

# AI-Driven Mobile App for Real-Time Disease and Insect Detection in Rice Plants

Presented by: Hongly VA (Ph.D)

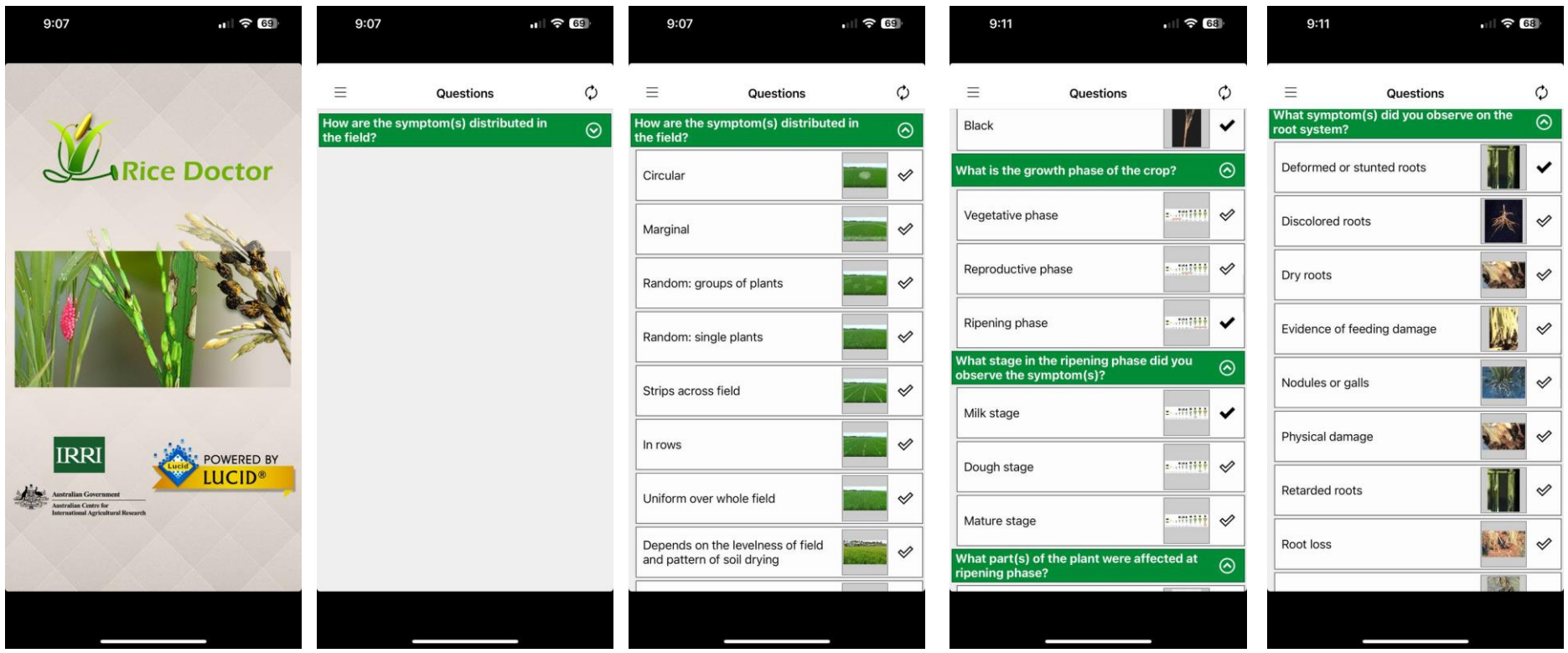
Institute of Digital Research and Innovation

**CADT** Cambodia Academy of  
Digital Technology

- Background
  - Agriculture is essential to Cambodia's economy, employing **36.64%** of the workforce (World Bank's **2022** indicators)
  - Cambodia exported approximately **630K** tons of processed rice
  - Cambodian Rice Federation Plan: **1M** tons by **2025**

- Challenge:
  - A lack of expertise and knowledge in disease detection and timely treatment
  - Limited access to real-time information and practical tools
  - Apply correct chemical treatment based on export country regulations (Guarantee premium quality of rice)

- Challenge:

