



Kongunadu

College of Engineering & Technology

[Autonomous]

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

(Accredited by NBA(CSE, ECE, EEE & MECH) and NAAC, An ISO 9001:2015 Certified Institution)

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AGRI ROOTS MAGAZINE



DEPARTMENT OF
AGRICULTURAL ENGINEERING

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MISSION, PEO, PSO & PO*



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DESIGN





ABOUT THE DEPARTMENT

The Department of Agricultural Engineering was established in the year 2021, offers 4 years B.Tech-Agricultural Engineering course with an intake of 60 students. The department has well experienced and highly qualified faculty members, excellent infrastructure, ultra-modern buildings, well equipped laboratory facilities and career guidance. The department is established to develop professionals with the knowledge of modern farming, irrigation, farm mechanization, soil and water conservation, harvesting, renewable energy and crop production with IoT technology. The department is focusing on widening the practical knowledge of the students thus encouraging them to solve different practical difficulties in small-landholdings. The practical knowledge gained by them during practical field works and industrial visits has been added advantage for new technology and innovations. The department leads in the transfer of agriculture engineering and technology education to the younger generation on the right path to fulfill the career in agriculture and allied sectors.

DEPARTMENT VISION

To Produce Excellent Professionals in Agricultural Engineering through quality education, leadership skills and ethical values to serve the societ.

DEPARTMENT MISSION:

- Providing in-depth knowledge and applications of agricultural machineries and associated process with embedded technology.
- Developing multidisciplinary learning environment with leadership skills.
- Impart training in entrepreneurial and life skills for enhancing employability.

PROGRAM EDUCATION OBJECTIVES (PEOs)

PEO1: Graduates shall become agricultural professionals with specialization in irrigation, farm equipments, post harvest and renewable energy along with automation.

PEO2: Graduates shall able to design and develop optimistic products for the benefits of farmer and society.

PEO3: Graduates shall have professional ethics, team spirit, life-long learning, adopt corporate culture, core values and leadership skills and communication skills.

PROGRAM SPECIFIC OUTCOMES(PSOs)

PSO1: Professional skills: Students shall understand, analyze, design and develop agricultural equipments to meet the requirements of farmer and industry.

PSO2: Competency: Students shall qualify at the State, National and International level competitive examination for employment, higher studies and research.

PROGRAM OUTCOMES(POs):

Engineering Graduates will be able to:

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Life Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Quality Policy of the Institute

To strive continuously for producing the best result in terms of knowledge, Self-Discipline and application of the Knowledge acquired.



How AI will Shape the Future of Agriculture

Karthikeyan D., Mohana .S., Sri Dhanalakshmi M.

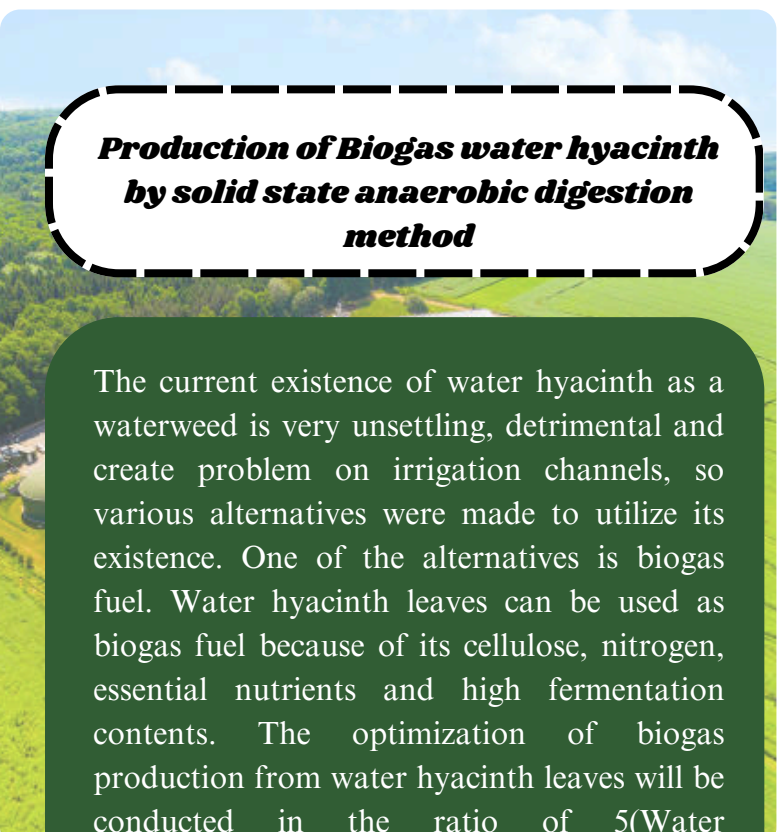
The application of AI in agriculture is increasingly viewed as a crucial solution to address food shortages and meet the demands of a growing global population. This article provides an overview of AI's role in agriculture and the advancements in the same. It explores key areas where AI could significantly impact: farm practices and production. Additionally, the Internet of Things (IoT) is identified as a technology with strong potential for future agricultural applications. However, three major challenges must be overcome for AI-based technologies to become widely adopted in the market: the uneven distribution of mechanization, the capability of algorithms to process large datasets both accurately and swiftly, and the security and privacy concerns related to data and devices. Despite the challenges of applying AI technologies tested in experimental settings to real-world environments, the article underscores the substantial progress in the development of agricultural robots and highlights the promising future of AI applications in the agricultural industry.



