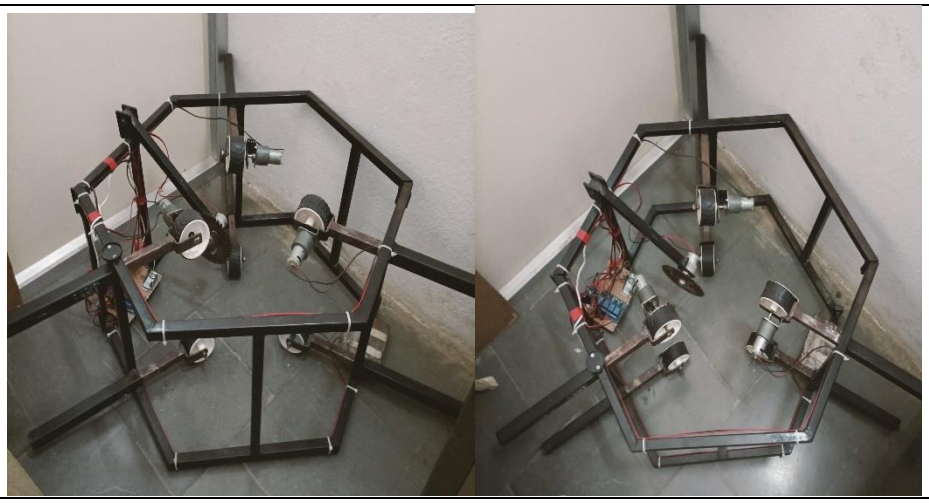
Details of Products/Prototypes/ Models developed for the A.Y. 2023-24

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Fabrication of Arecanut Tree climbing Robot- Dr BSK
Description (in 200 words)	The fabrication of an Arecanut tree climbing robot involves the development of a sophisticated machine designed to assist in the harvesting of Arecanut, addressing the challenges of labour-intensive and hazardous manual climbing. The process begins with a thorough design phase, utilizing CAD software to create detailed schematics of the robot's components and structure, focusing on durability, efficiency, and safety. The robot's frame is constructed from lightweight, high-strength materials such as aluminium alloys or carbon fibre composites to ensure both robustness and ease of manoeuvrability. The core of the climbing mechanism includes a set of grippers or claws equipped with high-torque motors and rubberized pad wheels for secure attachment to the tree trunk. These grippers are designed to adapt to the varying diameters and textures of Arecanut trees.Mobility is achieved through a combination of linear actuators and articulated joints that allow the robot to ascend and descend the tree smoothly. The control system comprises a microcontroller that coordinates the robot's movements and a user interface for remote operation. The robot's harvesting mechanism includes an extendable arm with a cutting tool, designed to efficiently and precisely cut the Arecanut and collect them in an attached basket. After assembly, the robot undergoes extensive testing in real-world conditions to ensure reliability and efficiency. This innovative solution significantly reduces the risks and labour associated with arecanut harvesting, making the process safer and more sustainable.
Register Number and Name of Students	20761A0334-Narra Mohan Vamsi 20761A0340-Shaik Zubair 20761A0331-Muppiri Nithin Srinivas

Photographs	

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design and fabrication of hybrid dryer – Dr VDR
Description (in 200 words)	The demand for efficient and sustainable methods of vegetable drying has grown significantly due to the need for food preservation and value addition inagricultural produce. This project presents the design, construction, and evaluation of a solar and wind-powered vegetable dryer aimed at providing a low-cost, environmentally friendly solution for small-scale farmers and rural communities. The solar and wind vegetable dryer integrates renewable energy sources to provide the necessary heat and airflow for efficient drying of various types ofvegetables. The design incorporates solar photovoltaic panels and a small windturbine coupled with heating elements and a ventilation system to create optimal drying conditions. Construction guidelines and operation procedures are detailed to facilitate easy replication and usage of the dryer. Performance evaluation involves monitoring temperature, humidity, and drying time, comparing results with conventional drying methods. The benefits of the solar and wind vegetable dryer include reduced reliance on fossil fuels, lower operating costs, and improved food security through extended shelf life of dried vegetables. This project contributes to sustainable agriculture practices by harnessing renewable energy to address the challenges of post-harvest loss and food waste. The solar and wind vegetable dryer offers a scalable solution with potential applications in both rural and urban settings, promoting self-sufficiency and resilience in local food systems.
Register Number and Name of Students	20761A0306-Bazaru Revanth Kumar 20761A0303-Andraju Harika 20761A0316-Gudisa Karthik

