

## **Faculty Approval Proposal: Human vs AI Decision Making in Pest Control**

### **1. Introduction**

Traditional pest control methods rely heavily on human decision-making and intuition, which can lead to inefficiencies and the overuse of pesticides. This proposal aims to examine how human decisions can be enhanced or replaced by AI in pest control to improve efficiency, reduce environmental impact, and optimize pest management practices. The goal is to compare human-based approaches with AI-driven decision-making to identify the most effective strategy for sustainable pest control.

### **2. Areas of Focus for AI and Human Integration**

AI can analyze vast amounts of data from sensors, drones, and cameras, allowing it to identify pests more quickly and accurately than humans alone. Predictive analytics can be used to forecast pest outbreaks, enabling timely interventions. AI's ability to optimize pesticide usage and suggest alternative pest control methods will be explored. The comparison with human decision-making will focus on identifying areas where AI can improve speed, accuracy, and sustainability, while also considering where human expertise remains essential.

### **3. Technical Considerations**

A detailed comparison between human decision-making processes and AI capabilities in pest detection and intervention will be conducted. Feasibility studies will explore the integration of AI tools with existing agricultural practices and human systems. Machine learning models will be developed for both pest detection and forecasting, with the aim of assessing their precision and the reliability of human versus AI-based predictions. This will also involve evaluating the infrastructure required to incorporate AI tools into current pest management strategies.

### **4. Ethical & Societal Considerations**

The shift toward AI in pest control will reduce reliance on harmful pesticides, benefiting ecosystems and human health. There are, however, concerns regarding the displacement of human roles in pest management. The project will assess the ethical implications of replacing human decision-making with AI, exploring how to ensure that the transition is beneficial for workers and communities. Moreover, privacy and data security will remain key concerns, particularly regarding the collection of sensitive agricultural data.

### **5. Practical Implementation**

The project will evaluate the costs and resources required for integrating AI into pest control, comparing it with the current costs associated with human-led pest management practices. A combination of AI and human training will be provided to facilitate a seamless transition to more data-driven pest control strategies. Pilot projects will be conducted to assess the effectiveness of both AI and human decision-making in real-world scenarios, with the aim of identifying the optimal balance between human judgment and AI capabilities.

### **6. Conclusion & Request for Approval**

This proposal seeks approval to conduct further research comparing human versus AI decision-making in pest control. The findings will guide the development of more efficient, sustainable, and accurate pest management strategies. We request approval for funding to carry out feasibility studies, pilot projects, and evaluate the ethical and societal impacts of implementing AI in pest control, focusing on optimizing decision-making processes in agriculture.