Agricultural Robotics

Monisha V

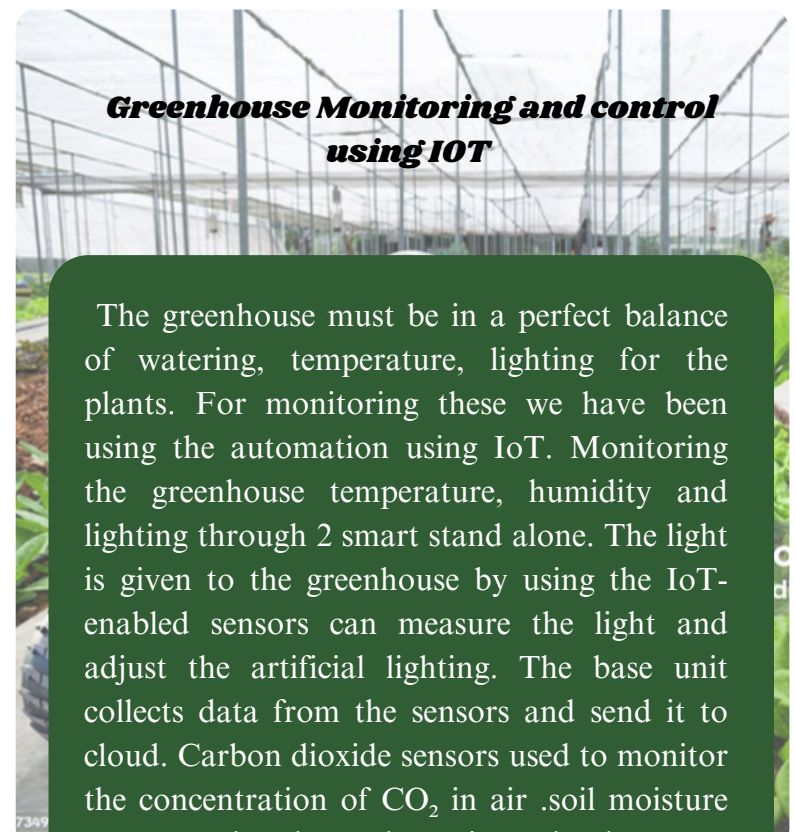
Robotics is revolutionizing agriculture through precision, efficiency, and labor-saving solutions. Autonomous drones and ground robots monitor crop health, soil conditions, and pest infestations, enabling early disease detection and targeted interventions. Robotics optimizes planting, seeding, weeding, and harvesting, reducing labor costs and improving yields. Autonomous tractors and irrigation systems enhance efficiency, conserve water, and promote sustainable farming. Additionally, robots streamline post-harvest processing, sorting, and packing. By leveraging AI, computer vision, and sensor technology, agricultural robotics collects valuable data, fuels precision agriculture practices, and enables data-driven decision-making. These innovations address labor shortages, reduce chemical use, and promote environmental sustainability, transforming the future of agriculture.



Production of Biogas water hyacinth by solid state anaerobic digestion method

The current existence of water hyacinth as a waterweed is very unsettling, detrimental and create problem on irrigation channels, so various alternatives were made to utilize its existence. One of the alternatives is biogas fuel. Water hyacinth leaves can be used as biogas fuel because of its cellulose, nitrogen, essential nutrients and high fermentation contents. The optimization of biogas production from water hyacinth leaves will be conducted in the ratio of 5(Water hyacinth):3(Cow dung):1(Water) by solid-state anaerobic digestion (SS-AD). In a batch type bio digester, the gas production takes place under anaerobic condition at room temperature. Degradation process will be done between 40-50 days. The resulting gas production will be stored in a portable gas container, which is a balloon type container, for further use. The produced gas was measured at end of the every week by weight basis. Using the pressure gauge the pressure of the gas container were measured as well. The resulted gas produced were measured as volume at the end of 1st, 2nd, 3rd, 4th, 5th, and 6th week produced 0.044 m³, 0.061 m³, 0.083 m³, 0.100 m³, 0.128 m³, 0.150 m³ with 1 bar pressure. Totally 0.254 kg of biogas is produced and 0.566 m³ of biogas is produced.