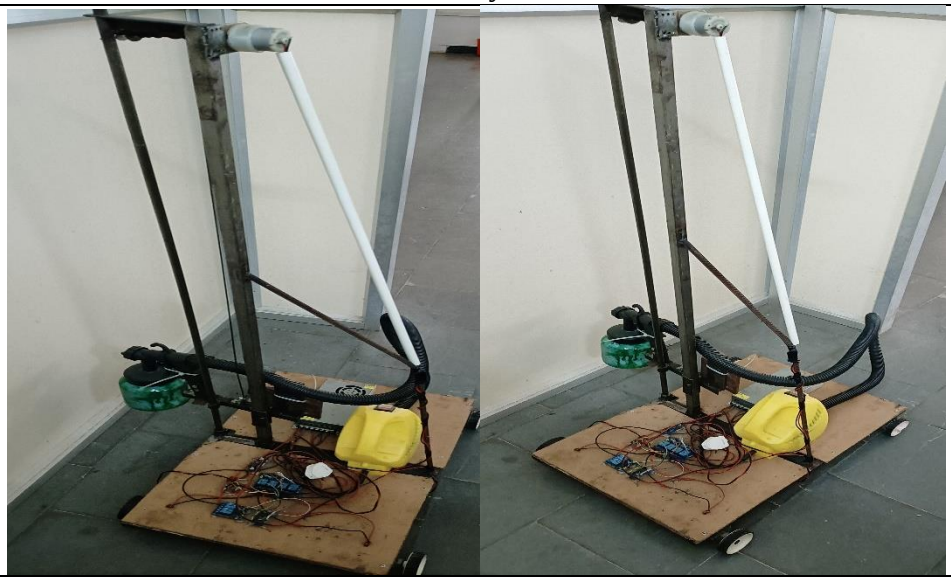
Photographs	

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design and fabrication of Adaptive robot Assistive feeding for childern-KLP
Description (in 200 words)	The Children Feeding Robot presents a revolutionary solution aimed at revolutionizing the mealtime experience for young children. This project emerges from the recognition of the challenges faced by parents, caregivers, and healthcare professionals in ensuring optimal nutrition and feeding for infants and toddlers.
Register Number and Name of Students	20761A0302-Anam Mani Dinesh 21765A0315-Swargam Syamala Devi 20761A0319-Karnati Pavan Manikanta
Photographs	

