



# VIMAL JYOTHI ENGINEERING COLLEGE

JYOTHI NAGAR, CHEMPERI – 670632, KANNUR, KERALA

Affiliated to APJ Abdul Kalam Technological University, Approved by AICTE  
ISO 9001 : 2015 Certified | Accredited by Institution of Engineers (India), NBA, NAAC  
Ph: 0490 2212240, 2213399 Email: office@vjec.ac.in Website: www.vjec.ac.in

NAAC Cycle 2

Criterion: 3.1.1

**2018-2019**

**Index**

Sl Number	Project Name with funding agency
1	Broom Making machine- Unnat Bharat Abhiayn
2	Bamboo structured solar tunnel dryer with biomass backup heater for Eruvessi panchayat in Kannur, Kerala-Unnat Bharat Abhiyan
3	Seed bot-INNOVATE-KSCSTE
4	Off-Sunshine and Night Cooking Solar Cooker with Latent Heat Storage System-APJAKTU - CERD - Research Seed Money Scheme
5	Assistive wearables for disabled people using Dopler radar-APJAKTU - CERD - Research Seed Money Scheme
6	Power generation in highway-APJAKTU - CERD - Research Seed Money Scheme
7	Pepper Plugging Machine-VJEC- IRPs
8	Design, Fabrication, and Control of a Novel Multifunctional Poultry Robot-VJEC- IRPs
9	Strength Characteristics of partially replaced concrete with cow dung ash and crushed granite-VJEC- IRPs-VJEC- IRPs
10	e-passport generation using blockchain-VJEC- IRPs
11	Biometric finger based electronic voting systems- IRPs
12	Aquatic waste collector-VJEC- IRPs





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**2018-2019**

## **Broom Making Machine**

The state Kerala derived its name from Kera, which means the land of coconuts, due to its abundance of coconut trees in this state in India. Thus, there is a range of products derived from coconut trees. The coconut leaf brooms are one of them, and they are mainly handmade by the villagers by the removal of the midrib from the leaves. This process is a very time-consuming and tedious process. The proposed coconut leaf broom-making machine is a simple and economical machine that is user-friendly and can be operated by any person. In this machine, initially, the coconut leaves are fed through a roller arrangement that rotates slowly and pulls the leaves inside the system. Then, the leaves are passed through two sharp spiked rollers, and the midrib of the leaf gets separated. When the tip of the leaves comes out of the spiked roller, it gets pulled at a pace by another set of rotating rollers, which rotates faster than the spiked roller, and these ribs are passed through an agitating guideway into the collecting box. Then, the collected leaf ribs are tied together automatically with the help of a sensor-based robotic manipulator to form a broom. The remaining part of the coconut leaves can be fed to the cattle.





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GSTIN :32AAGFL8903K1Z7

<b>INVOICE</b>	<b>ORIGINAL</b>
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Reverse Charge	Vehicle Number
Invoice No 00 62	Date Of Supply 12/03/2019
Invoice Date 12/03/2019	Place Of Supply KANNUR
State KERALA State Code 32	

Details Of Receiver (Billed To)	Details Of Consigner (Shipped To)
Name: PRINCIPAL, VIMAL JYOTHI ENGINEERING COLLEGE	Name PRINCIPAL,
Address: CHEMPERI, KANNUR	VIMAL JYOTHI ENGINEERING COLLEGE
GSTIN:	Adress CHEMPERI, KANNUR
State: KERALA Pin Code: 670632	

Sl. No	Descriptin Of Goods	HSN	Unit Price	Qty	Amount	Taxable Value	CGST		SGST		Total
							Rate	Amt	Rate	Amt	
1	RUBBER ROLLER 9*13	4016	2543	4	10172	10172	9	915.48	9	915.48	12002.96
Total					10172	10172		915.48		915.48	12002.96

Total Invoice Amount in Words	Total Amount Before Tax	10172
TWELVE THOUSAND THREE INR ONLY	CGST	915.48
	SGST	915.48
Bank Details	Tax Amount (GST)	1830.96
Bank Account Number 37209867780	Invoice Total	12003
Bank Account IFSC SBIN0007853	Round off	0.04

No complaints will be entertained regarding the bill. We are not responsible for damage & pilferage in transit. Interest @24% will be charged if payment is not paid within due date mentioned above. Subject to kannur Jurisdiction only	Recived in Good Condition	Certified that all the particulars in the above are true and correct.
		For Leptons KANNUR Authorised Signatory 