R.Roshini



Greenhouse Monitoring and control using IOT

The greenhouse must be in a perfect balance of watering, temperature, lighting for the plants. For monitoring these we have been using the automation using IoT. Monitoring the greenhouse temperature, humidity and lighting through 2 smart stand alone. The light is given to the greenhouse by using the IoT-enabled sensors can measure the light and adjust the artificial lighting. The base unit collects data from the sensors and send it to cloud. Carbon dioxide sensors used to monitor the concentration of CO₂ in air .soil moisture sensor used to detect the moisture level.

Temperature sensor monitor the temperature in greenhouse and adjust the heating and cooling system. water sensor to monitor water level in irrigation system and reservoirs. Light sensor to track the intensity and duration of light. Humidity sensors to measure the moisture level. The main theme of this system is to improve the green house monitoring and control.

R.Kiruthika





Smart Detection and Plucking Equipment of Ripe Custard Apple

Abisekar M, Rohith R, Shanmugaraj R

Annona squamosa, also known as Custard Apple, is a small tree with fragrant pendulous flowers and round-ish shaped fruit with a knobby surface. Traditional methods of harvesting rely on manual labour, which can be inefficient and result in damaged fruit due to improper handling. Our project integrates an ESP32-CAM module to capture images of custard apples, which are processed using a machine learning model trained on Edge Impulse to identify ripeness. Upon detecting a ripe fruit, a servo motor activates a knife mechanism to cut the stem of the fruit. The plucked fruit is collected using a fruit collecting net attached to a hand-adjustable telescopic rod for reaching height or distant of the fruits.



The entire system is powered by a power bank, making it portable for field use. The setup is programmed using Arduino IDE, with a web dashboard for remote monitoring and control.

Monitoring Honey Bees Hives using IoT



Beekeeping is one of the prevalent and traditional fields in agriculture, where Internet of Things (IoT)-based solutions approaches can ease and improve beehive management significantly. A particularly important activity is bee swarming. A beehive monitoring system can be applied for digital farming to alert the user via a service about the beginning of swarming, which requires a response. An IoT-based bee activity system is proposed in this project. It measures the temperature, humidity, sound frequency and weight of the beehive, using an IoT sensor. The problem related to temperature and humidity to understand the effect on the bees and the overall yield of the beehive by plotting a few scatter plots. It can be easy to understand and to monitor the bee hives



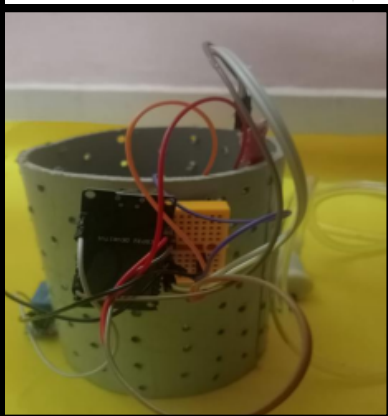
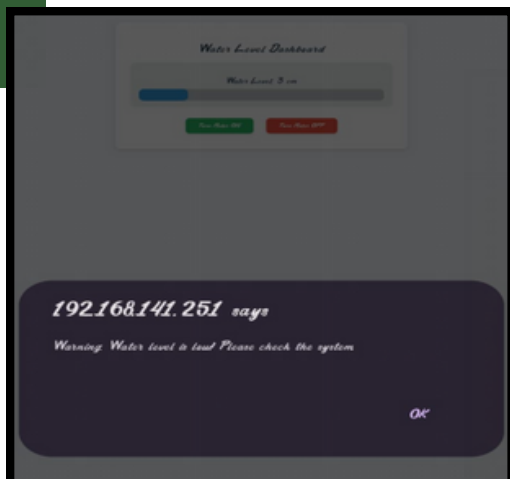
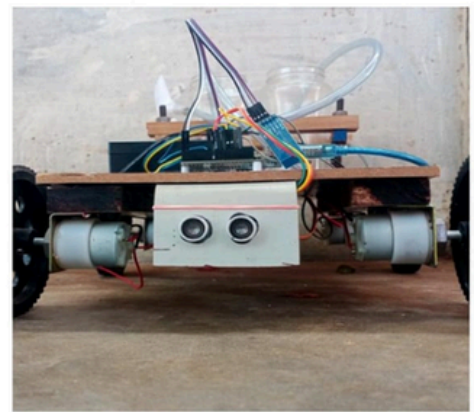
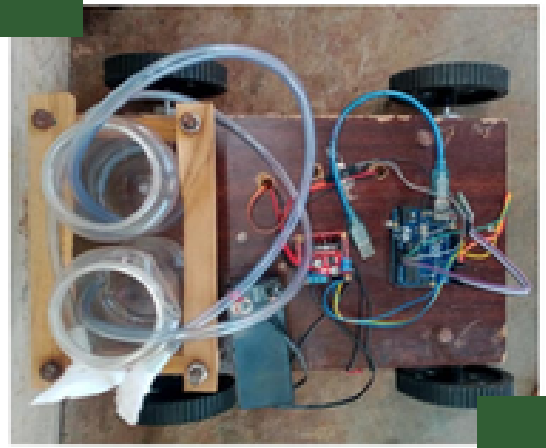
Abishek A, Kavibharath B, Srikanth S



