



Collaborative Research Projects

Sl.No	Description of the Problem Statement	LINK
1	<p>Mobile phone usage during class hours affects students concentration and learning ability. Teachers cannot continuously monitor all students during lectures. Manual checking of phone usage is difficult and time-consuming. An automated system is needed to detect active mobile phones inside classrooms. This system helps maintain discipline and improves the learning environment.</p>	APPLY
2	<p>Manual wire cutting takes more time and may produce inaccurate wire lengths. Industrial and electrical applications require precise and fast wire cutting processes. Human errors during cutting can lead to material wastage and reduced efficiency. An automatic wire cutting machine is needed to cut wires accurately and quickly. This system improves productivity, reduces errors, and minimizes manual effort.</p>	APPLY
3	<p>Traditional notice boards require manual updating of information regularly. Important announcements may not reach all students or employees on time. Paper-based notices increase maintenance effort and paper wastage. A smart notice board is needed to display updates digitally and instantly. This system provides efficient communication and easy information management.</p>	APPLY

4	<p>Manual attendance marking is time-consuming and may lead to errors. Proxy attendance and inaccurate record maintenance are common problems. Teachers face difficulty in managing attendance records for large classrooms. An RFID-based smart attendance system is needed for automatic attendance tracking. This system improves accuracy, saves time, and simplifies attendance management.</p>	APPLY
5	<p>Fixed solar panels cannot utilize maximum sunlight throughout the day. This reduces the overall efficiency and power generation of solar systems. Manual adjustment of solar panels is difficult and impractical. A solar tracking system is needed to automatically align panels with sunlight direction. This system increases energy efficiency and improves solar power generation.</p>	APPLY
6	<p>Manual book issuing and returning processes consume more time in libraries. Maintaining library records manually may lead to errors and misplaced books. Searching and tracking books becomes difficult in large libraries. An RFID-based library system is needed for automated book management and tracking. This system improves efficiency, accuracy, and user convenience in library operations.</p>	APPLY

7	<p>Birds damage crops and reduce agricultural productivity.</p> <p>Traditional methods like scarecrows are not effective for long-term use.</p> <p>Farmers face financial losses due to bird attacks on farming land.</p> <p>An automated system is needed to detect and repel birds safely.</p> <p>This system helps protect crops and improve farming efficiency.</p>	APPLY
8	<p>Poor sitting posture can cause back pain, neck strain, and other health problems.</p> <p>People often sit for long hours without realizing incorrect posture habits.</p> <p>Manual monitoring of posture is difficult in workplaces and study environments.</p> <p>A smart chair is needed to detect and analyze the user's sitting posture.</p> <p>This system helps users maintain proper posture and improve health conditions.</p>	APPLY
9	<p>Improper waste collection leads to unhygienic surroundings and environmental pollution.</p> <p>Manual garbage cleaning requires more time, effort, and manpower.</p> <p>Overflowing garbage can spread diseases and create unpleasant conditions.</p> <p>An automated garbage cleaning system is needed for efficient waste management.</p> <p>This system helps maintain cleanliness and reduces human involvement in waste handling.</p>	APPLY
10	<p>Cleaning and inspecting tall walls and buildings is risky for humans.</p> <p>Manual climbing operations require more safety measures and manpower.</p> <p>Difficult-to-reach surfaces cannot be monitored or maintained easily.</p> <p>A wall climbing robot is needed to perform inspection and cleaning tasks safely.</p> <p>This system reduces human risk and improves operational efficiency.</p>	APPLY

11	<p>Weather conditions change frequently and affect daily activities and agriculture.</p> <p>Manual weather monitoring does not provide real-time updates.</p> <p>Environmental parameters need continuous monitoring and recording.</p> <p>An IoT-based system can collect and send weather data through the internet.</p> <p>This system provides accurate and real-time weather information to users.</p>	APPLY
12	<p>Traditional surveillance systems require continuous human monitoring.</p> <p>Suspicious activities may go unnoticed due to lack of real-time analysis.</p> <p>Low-cost smart security solutions are needed for homes and offices.</p> <p>An AI-based surveillance system using ESP32 can detect and monitor activities automatically.</p> <p>This system improves security through intelligent real-time surveillance.</p>	APPLY
13	<p>Noise in study rooms disturbs concentration and affects learning.</p> <p>Maintaining silence manually is difficult in shared study areas.</p> <p>Students may unknowingly create noise while studying or talking.</p> <p>A noise detection system can monitor sound levels automatically.</p> <p>This system alerts users when noise exceeds the allowed limit.</p>	APPLY
14	<p>Farmers face difficulties in performing continuous agricultural activities manually.</p> <p>Tasks like monitoring crops and spraying pesticides require more labor and time.</p> <p>Lack of automation reduces efficiency in modern farming practices.</p> <p>An autonomous Agri Bot is needed to perform farming operations automatically.</p> <p>This system helps improve productivity and supports smart agriculture.</p>	APPLY

15	<p>Incorrect sitting posture for long periods can cause back pain and spinal problems.</p> <p>People often do not realize when they are sitting in unhealthy positions.</p> <p>Manual monitoring of posture is difficult in offices and study environments.</p> <p>A smart chair is needed to continuously monitor and analyze sitting posture.</p> <p>This system helps users maintain proper posture and improve overall health.</p>	APPLY
16	<p>Communication systems often fail during natural disasters such as floods and earthquakes.</p> <p>Lack of communication makes rescue and emergency operations more difficult.</p> <p>Traditional networks depend heavily on existing infrastructure, which may get damaged.</p> <p>A hybrid mesh IoT communication system is needed for reliable data transfer during disasters.</p> <p>This system ensures uninterrupted communication for emergency response and public safety.</p>	APPLY
17	<p>Pollution in the Ganga River affects water quality, aquatic life, and public health.</p> <p>Manual monitoring methods cannot provide continuous and real-time analysis of river conditions.</p> <p>Environmental changes and contamination levels need accurate monitoring and prediction.</p> <p>An IoT and AI-based system is needed to monitor water quality parameters automatically.</p> <p>This system helps in pollution control and effective river management.</p>	APPLY
18	<p>Poor sleep quality and incorrect sleeping posture can affect physical and mental health.</p> <p>Continuous health monitoring during sleep is difficult using conventional methods.</p> <p>People may not be aware of sleep disorders or unhealthy sleeping habits.</p> <p>A smart bed is needed to monitor sleep patterns, posture, and vital health parameters.</p> <p>This system helps improve sleep quality and supports better healthcare monitoring.</p>	APPLY

19	<p>Regular glucose monitoring using invasive methods can cause discomfort to diabetic patients. Frequent needle-based testing may reduce patient convenience and compliance. There is a need for comfortable and wearable health monitoring solutions. A wearable textile antenna system can help track glucose levels non-invasively. This system provides continuous monitoring and improves patient comfort and healthcare management.</p>	APPLY
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