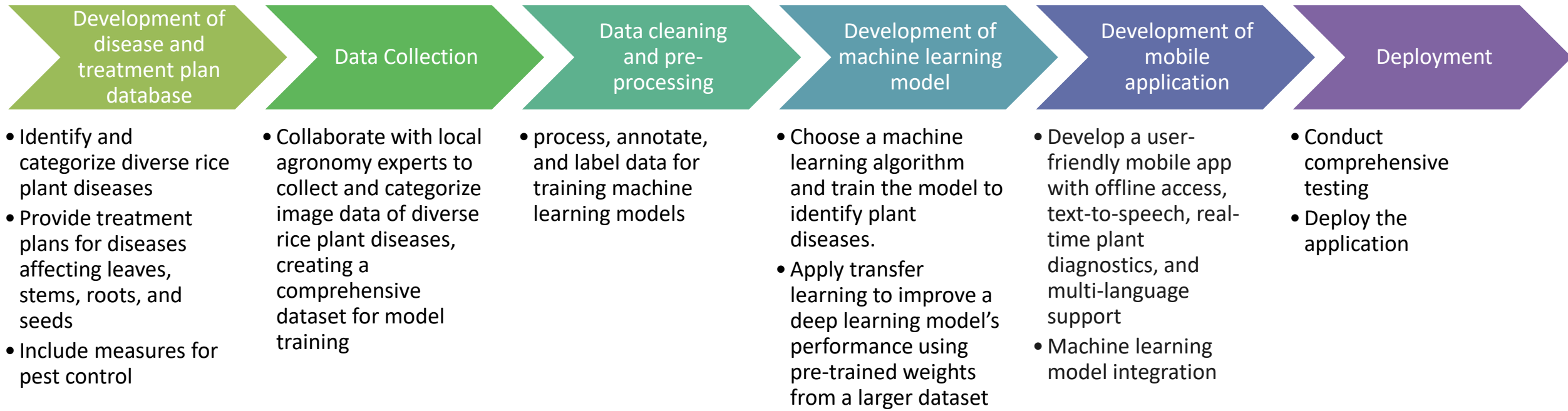


## *RiceDoctor App*

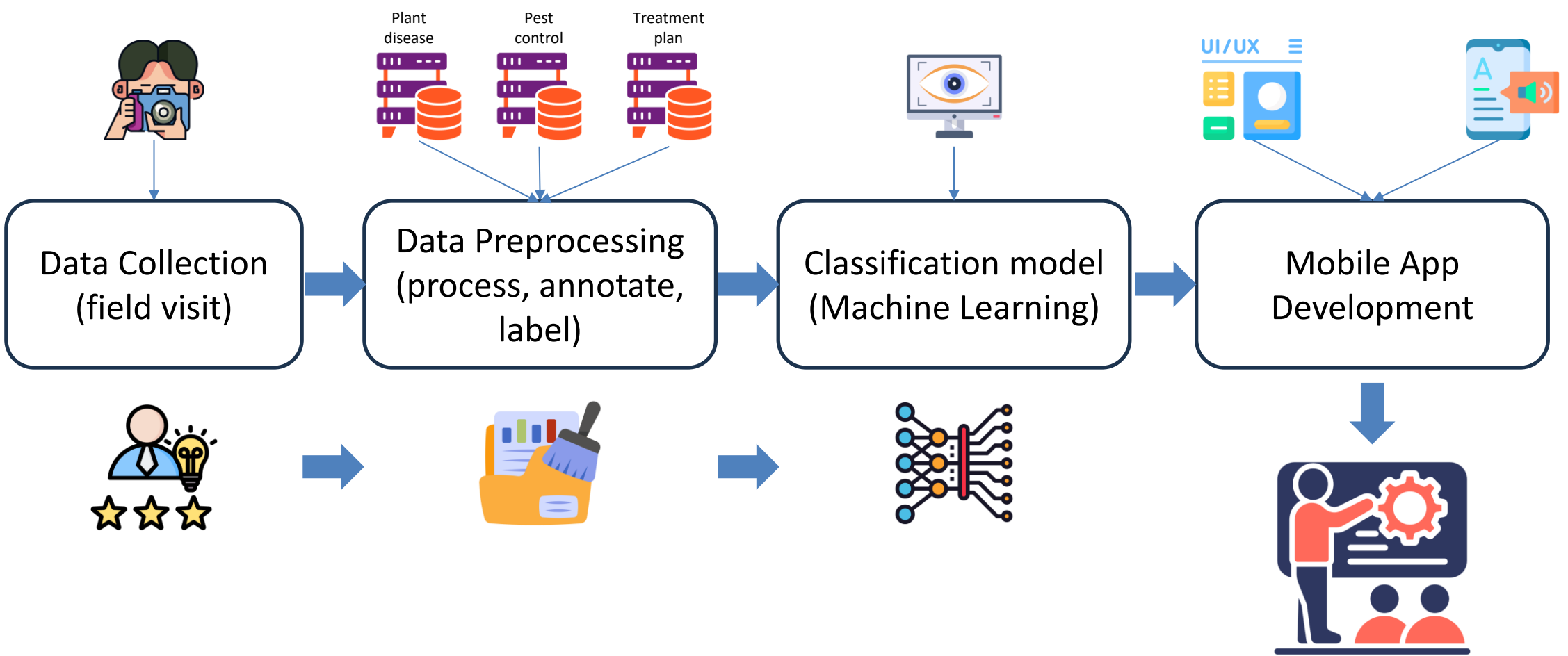
<https://www.doctorrice.org/in/>

- **Proposed Solution:**
  - Develop a mobile application for real-time disease and insect identification using AI.
    - Real-time disease classification using image-based data
  - Multi-Language and Voice Interactions
    - Simplifying the user experience with Text-To-Speech technology (TTS)
  - Training and Support Program
    - Technological advancements and sustainable practices.