Automated Vehicle-Controlled Weed Killer and Tapioka Plant Fertilizer Sprayer

Introducing a versatile surveillance rover system that seamlessly integrates remote control capabilities with live photo streaming and plant detection functionalities. Leveraging ESP-8266 (Espressif System) for pump control and ESP32-CAM (Camera) for photo live streaming, plant and weed recognition. This system empowers users to remotely monitor its surroundings in real-time. The web dashboard can be programmed by either fertilizer or herbicide spraying particular plant. Arduino Uno used control the vehicle movement and using Ultrasonic sensor detect the unwanted plant from field.

Ragul M, Gokul A, Arun N



Smart Alternative Wetting and Drying for Sustainable Paddy Farming Using IoT

*Subha M,
Sabarishwaran S,
vaishnavi A S*

An IoT-based automated Alternate Wetting and Drying (AWD) system is designed to address water scarcity in rice cultivation. By utilizing advanced sensors and real-time data monitoring through a mobile application, the system optimizes water management by automating irrigation and reducing water usage compared to traditional methods. When the water level drops below the set threshold, the motor automatically turns on for refilling, and when the water reaches the surface level, the motor switches off. This precise control significantly reduces water waste by ensuring only the necessary amount of water is used at each stage of rice growth. In addition to lowering water consumption, this method also decreases greenhouse gas emissions, as less water in the fields reduces methane production from submerged rice paddies. The user-friendly mobile app allows farmers to easily monitor and control the system remotely, making it an accessible and scalable solution for sustainable rice farming. By integrating smart irrigation with AWD, this system not only conserves valuable water resources but also promotes healthier root growth, reduces crop stress, and maintains optimal soil conditions. Its efficiency and scalability aim to revolutionize rice cultivation practices globally, helping farmers manage water more sustainably and increase productivity.

Biodegradable Bags Using Banana Fiber With Sugarcane Bagasse

Santhoshni .P
Sri Dhanalakshmi.M
Saran.J



This project explores the development of biodegradable bags from agricultural wastes, specifically sugarcane bagasse and banana fiber, as a sustainable solution to combat plastic pollution. By repurposing these abundant by-products, the project reduces waste from agricultural industries while offering an eco-friendly alternative to conventional plastic bags. The production process involves collecting and chopping the materials, followed by boiling with sodium hydroxide to break down lignin and hemicellulose. After pulping, the

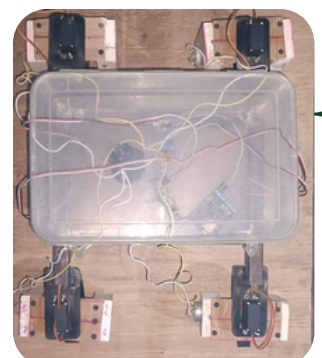
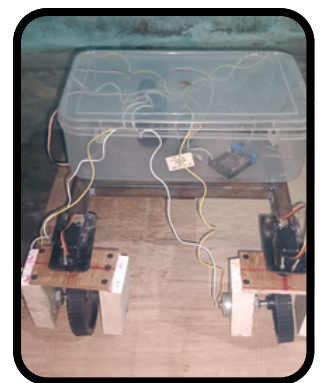
materials are ground to a uniform consistency, filtered to remove impurities, and dried to form sheets of biodegradable material with a thickness of 100 to 150 microns. Each bag has a weight-carrying capacity of 2 to 2.5 kilograms, with a production cost ranging from ₹5 to ₹8 per bag. The volume capacity of each bag is approximately 7,280 cm³ ensuring a practical and functional design for everyday use.



