Faculty Approval Proposal: Precision Pest Control Using AI-Enhanced Monitoring

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1. Introduction
Traditional pest control methods are inefficient, over-reliant on pesticides, and harmful to the environment. This proposal aims to implement AI-powered monitoring systems for more precise pest management. The objective is to reduce pesticide use, enhance sustainability, and improve agricultural practices by leveraging AI for pest detection and intervention.

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2. Areas of Focus for AI Integration
AI can detect pests early using sensors, drones, and cameras, enabling quick responses through image recognition. Predictive analytics will forecast pest outbreaks and allow for real-time intervention. AI will also optimize pesticide application and explore eco-friendly alternatives like biological controls, reducing environmental impact.

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3. Technical Considerations
Feasibility studies will evaluate the hardware and software requirements for real-time pest monitoring systems. The integration of AI with existing farming infrastructures will ensure smooth implementation. Development of machine learning models for pest detection and forecasting will be central to improving system accuracy and effectiveness.

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4. Ethical & Societal Considerations
The reduction in pesticide use will benefit ecosystems and human health. AI can help optimize labor, allowing workers to focus on more complex tasks. Ensuring the privacy and security of sensitive agricultural data will be a priority to address concerns about surveillance and misuse.

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5. Practical Implementation
The project will assess the initial investment for AI technologies and explore funding options to reduce costs. Training will be provided to farmers to ease AI adoption. Pilot programs and field trials will validate system effectiveness, ensuring the solution is scalable and practical for real-world use.

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6. Conclusion & Request for Approval
AI-powered pest control can improve agricultural sustainability and efficiency. This proposal seeks approval to conduct further research, feasibility studies, and pilot projects to develop AI-driven pest management systems, addressing both technical and ethical considerations in agriculture.