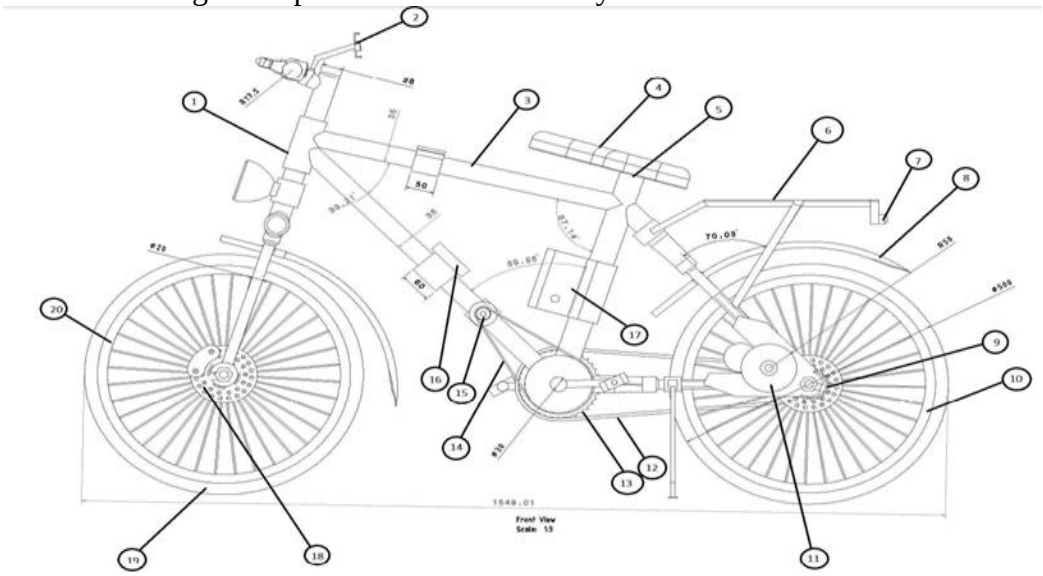
Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design and fabrication of Automation Machine Centre-KVV
Description (in 200 words)	This project includes cutting-edge technologies to streamline wood working processes. The system includes a non-coded conveyor belt, flipping mechanism, CNC milling station, CNC laser station, and liquid polishing station, all designed and coordinated using SolidWorks software, manufactured using a 3D printer, and controlled by Arduino. The project begins with the continuous rotation of the non-coded conveyor belt, allowing wooden workpieces to enter the flipping mechanism. The flipping mechanism accurately positions the workpieces at specific times and distances on the main conveyor belt, initiating the automated workflow. Subsequently, the main conveyor belt, coded with Arduino, transports the workpieces to the CNC milling station. Here, a gripper securely holds the workpiece for precise machining operations. Upon completion, the workpiece advances to the CNC laser station, where another gripper facilitates laser cutting or engraving operations with high accuracy. Finally, the workpiece proceeds to the liquid polishing station, where it undergoes polishing to achieve the desired finish. The Integration of SolidWorks design, 3D printing manufacturing, and Arduino-based control ensures a cohesive and efficient automation system. This project showcases the potential of automation technologies in enhancing manufacturing processes, optimizing workflow, and delivering consistent, high-quality outputs in woodworking applications.
Register Number and Name of Students	21765A0310-P Eswar 21765A0314-S Padmavathi 20761A0339-S Siva Ram
Photographs	

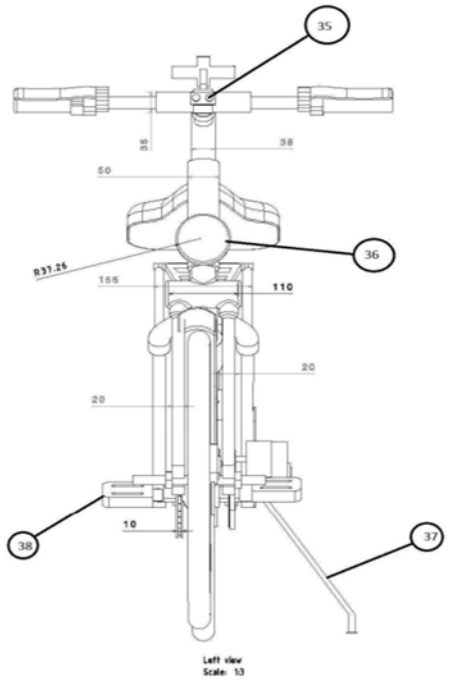
Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design and Fabrication of Rain-resistant Grain Preservation Using an Automated Protective Shield
Description (in 200 words)	The Automated Protective Shield (APS) system incorporates rain sensors that continually monitor real-time precipitation levels. Upon detecting substantial rainfall, the activation mechanism is engaged to swiftly and efficiently deploy a waterproof cover over the grains. Crafted from durable and weather-resistant materials, this cover exhibits the capacity to withstand harsh weather, thereby safeguarding the grains beneath it. The activation mechanism seamlessly interfaces with a robust control system, guaranteeing the smooth and timely deployment of the agriculture products cover. The triumphant implementation of the Automated Protective Shield signifies a remarkable stride in the domain of agricultural engineering. By providing a sustainable and dependable approach to shielding grains during rainy periods, this technology holds the potential to redefine conventional preserving practices. It strengthens food security, thereby contributing to a more resilient agricultural sector capable of navigating the evolving patterns of weather and climate uncertainties.
Register Number and Name of Students	20761A0398-Ummadisetti Tejaswi 20761A0395- Thalluri Mahesh babu 20761A0353-Attaluri Teja
Photographs	

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design And Fabrication of Automatic Wall Painting Robot-Dr BSK
Description (in 200 words)	The project begins with a detailed conceptualization phase, involving CAD modelling to outline the robot's structure, components, and operational parameters. The design focuses on creating a compact, mobile unit that can navigate and paint vertical surfaces autonomously.