Development of IoT Based Grass Cutter Using wi-fi

Logeshwaran A
Thulasiram N
Karthikeyan D

The technology commonly used to cut the grass by manually handled device. The project aims to fabricate a grass cutting machine system controlled by android application using Wi-Fi module feature which runs with the help of motor using battery power. the movement of the machine is totally controlled by manual mode. the Wi-Fi controller run this machine movement and direction through an android Application. The controlling device of the whole system is a micro-controller(esp8266). Wi-Fi module and DC motors are interfaced to the micro-controller. the data Received from the android phone application by Wi-Fi module is fed as input to the controller and the controller acts according on the DC motor of the grass cutter. In achieving the task, the controller is loaded with a program written using Embedded 'C' Language.A cutter system that is Wi-Fi-controlled can efficiently convert user commands into exact motor control movements.and these system was cut the grass at 15 cm ground clearance. The battery gets discharged fully at 4 hours 30 minutes and takes 1 hour 10 minutes for recharge.Further two solar panel is added for the charging system to Supply the power and improve the operation time.



ACHIEVEMENTS

Paper presentation



R.shanmugaraj , P.Santhoshni
Won Second Prize



R.shanmugaraj , P.Santhoshni
Won first Prize



M.Subha, M.Sri Dhanalakshmi,
S.Mohana
Won Second Prize

Technical Quiz



J. Gunavathi,
B. Rajeshwari, and
T. Visvanandhini
Won Third Prize



R.Swetha
Won First Prize



S.Devika
Won Second Prize



R.Swetha, S.Devika
Won Third Prize

Sports

Basketball



Anand R, Dhanush Pandi T,
Ganeshan A
Won First Prize



Fouth Prize



Third Prize



Award: Best Player

Hockey

Anand R



First Prize



Second Prize



First Prize



P. Santthoshni



S. Bharath



D. Karthikeyan



M. Sri Dhanalakshmi



S. Dharshini



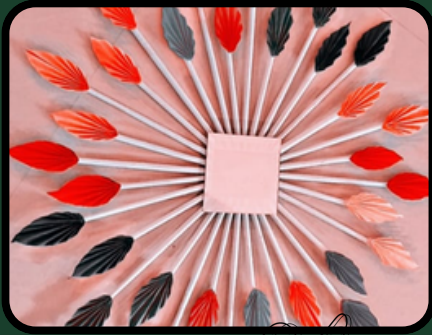
V. Monisha



M.Subha

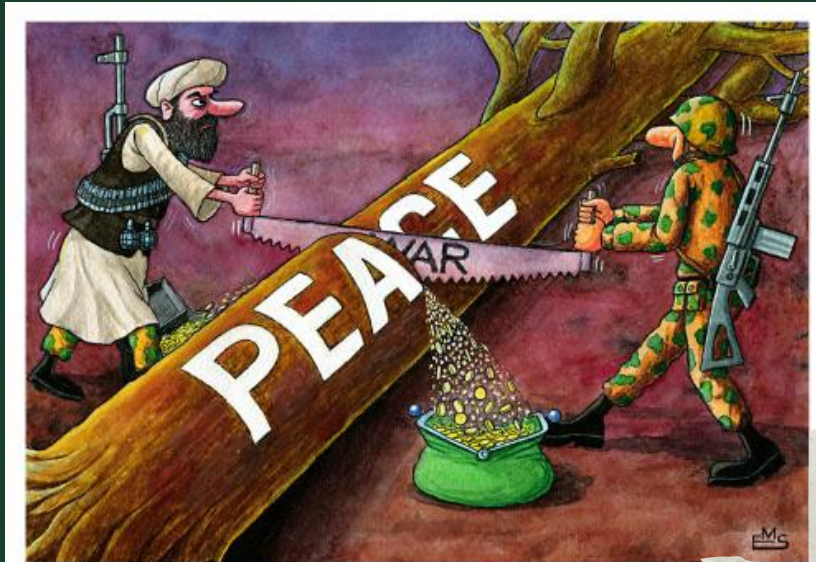


P.Kabilan



Monica.C

"An eye for an eye only ends up making the whole world blind."
- Mahatma Gandhi



Kalaiwanan.R

"The purpose of art is to wash the dust of daily life off our souls."
- Berthold Auerbach