	<p style="text-align: center;"><b>VIMAL JYOTHI</b> <b>ENGINEERING COLLEGE</b> <b>JYOTHI NAGAR, CHEMPERI – 670632, KANNUR, KERALA</b></p> <p style="text-align: center;">Affiliated to APJ Abdul Kalam Technological University, Approved by AICTE ISO 9001 : 2015 Certified   Accredited by Institution of Engineers (India), NBA, NAAC Ph: 0490 2212240, 2213399 Email: office@vjec.ac.in Website: www.vjec.ac.in</p>	<p style="text-align: center;">NAAC Cycle 2</p> <hr/> <p style="text-align: center;">Criterion: 3.1.1</p>
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**2018-2019**

**Bamboo structured solar tunnel dryer with biomass backup heater for Eruvessi panchayat in Kannur, Kerala**

In our UBA-adopted village, Eruvessi, Kannur Kerala, we have implemented a multidirectional and multidisciplinary Solar tunnel dryer. It is a low-cost design specifically designed for the climatic conditions of this region, which is mostly highly humid, making the process of drying an expensive one. Design is multidisciplinary as it involves Civil Engineering for the basic design like flooring, biomass, and pillar placement. Mechanical Engineering is responsible for the design of the tunnel dryer setup. Electrical engineering is involved in fixing solar panels and exhaust fans. Instrumentation Engineering is used to control exhaust fans based on temperature automatically. It is multidirectional because it is used to dry many products like copra, rubber sheets, coir materials, areca nuts, almonds, cashew nuts, etc. This value addition to the agricultural products will definitely raise the income of the households in this area, particularly in the women's empowerment segment.





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NAAC Cycle 2

Criterion: 3.1.1

## 2018-2019

### Seed bot

Even though agriculture is the main source of employment for Indian families, this sector faces major agricultural problems such as labor costs, lack of skilled workers, lack of proper irrigation facilities, and mechanization. Hence, new efficient and low-cost technology for planting and watering is needed for the growth of the agriculture sector in India. This project proposes the design, fabrication, and control of a Seedbot, which can be used by farmers and households for domestic cultivation. This work also includes the kinematic and static analysis of the seedbot system. Seedbot is a prototype of a low-cost wheeled robotic system that consists of 4 main subsystems: digging module, seed planting module, watering module, and inline motion module. Wheels will be steered using DC motors; the seedbot digs the hole, plants a seed, and covers the soil above it; using the planting and watering modules, water the seed by sensing the moisture content in the soil, using a soil moisture sensor. Moisture sensors send the signal to the controller, which in turn gives the pump the signal to "on or off" based on the level of water content in the soil. The distance between each seeding position is measured in each row using an encoder-based inline motion module. A based controller is proposed for controlling the robot. Additional modules, such as pesticide spraying modules and tracked wheel modules, etc. can also be added in the future. Seedbot is a good, economical solution for farmers' agricultural problems and can also be used in every household for the domestic cultivation of homemade vegetables and plants.





**2018-2019**

## **Off-Sunshine and Night Cooking Solar Cooker with Latent Heat Storage System**

The cooking gas bills are rocketing up on a day-to-day basis, and an alternative cooking solution using renewable energy sources like biogas or solar energy is inevitable. This work is to design, fabricate, and integrate a PCM-based Thermal storage system into the commercially available solar cooker, which extends the performance of solar cookers during off-sunshine and night hours. Phase change material (PCMs) used for the storage of heat energy as latent heat, is an important class of modern materials that substantially contribute to the efficient use and conservation of waste heat and solar energy. The stored heat is used to compensate for the absence of heat for cooking during off-sunshine. Proper insulation ensures minimum heat loss from the PCM material. For this Evacuated tube solar cooker is used. The evacuated tube has the capability of reaching high temperatures of 150 -200°C in less time and also vacuum prevents heat loss