	The frame of the robot is constructed from lightweight, durable materials such as aluminium or reinforced plastic, ensuring ease of movement and stability. The robot is equipped with a track or wheel system for mobility, allowing it to traverse different floor types and navigate around obstacles. High-precision stepper motors and encoders are integrated to control the movement and positioning of the robot accurately. A pivotal component is the painting mechanism, which includes a paint reservoir, pump, and spray nozzle. The system is designed to maintain consistent pressure and flow rate, ensuring uniform paint application. The spray nozzle is mounted on a robotic arm with multiple degrees of freedom, allowing it to reach various heights and angles. The robot is programmed with sophisticated algorithms to follow a predetermined path, ensuring complete and efficient coverage of the wall. The control system includes a user interface for easy operation and customization of painting parameters, such as speed, coverage area, and paint thickness. After assembly, the robot undergoes rigorous testing to validate its functionality, precision, and safety. This innovative automatic wall painting robot significantly reduces labour costs, minimizes human exposure to hazardous environments, and ensures high-quality, consistent painting results.
Register Number and Name of Students	21765A0333-Sappa Durga Rao 20761A0351-Annapureddy Bala Yaswanth Sai Reddy 20761A0348-Alla Geetheswara Reddy
Photographs	

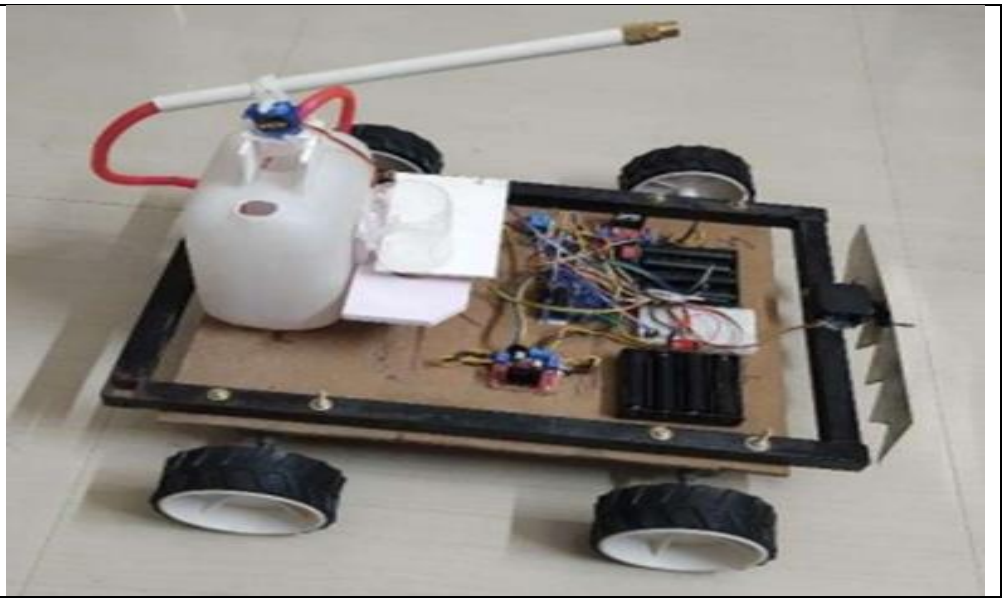
Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Design And Fabrication of Smart E-Bicycle- Dr VDR
Description (in 200 words)	Now-a-days the primary issue is a scarcity of fossil fuels. Fossil fuels have a limited lifespan of only the next 50 years at the current rate of use and un-favorable change in the climate. In the Indian economy, transport plays a very