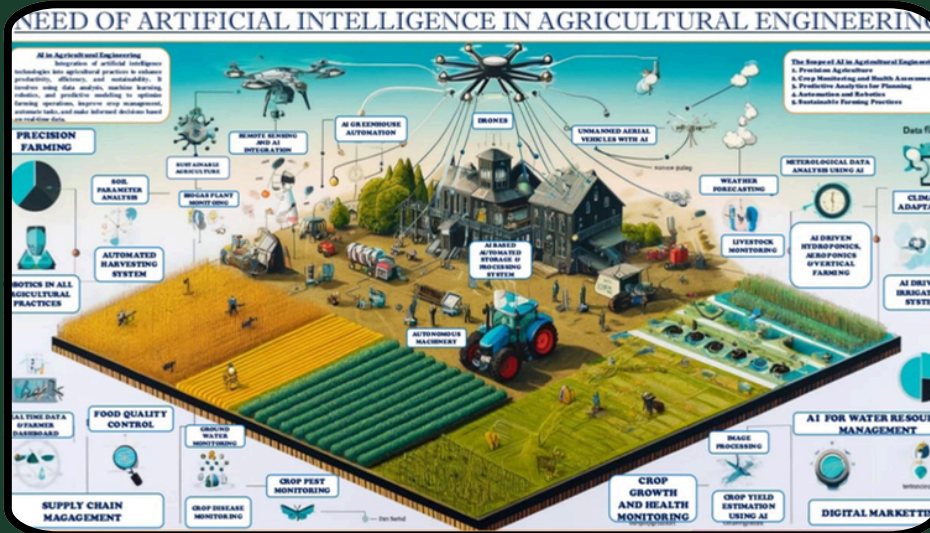
Yogeshwaran.M



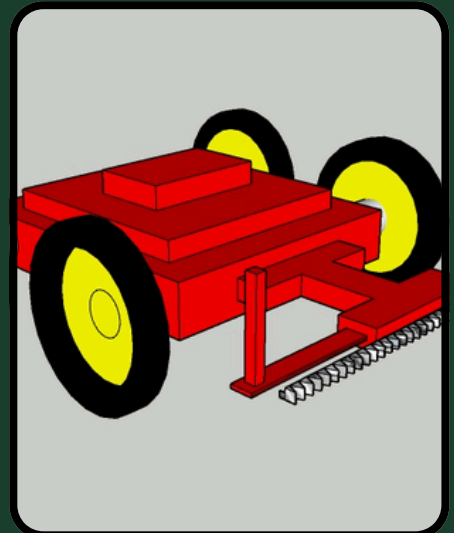
Sowmiya.p

POSTER DESIGN

Designing



R.Shanmugaraj



Karthikeyan D.,

WED PAGE DESIGN

Graphic Design

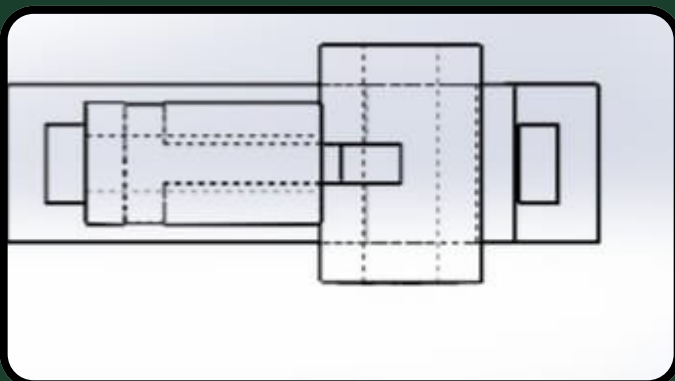


M.Subha

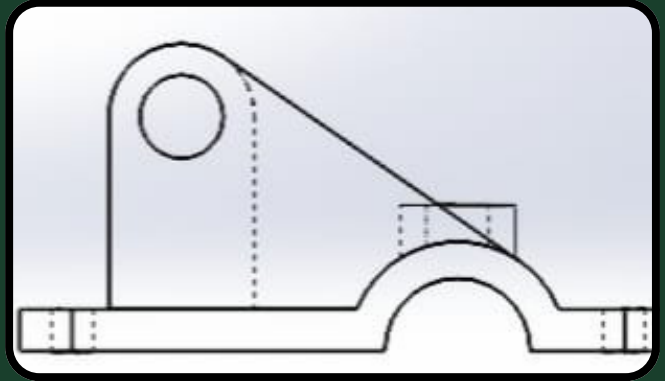


M.Sri Dhanalakshmi

AUTOCAD DESIGN



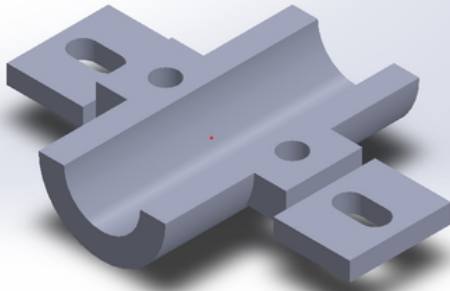
POORNKA S



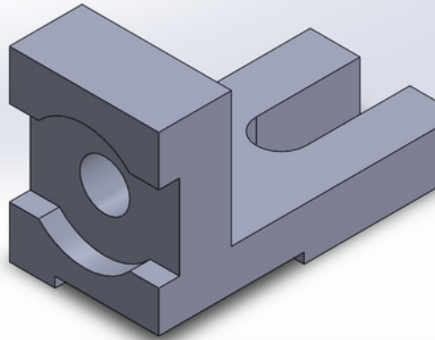
NAVANEETHA B



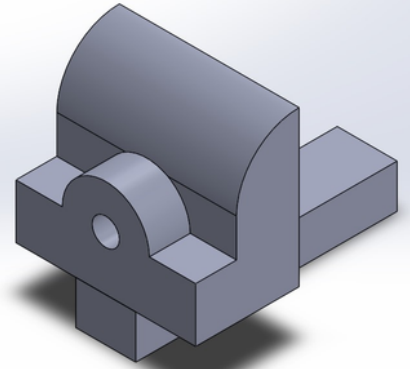
SOLID WORK DESIGN



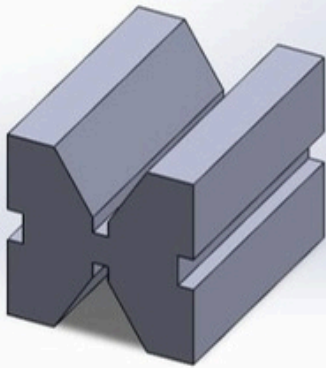
BALAKUMARAN K



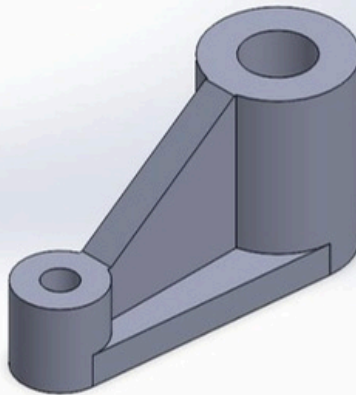
GOPINATH K



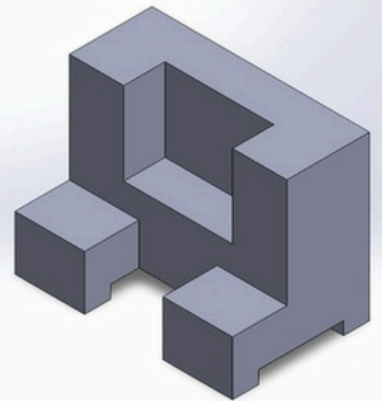
KARTHIKEYAN D



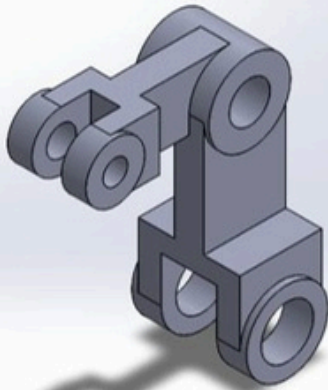
DHARUNFRANCLIN X



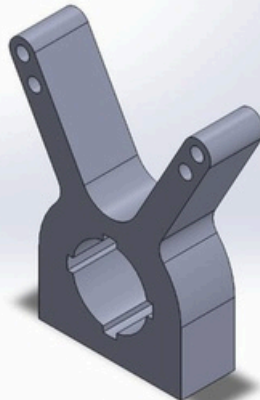
GOKUL A



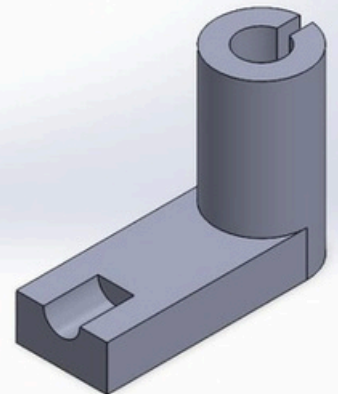
KAUJYA S



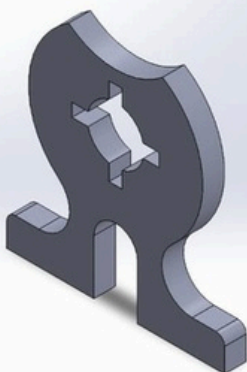
MOHANA S



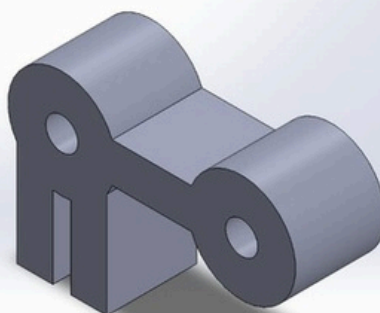
RAGUL M



MOULEESWARANA S



RAJESHWARI B



MONISHAV



SANTHOSHNI P

அம்மா

அம்மா!!

அடிப்பவள் அவள் தான்..

உணவை தட்டில் வைத்து மிரட்டுபவளும் அவள் தான்..

உறங்கும் போது அணைப்பவளும் அவள் தான்..

ஆளான போது முத்தமிடுபவளும் அவள் தான்..

துன்பம் எனும்போது துணையாக இருப்பவளும் அவள் தான்..

வெற்றி எனும்போது தள்ளி நின்று ரசிப்பவளும் அவள் தான்..

வளர்ந்த போதும் குழந்தையென நினைப்பவளும் அவள் தான்..

வாழும் வரை எனை நெஞ்சில் சுமப்பவளும் அவள் தான்..