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**2018-2019**

## **Assistive wearables for disabled people using Doppler radar**

This project uses Doppler radar sensors in order to provide the user with movement, speed, and distance information of their environment. An array of Doppler radar sensors are placed on the user's head, and vibration motors are placed on the user's chest, neck, back, and/or arms in order to provide input to the user without impeding any of their other senses. When something moves within about 25 feet of the user, the corresponding vibration motor for the particular direction relative to the user where the movement was detected will activate with a certain intensity to indicate how far away the movement was detected. In cases where an object is moving rapidly toward the user at high speed, an emergency notification is sent such that all motors are activated and will pulse while the motor corresponding with the direction the danger is in will be continuous and at a higher intensity to alert the user to where the danger is. The reason for this project is that from looking at new safety features being implemented in cars, such as forward collision warning, this is a great opportunity to use a similar technology to provide almost another sense for people that may be walking, bicycling, or otherwise. This project is intended to provide added safety to users in multiple situations. For example, this can provide added comfort and safety to users walking at night by alerting them towards anything they may not be able to see. In addition, when walking on the street, this can alert users of bicyclists or electric vehicles coming from behind that they might not have noticed. Lastly, this can also be used for those who have visual or audio impairment by providing extra information about their surroundings to improve their safety and comfort. For example, this project also allows users to be able to detect that they are walking towards an object like a wall, and can help avoid walking users from colliding into things.







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**2018-2019**

## **Power generation in highway**

In today's life, the demand for electricity is much higher than that of its production. One of the major issues ever since men realized is that natural resources are going to be finished one day and a replacement is to be found. Apart from that fossil fuels play a major role in pollution, global warming, and greenhouse gas. To address such problems using renewable energies such as sunlight, wind, rain, and so forth is essential in the current century which is named as green technology century as well. Wind energy is considered the fastest-growing source of clean and cheap energy. An adequate amount of wind energy is produced from the pressure difference created by the moving vehicles on the highways. This project focuses on the use of wind energy on highway medians for the generation of electrical energy with the help of a vertical-axis wind turbine. A vertical axis wind turbine can be installed on the median of the roads so that the wind from both sides of the divider will act tangentially in opposite directions on both sides of the turbine thereby increasing the effective wind speed acting on the turbine. This wind flow will depend on the velocity of the vehicle, the size of the vehicle, and the intensity of the traffic. Based on the studies made, an optimal wind turbine design has to be made. Furthermore, the energy produced has to be stored. The wind power harnessed through this technique can be used for smart street techniques, street lighting, traffic signal lighting, toll gates, etc.





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## Pepper Plugging Machine

Pepper plugging, a crucial step in food processing industries, involves sealing peppers with various fillings or preserving agents. Manual plugging is labor-intensive and time-consuming, prompting the need for automation. This abstract presents the design and functionality of a Pepper Plugging Machine (PPM), an innovative solution aimed at streamlining the pepper plugging process. The PPM integrates advanced robotics and precision engineering to automate pepper plugging operations efficiently. It comprises several key components, including a conveyor system for transporting peppers, a filling station equipped with reservoirs for fillings, a plugging mechanism, and a control interface for seamless operation. At the heart of the PPM lies its plugging mechanism, which employs robotic arms equipped with specialized tools to insert fillings into peppers precisely. The system ensures uniformity in plugging while minimizing product wastage and enhancing productivity. Additionally, the filling station allows for versatile customization, accommodating various fillings ranging from cheese and meats to brines and sauces.





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## **Design, Fabrication and Control of a Novel Multifunctional Poultry Robot**

The poultry industry faces ongoing challenges in optimizing efficiency and animal welfare while maintaining high standards of hygiene and production. This abstract presents the development of a novel Multifunctional Poultry Robot (MPR) designed to address these challenges comprehensively. The MPR integrates advanced robotics, sensing technologies, and intelligent control systems to perform various tasks in poultry farming, including feeding, monitoring, and health management. Its design emphasizes versatility, adaptability, and user-friendliness, making it suitable for diverse poultry farming environments. Key components of the MPR include a mobile base equipped with omnidirectional wheels for maneuverability, a robotic arm with interchangeable end-effectors for different tasks, and an array of sensors for real-time data acquisition and analysis. The robot's control system utilizes machine learning algorithms and sensor fusion techniques to optimize performance and decision-making in dynamic farm environments. The MPR's multifunctionality enables it to execute tasks such as feeding, watering, egg collection, and environmental monitoring with precision and efficiency. Its modular design allows for easy customization and integration of additional functionalities to meet specific farm requirements. Furthermore, the MPR prioritizes animal welfare by employing non-invasive techniques for handling and monitoring poultry. Advanced vision systems and machine learning algorithms enable the robot to detect signs of distress or illness, facilitating early intervention and preventive care.