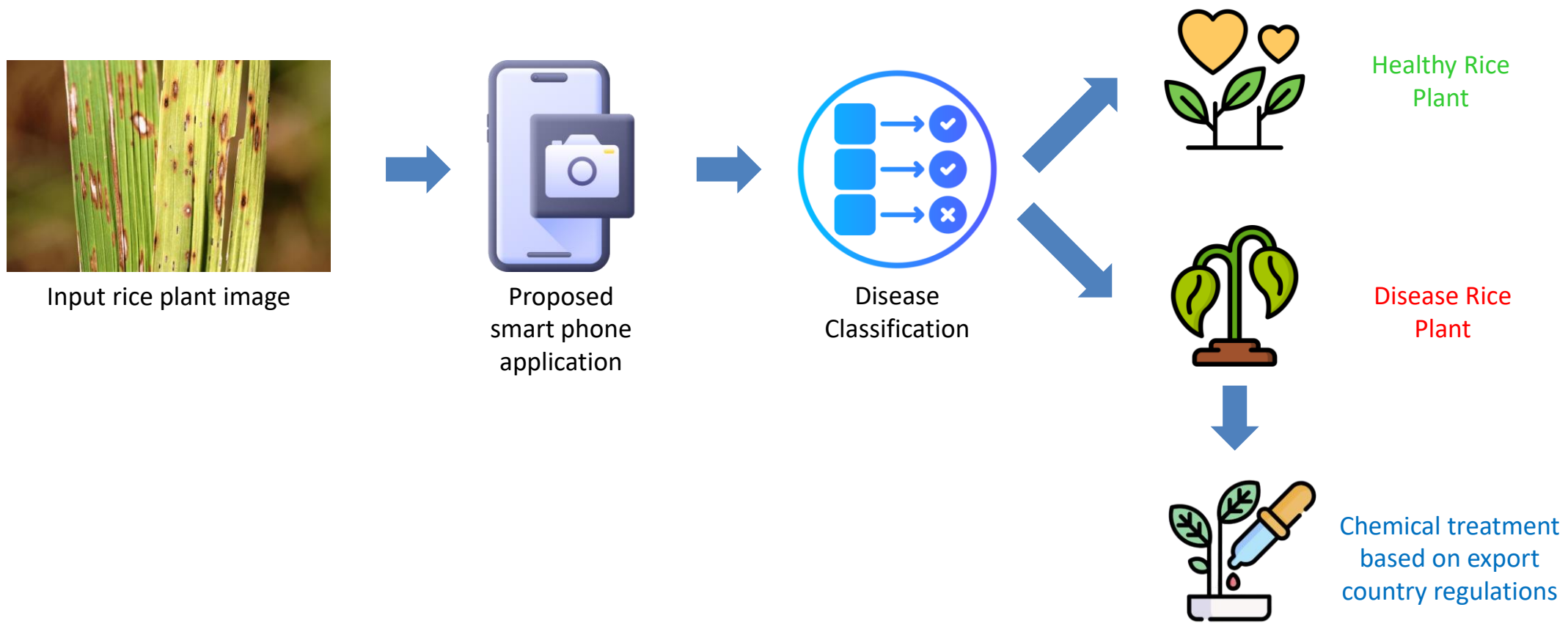
- To successfully completed the proposed method, several stages are identified.



- Proposed Project Implementation



## Real-time disease classification process:





- Outcome:
  - A robust mobile application capable of real-time detection of rice plant diseases and insect infestations, supporting multiple languages for accessibility.
  - An accurate machine learning model trained on a diverse, high-quality dataset, optimized through pre-processing for reliable disease and pest identification.

- Impact:
  - Enable farmers to quickly identify rice plant diseases and pests for timely treatment, reducing crop loss and crop loss and boost productivity.
  - Foster regional collaboration by sharing data on diseases and pests, facilitating the exchange of best practices and improving agricultural knowledge.
  - Enhance food safety and protection.

- **Conclusion**

- Our main goal is to help farmers to access a tool leveraging ICT technology to identify and address crop diseases.
- This project empowers them to improve their digital skills and literacy in crop management.
- By introducing innovative ICT solutions, it aims to create a more secure and resilient agricultural ecosystem.

- Reference

- International Rice Research Institute. "Knowledge Bank." [Online]. Available: <https://www.irri.org/rice-knowledge-bank/>.
- U.S. Environmental Protection Agency. "EPA." [Online]. Available: <https://www.epa.gov/>.
- Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail. "Ephy." [Online]. Available: <https://ephy.anses.fr/>.
- Cambodian Rice Federation. "CRF." [Online]. Available: <http://www.crf.org.kh/>.
- M. Rifqi, "Rice disease prediction application," arXiv preprint arXiv:2301.05528, 2023. [Online]. Available: <https://arxiv.org/abs/2301.05528>.
- R. V. N. Rifqi, "Rice Disease Prediction Application." [Online]. Available: <https://github.com/rifqinvnd/Rice-disease-Prediction-Application>.

# Thank you for your attention!

Institute of Digital Research and Innovation  
Cambodia Academy of Digital Technology

**Hongly VA (Ph.D.)**  
Email: [hongly.va@cadt.edu.kh](mailto:hongly.va@cadt.edu.kh)  
Tel: (+855) 96 405 945 6