D. Pugalzheni

TREE

*A majestic tree stands tall and proud,
Its branches stretching, its roots avowed.
A symbol of strength, of wisdom true,
A shelter for birds, and shade for you.
Its leaves dance in breeze, its bark is old,
Stories of seasons, forever to be told.
A haven for dreams, a witness to time,
A sentinel of nature's sublime.
Roots deep, branches wide,
A living wonder, side by side.
With nature's beauty, it does abide,
A treasure trove, where love resides.
A tree of life, where hearts entwine.*

B. Kavibharath



NATURE



*I believe the nature it brings, breeze,
rain and grows plants and makes all lives.
We are touched by nature for a reason. Even at my worst,
the green meadows spread over and spread to live.
Sometimes I feel so much for beauty, The sun sets are real beauty.
I am trying to become like the wind, When I smell it, it feels blind;
It is breath and silence, The sun set tells the stories behind;
The silence of brights.
Shadows on a sunny day, Smelling the air turned around;
Oh yes! you are coming rainy day.
Tucking the flower behind my ear Knowing the person
is pure loved. Over the years.
A beautiful and serene hamlet, Like a whisper gentle wind shakes
The air hold in palm Craving peace for what it takes.*

Rejil S

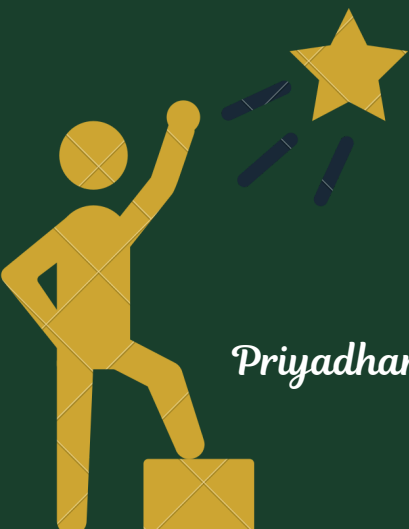
TRAVEL

*The railroad track is miles away, And the day is loud with
voices speaking, Yet there isn't a train goes by all day But I
hear its whistle shrieking.
All night there isn't a train goes by, Though the night is still for
sleep and dreaming But I see its cinders red on the sky, And
hear its engine steaming.
My heart is warm with the friends I make, And better friends
I'll not be knowing, Yet there isn't a train I wouldn't take, No
matter where it's going.*



CONFIDENCE

*My hurt became a star That shined right above me,
around me An expanding bright sheen that Enclosed all
spaces.
Underneath my feet is an indistinct glass, non-
transparent in its thickness. Osmosis. The star filters out
Everything except the bad.
My own brightness fills the room.
In everything I shine through.*



Priyadharshini R V

COLLEGE VISION & MISSION

VISION

" To become Internationally Renowned Institution in Technical Education , Research and Development by transforming the students into Competent Professionals with Leadership Skills and Ethical values "

MISSION

- Providing the Best Resources and Infrastructure .
- Creating Learner - Centric Environment and continuous learning.
- Promoting Effective Links with Intellectuals and Industries . Enriching.
- Employability and Entrepreneurial Skills .
- Adapting to Change for sustainable Development .

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Priyadharshini R V II-YEAR



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