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Post-Doctoral Position: AI-Based Targeted Pesticide Application Project

Position Title: Post-Doctoral Research Associate

Project Title: AI-Based Smart Spray Technology for Precision Pesticide Applications

Project Overview: This position will join a team focused on improving chemical application technology in agriculture as well as the use of AI-powered technology to monitor, detect, identify, and manage pests and relevant crop characteristics. The desired individual will focus on the development of pertinent software for embedded computers used in farm equipment and training of AI models on GPU-accelerated servers. The overall objective is to develop targeted spray technology that applies pesticides only where needed, enhancing efficiency and reducing pesticide use. The project will be located at the University of Florida's Gulf Coast Research and Education Center, Wimauma, FL, and site for the new Center for Applied Artificial Intelligence in Agriculture (https://gcrec.ifas.ufl.edu/research-programs/center-for-artificial-intelligence/).

Project Objectives:

1. **AI Model Development:** Create advanced AI machine vision models for detecting, identifying, and targeting cucurbit crop canopies, flowers, fruits, and disease symptoms.
2. **Prototype Development:** Develop and evaluate a full-scale prototype smart spray system that utilizes AI models and machine vision for precise pesticide applications. This position will join a multi-disciplinary team and will lead in the development, integration, and deployment of both front- and back-end programming needed to run the smart spray machine vision systems.
3. **Targeted Spray Technology:** The successful candidate will join a vibrant team working on a wide variety of targeted spray and detection systems. If desired, there will be opportunities to work collaboratively on an array of novel technologies.

Key Responsibilities:

- Conduct research to develop and refine AI models for crop and disease detection.
- Collaborate in the design and implementation of a smart spray system prototype.
- Analyze and interpret data from AI models and machine vision systems.
- Contribute to the production of synthetic image datasets for model training.
- Participate in field testing and validation of the smart spray system.
- Assist in preparing research reports, publications, and presentations.
- Publish in peer-reviewed journals and conference proceedings.
- Engage with industry partners for potential commercialization of the developed system.

Qualifications:

- Ph.D. in Agricultural Engineering, Computer Science, Plant Science, or a related field.
- Strong background in AI, programming, machine learning, and image processing.
- Proficiency in programming languages such as Python, R, C/C++, ASM or similar.
- Excellent analytical, problem-solving, verbal and written communication skills.
- Ability to work independently and as part of a multidisciplinary team.

Preferred Skills:

- Knowledge of integrating software and hardware in developing embedded computer systems.
- Experience in CAD design and machine/electrical circuit fabrication.
- Experience in developing and deploying machine vision systems.
- Familiarity with generative AI techniques for synthetic image generation.
- Practical experience in prototype development and field testing.

Project Impact: This project aims to revolutionize cucurbit crop production by minimizing pesticide use through precise, AI-driven fungicide application. By achieving the project objectives, we can enhance disease management, reduce environmental impact, and improve the sustainability of agricultural practices.

Application Process: Interested candidates should submit the following:

- A cover letter detailing their research experience and interest in the project.
- A curriculum vitae (CV).
- Contact information for three professional references.
- Unofficial academic transcripts.
- Any relevant publications or research work.

Application Deadline: A review of applications will begin immediately until the position is filled.

Contact Information: For inquiries or to submit your application, please contact: Dr. Arnold Schumann schumaw@ufl.edu.

Join us in advancing sustainable agriculture through innovative AI technologies!