Kissan Jal Rakshaa – National-Level Award-Winning Innovation

An Intelligent IoT-Based Aquaculture Water Quality, Aeration and Feeding Management System

Kissan Jal Rakshaa is a smart, low-cost, IoT-based aquaculture management system developed to protect fish ponds by continuously monitoring water quality and automatically controlling aeration and feeding. The project focuses on solving real-world challenges faced by aquaculture farmers, such as fish mortality, oxygen stress, feed wastage, and delayed detection of equipment failure.

About the Project

Key Features

- Real-time monitoring of pH, temperature, and turbidity
- Automatic control of multiple aerators based on water quality conditions
- Smart feeding system with pre-alert siren to improve feeding efficiency
- Motor operation verification without additional sensors
- Noise-resistant pH display ensuring stable and accurate readings
- Local LCD display combined with IoT-based remote monitoring
- Instant alerts for unsafe water conditions and equipment failure
- Low-cost, scalable, and farmer-friendly system design

Technical Innovation and Uniqueness

The uniqueness of Kissan Jal Rakshaa lies in its ability to maintain pond health without using a dissolved oxygen sensor. Instead, it correlates pH, temperature, and turbidity to infer oxygen demand. Another major innovation is the use of electrical noise observed in analog sensor signals as feedback to verify whether aerator and feed motors are actually running. This signal-based feedback mechanism eliminates the need for additional current or vibration sensors, making the system both innovative and cost-effective.

Project Team and Mentorship

Project Mentor:
CH. CH. V. B. VASANTH
Assistant Professor, Department of Physics

Technical Faculty Expert:
P. Rajesh Department of Commerce

Hardware Expert:
N. Bhanu Prakash
III B.Sc Physics

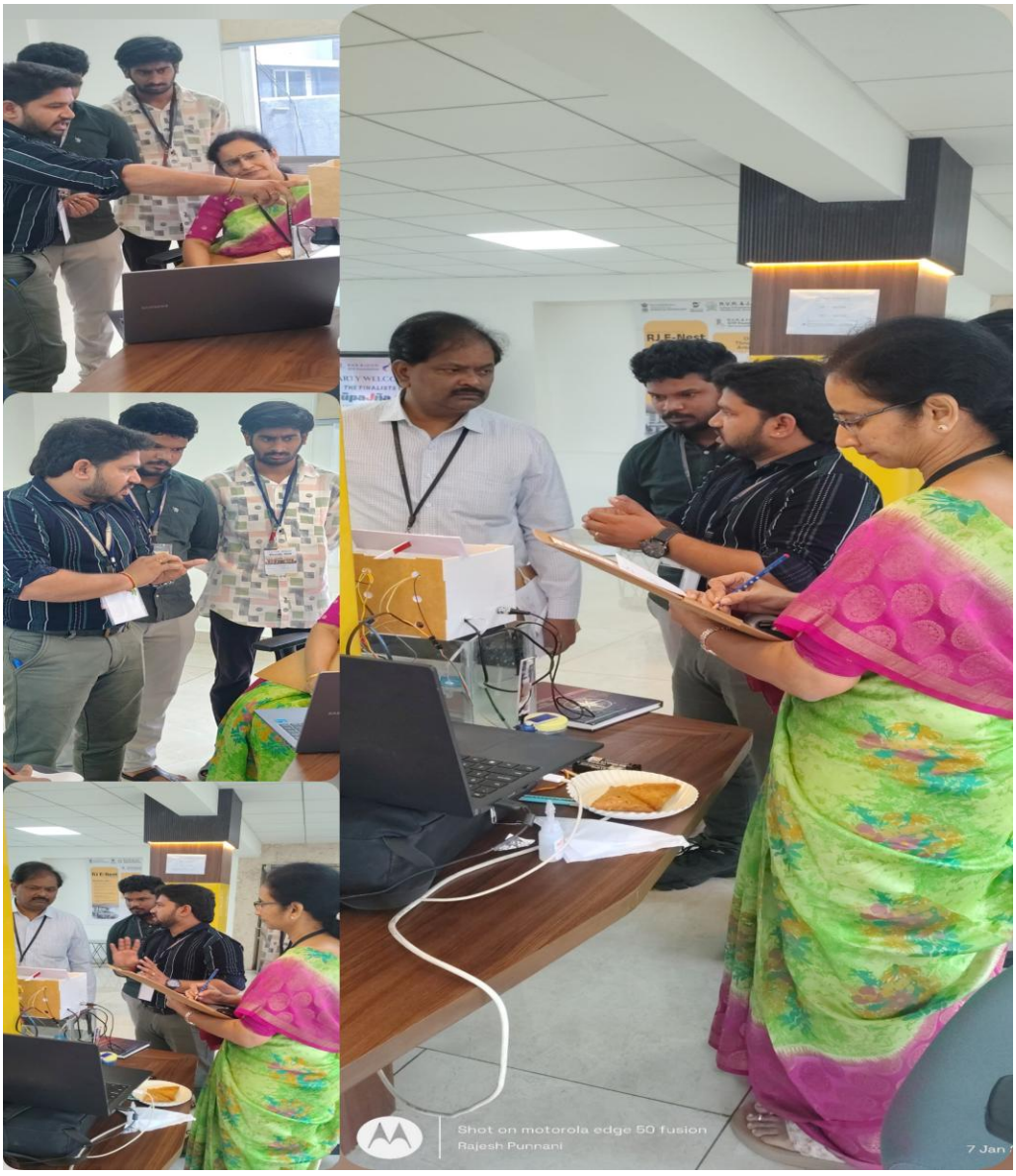
National-Level Achievement

Kissan Jal Rakshaa achieved a prestigious national-level recognition by securing SECOND PLACE in a National-Level Engineering and Innovation Competition. The competition witnessed participation from 79 engineering colleges across India.

This achievement is particularly noteworthy as the project successfully competed against engineering college teams from across the country and was recognized for its innovation, technical depth, real-world relevance, and working hardware prototype.

Impact and Future Scope

The project has strong potential to improve sustainability in aquaculture by reducing fish mortality, minimizing feed wastage, and lowering operational costs. Kissan Jal Rakshaa can be further enhanced with advanced analytics, multi-pond support, and large-scale deployment. The system is also suitable for commercialization and patent-based product development.



Conclusion

Kissan Jal Rakshaa stands as a strong example of how intelligent system design, interdisciplinary knowledge, and practical engineering can address real societal challenges. The national-level award validates the technical strength, innovation, and applicability of the project.