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## **Strength Characteristics of Partially Replaced Concrete with Cow Dung Ash and Crushed Granite**

This abstract presents a comprehensive study on the strength characteristics of concrete partially replaced with cow dung ash (CDA) and crushed granite aggregates (CGA). With a growing emphasis on sustainable construction materials, this research investigates the feasibility and effectiveness of utilizing CDA as a supplementary cementitious material and CGA as a replacement for natural aggregates in concrete production. The experimental investigation involves systematically varying the proportions of CDA and CGA in concrete mixes and evaluating their effects on compressive strength, tensile strength, flexural strength, and durability properties. The study encompasses laboratory testing, including slump tests, compressive strength tests, split tensile strength tests, and modulus of rupture tests, to assess the performance of the modified concrete mixes. Results from the experiments reveal the influence of CDA and CGA on the mechanical and durability properties of concrete. Partial replacement of cement with CDA leads to improvements in workability and can contribute to the enhancement of compressive strength, particularly at later ages, owing to the pozzolanic reactions of CDA. Meanwhile, the incorporation of CGA as a replacement for natural aggregates affects the concrete's mechanical properties, with variations observed in compressive strength and flexural strength. Furthermore, the study evaluates the durability aspects of the modified concrete mixes, including resistance to chloride ion penetration, sulfate attack, and carbonation. It investigates the microstructural changes induced by the inclusion of CDA and CGA through techniques such as scanning electron microscopy (SEM) and X-ray diffraction (XRD) analysis.



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### **e-passport generation using blockchain**

E-passport is a new advancement made on the existing passport. It uses blockchain technology to abolish all the issues that we now face related to passports. This new technology holds the power to secure our passports and processes related to it. Blockchain has taken the industry by storm and developers sensing the urge to secure things have resorted to blockchain since it provides data security at its best. Using this feature, we propose a system where the passport is stored in the blockchain, and all its functions are handled by it. The system is built on the Hyperledger fabric infrastructure using the Hyperledger composer tool. All the processes like police verification, arrival, departure, etc., are made easier by the existing techniques.





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## **Biometric finger-based electronic voting system**

Election and Voting is a routine part of our lives. Today security is a major concern and it also needs to be ensured that someone can't vote twice, so this problem can be solved by introducing Finger Print Based Voting, where a person can be authorized based on his finger Print. This will also stops fake voting. Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. A voter is provided with RFID card which has unique 12 byte code embedded in it. When the card is brought in the vicinity of RFID card reader, the reader detects 12 byte embedded code. A voter can also identify himself uniquely by fingerprint recognition process. A static central database containing details of voters according to their constituency is maintained. The database also maintains the candidates along with their constituency. At the time of login it is checked whether the voter is registered or not. The voter is allowed to proceed only if he is registered. After login a voting form appears before the voter. The count of votes for that candidate is maintained. Once the user votes the application is exited so that the user cannot change his vote. After the voter has voted the Boolean status for that voter is marked true so that the same voter cannot vote for the second time.





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## Aquatic waste collector

Aquatic environments worldwide face increasing pollution challenges, primarily caused by the accumulation of plastic waste, debris, and other pollutants. This abstract highlights the development and functionality of Aquatic Waste Collectors (AWCs), innovative technologies designed to mitigate the detrimental effects of aquatic pollution and enhance waterway sustainability. AWCs are autonomous or semi-autonomous devices equipped with specialized mechanisms for collecting, sorting, and removing various forms of waste from water bodies, including rivers, lakes, and oceans. These devices utilize a combination of physical, mechanical, and, in some cases, robotic systems to effectively target and retrieve pollutants, thereby minimizing environmental harm and preserving aquatic ecosystems. Key features of AWCs include their ability to navigate water bodies efficiently, adapt to varying environmental conditions, and accommodate different types of waste materials. Advanced sensors and imaging technologies enable AWCs to identify and differentiate between debris, plastics, organic matter, and other pollutants, facilitating selective collection and sorting processes. The design and functionality of AWCs are informed by principles of sustainability, efficiency, and environmental impact mitigation. These devices are often powered by renewable energy sources such as solar or hydroelectric power, minimizing their carbon footprint and operational costs while ensuring long-term sustainability.

