	
	Email id: shivshal76@gmail.com	
	3.Member	
	Name: Yash Kumar	
	USN No.: 1SB17CS099	
	Contact No: 8884866990	
	Email id: yash.kum998@gmail.com	
4.Member		
Name: Vishal Ranjan		
USN No.: 1SB17CS097		
Contact No: 8235695046		
Email id: vishal.ranjan0510@gmail.com		
13	Scope / Objectives of the project:	<p>This project presents a system that combines a conventional refrigerator, microcontrollers and a smart phone to create an inventory monitoring that can monitor the stocks inside the refrigerator wirelessly. Nowadays, with our advanced technology, smart refrigerator is being used to develop the use of appropriate storing of food. However, this device is not economically friendly because it is expensive. Thus, this project presents an Internet of Things-based smart refrigerator using sensor network and Arduino Microcontroller that is suitable to any individual that usually</p>

		<p>spend more time at work and have difficulties monitoring their food. The proposed system monitors the stocks remaining and deficient remotely and at Realtime. Also, it will notify the user the inventory update on his/her fridge through Internet.</p>
<p>14</p>	<p>Methodology of work: (Including diagram, flow chart and design calculations)</p>	 <p>The Entire project is divided into three main components:</p> <ul style="list-style-type: none"> • Sensing module. • Control module. • Transmission module. <p>The Sensing modules consists of multiple sensors used to obtain the physical parameters that would become the data that is worked upon later.</p> <p>The Control module or the Arduino in our case acts the brain of our project.</p> <p>The transmission module consists of the IoT which then transmits the data obtained which is then subjected to Machine learning models.</p> <p>This project works on the principles of Internet of Things. Here, we use multiple sensors to gather data of the physical objects and then use this data efficiently to benefit the end user. Sensors are electronic devices that convert physical parameters into digital from. The sensing Module of our project consists of multiple sensors like:</p>

		<ul style="list-style-type: none"> • <u>HARDWARE</u> <ul style="list-style-type: none"> ○ Load cell. ○ NodeMCU ○ RFID Sensor ○ IR Sensor. ○ Photoresistor. ○ Temperature and humidity sensor. ○ Resistors ○ Capacitors ○ Wires ○ Arduino Mega 	<ul style="list-style-type: none"> • <u>SOFTWARE</u> <ul style="list-style-type: none"> ○ Tinker CAD ○ ThinkSpeak ○ Python ○ Arduino IDE (Embedded c)
		<p>The Control Module that controls the entire system is the Arduino Uno that would be the brain of the project. The transmission module is a ESP8266 or a ESP32 that acts as a router that is connected to the cloud. Accordingly, data acquisition takes place. The obtained data is accumulated to process the raw data to get a user required parameters. The Obtained data includes parameters such as Temperature, weight of the component, time stamp of the component when kept in, collection of items present on the inside and many more.</p> <p>This data can be made useful to the user for proper management of food, avoid over stocking, avoid wastage of food as it suggests recipes of the items inside.</p> <p>Thereby the entire system works on data collected by the other component making it an entire efficient IoT System.</p>	