	fundamental role. Today there are more 25 million vehicles registered in India. Almost all modes of transportation consume fossil fuels which are rapidly depleting and, they contribute to air and water contamination which leads to global warming. To solve this problem, there is necessary to start to use sustainable electrical bike in terms of facilitating people mobility and transportation. The main objective of this project is to develop a E-cycle with smart features using IoT. This E-cycle is integrated with IoT features like location tracker, Smart locking system, Theft Alert system, SOS button, A mobile charging port, A Display. A Generator and a Solar panel for power generation. This E-cycle is more cost-effective, less complicated to make, and can generally be used for short distance travel, especially by schoolchildren, college students, office workers, peasants.
Register Number and Name of Students	21765A0326-Lankapalli Pradeep 20761A0370-Mangapatla Vishnu Vardhan 20761A0371-Mendigudhiti Prem Kumar
Photographs	 Fig. 1 Proposed smart electric bicycle with IoT features 



S.NO.	COMPONENT NAME
1	Headset
2	Mobile Holder
3	Bicycle Frame
4	Saddle
5	Seat Post
6	Bicycle Carrier
7	Reflector
8	Fender
9	Free Wheel
10	Rim
11	Electric Motor
12	Chain
13	Crank set
14	Power Generating Belt
15	Power Generating Motor
16	Controller
17	Battery
18	Brake Caliper
19	Tire
20	Spokes
21	Brake Lever
22	Digital Lock
23	Wheel
24	Shifter
25	Accelerator
26	Handle Bar
27	Stem
28	GPS tracker
29	Handel support
30	Microcontroller
31	Handle Grips
32	Brake Lever
33	Bell
34	Lidar sensor
35	Lidar sensor
36	Head Light
37	Stand
38	Pedal

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Fabrication Of Multipurpose Agriculture Machine-KLP
Description (in 200 words)	Now a days agriculture robots is the newly emerging trend in agriculture sector to save the time and energy. It also helps in decreasing the use of non-renewable energy sources and will not pollute the environment. The machine's versatility allows it to be used for different tasks like “Seeding” “Ploughing” and “Spraying.” All this can be done in this same machine. This project is expected to contribute to the advancement of agricultural technology, making farming more efficient and sustainable.
Register Number and Name of Students	20761A0349-Allu Praveen Kumar 20761A0393-Sykam Kalyan 20761A0396-Thokala Uday Kiran

Photographs	

Department Name	Mechanical Engineering
Academic Year	2023-24
Name of the Product	Fabrication Of River Cleaning Boat - VSR
Description (in 200 words)	The objective of this project is to fabricate a “River cleaning boat", which removes waste from water surfaces and disposes them safely from the water bodies. Rivers and waterways serve as lifelines for communities around the world, providing essential resources for drinking, agriculture, and various economic activities. However, these vital ecosystems are increasingly facing the challenge of pollution caused by human activities, such as industrial discharges, agricultural runoff, and improper waste disposal Water is a basic need for all living beings, it is important to maintain the cleanliness and hygiene of water. The development of a prototype for a river cleaning rover controlled via a mobile application using Bluetooth connectivity. The rover, powered by an Arduino Nano microcontroller, responds to commands sent from the mobile app, allowing users to control its movement. The app interface includes buttons for forward, backward, left, and right movements, enabling precise navigation of the rover along riverbanks and water bodies for waste collection purposes.Furthermore, the prototype integrates an ESP-CAM module, providing real-time visual feedback of the rover's surroundings and operational processes. The ESP- CAM captures and transmits video footage to the mobile app, allowing users to monitor the rover's movements and waste collection activities remotely. This feature enhances operational visibility and enables effective decision-making, ensuring optimal rover performance and waste removal efficiency in river cleaning initiatives. Overall, the integration of Arduino Nano, motor drivers, and ESP-CAM technology in this prototype represents a promising step towards the development of advanced solutions for environmental conservation and river cleaning endeavours.

Register Number and Name of Students	20761A0382-PONNA LIKHITH KUMAR 20761A0357-DASARI VENKAT VARUNTEJA 20761A0391-SIMHADRI JAIPAL
Photographs	 River Cleaning Boat