**AeroTech: A Sensor-Based Aeroponics System for Efficient Vegetable Growth**

The project aims to design and implement an automated aeroponics system that features real-time monitoring, adaptive climate control, and remote accessibility, all powered by sustainable energy.

Specific Objectives:

* The project aims to develop an automated, sensor-based aeroponics system that uses microcontroller-triggered pumps and fans to deliver nutrients and control environmental conditions such as pH, TDS, water level, and temperature.
* The system will be implemented with a centralized monitoring system, which will combine SMS-based alerts for system anomalies such as pump failure and pH imbalance, with a cloud-based dashboard for real-time data logging, visualization, and analysis.
* The project aims to ensure system sustainability and reliability by integrating solar power with battery backup and conducting controlled tests to evaluate energy efficiency, sensor accuracy, and automation response.
* The system's effectiveness will be assessed by comparing its efficiency, resource usage, and plant growth outcomes with those of traditional soil-based farming methods.