15	Expected Outcome of the project:	<p>Proper management is the key to solve this problem. A smart refrigerator that helps assess and organise food at home and prevent wastage.</p> <p>As the cost is the primary factor these days, our aim is to do this in the most cost-effective manner possible. Having a cheaper alternative which allows you to do everything and more than what a smart refrigerator can do.</p>																							
16	Application of the project:	<p>This project thereby performs efficient operations to completely involve itself into the contents of the refrigerator and monitor efficiently to Reduce Food Wastage.</p> <p>The Smart Refrigerator module is able to remotely notify the user about the low contents inside the refrigerator.</p> <p>This system can be used by every Household in homes, public buildings such as Hotels and Restaurants and even in Grocery Stores and its food warehouses where food is stocked.</p> <p>The concept of smart fridge is far more reaching than notifying the user about the contents of the refrigerator. It should give importance on maintaining a healthier lifestyle by providing the nutritional value of the contents.</p>																							
17	Budget details with Materials required:	<table border="1"> <thead> <tr> <th data-bbox="571 1201 967 1268">Budget</th> <th data-bbox="967 1201 1247 1268">Quantity</th> <th data-bbox="1247 1201 1518 1268">Amount</th> </tr> </thead> <tbody> <tr> <td data-bbox="571 1268 967 1335">Micro-Controller</td> <td data-bbox="967 1268 1247 1335">1</td> <td data-bbox="1247 1268 1518 1335">1030.00</td> </tr> <tr> <td data-bbox="571 1335 967 1444">Light Detecting Resistor (LDR)</td> <td data-bbox="967 1335 1247 1444">15-20</td> <td data-bbox="1247 1335 1518 1444">500.00</td> </tr> <tr> <td data-bbox="571 1444 967 1549">Resistor, Capacitors & Wires</td> <td data-bbox="967 1444 1247 1549">As Required</td> <td data-bbox="1247 1444 1518 1549">300.00</td> </tr> <tr> <td data-bbox="571 1549 967 1617">ESP32 CAM</td> <td data-bbox="967 1549 1247 1617">1</td> <td data-bbox="1247 1549 1518 1617">1000.00</td> </tr> <tr> <td data-bbox="571 1617 967 1726">Temperature & Humidity Sensor</td> <td data-bbox="967 1617 1247 1726">3</td> <td data-bbox="1247 1617 1518 1726">525.00</td> </tr> <tr> <td data-bbox="571 1726 967 1793">Load Cell</td> <td data-bbox="967 1726 1247 1793">2-3</td> <td data-bbox="1247 1726 1518 1793">1500.00</td> </tr> </tbody> </table>			Budget	Quantity	Amount	Micro-Controller	1	1030.00	Light Detecting Resistor (LDR)	15-20	500.00	Resistor, Capacitors & Wires	As Required	300.00	ESP32 CAM	1	1000.00	Temperature & Humidity Sensor	3	525.00	Load Cell	2-3	1500.00
Budget	Quantity	Amount																							
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Temperature & Humidity Sensor	3	525.00																							
Load Cell	2-3	1500.00																							

		RFID Sensor	6	1356.00
		IR Sensor	3-5	120.00
		Servo Motor	1-2	150.00
		Miscellaneous	-	200.00
		Total	-	6681.00
18	Date of commencement of the Project:	1/12/2020		
19	Probable date of completion of the Project:	20/07/2021		
20	Duration of project work:	6 months		
21	Pert chart for completion of the project in said duration as per planned activities:			

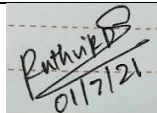
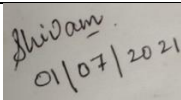
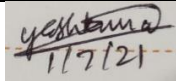
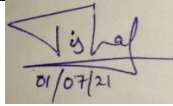
Sl. No.	Activities Planned	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
01	Literature review						
02	Planning/ Designing						
03	Hardware Implementation/ Fabrication						
04	Final Testing						
05	Result & Calculation/ Conclusion						
06	Preparation of Report & Submission						

DECLARATION BY THE STUDENTS

We, the project group members hereby declare that the details enclosed in the project proposal are true and correct to the best of our knowledge. We undertake to inform VTU, of any changes there in the project title, students name will be intimated immediately. In case, any of the above information is found to be false or untrue or misleading, we are aware that we may be held liable for it.

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We also hereby, enclose the endorsement form to VTU, Belagavi.

Sl. No.	Name of the Student	Signature with date
01	Ruthvik Jhingade	
02	Shivam Shukla	
03	Yash Kumar	
04	Vishal Ranjan	



Sri SAIRAM COLLEGE OF ENGINEERING

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Sai Leo Nagar, Anekal, Bengaluru - 562 106. Tel : +91 - 80 - 2783 0221 / 2784 0631 www.sairamce.edu.in



ENDORSEMENT

This is to certify that

- 1] SHIVAM SHUKLA
- 2] RUTHVIK JHINGADE
- 3] VISHAL
- 4] YASH KUMAR

Are bonafide students of Department of Computer Science and Engineering in of our institution. If the project proposal submitted by these students under VTU Sponsored Student Project Proposal is selected by VTU, we will provide the required laboratory/Computer/infrastructure support in our college/Institution. Further we also take necessary steps that the project group will exhibit / demonstrate their project in the regional centre and for exhibition at VTU, Belagavi. If the student group fails to attend the evaluation in regional centre and exhibition at VTU Belagavi, the supported project amount will be returned back to VTU immediately.

Signature of Project Guide with date	Signature of HOD with Seal and date	Signature of Principal with seal and date
Prof. Lorate Shiny	Dr. Bindhu Madhavi Head of the Department	Dr. B. Shadaksharappa

Dept. of Computer Science & Engineering
Sri Sairam College of Engineering
Anekal, Bengaluru - 562 106.

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