Designing an IoT Solution for Smart Agriculture

Lù Kim Đồng
Thai Nguyen University of Information and Communication Technology
Thai Nguyen University, Thai Nguyen, Vietnam
dtc1954802010073@ictu.edu.vn

***Abstract*—This undergraduate thesis investigates an IoT-oriented solution design for smart agriculture. Farm managers need timely information about crops and operations, with possible links between users and advisers. The student surveys the domain and develops an object-oriented analysis, use cases, database design, and proposed application architecture. The source emphasizes system design rather than a measured sensor deployment. The conclusion discusses a proposed information platform and possible links among users, experts, and farm managers. Order management, online payment, scheduling, AI forecasts, and cross-platform expansion are described as future possibilities. The source does not show validated sensor readings, a field trial, crop-yield outcomes, or an operational IoT installation. The contribution is a documented student study or prototype whose stated scope can guide further testing.**

***Index Terms*—smart agriculture, IoT, system design, database**

I. Introduction

Farm managers need timely information about crops and operations, with possible links between users and advisers. This thesis investigates an IoT-oriented solution design for smart agriculture. It begins from a practical engineering need and explains the technologies and workflow chosen for the case. The objective is to document a student implementation or comparative investigation, together with the evidence available in the manuscript. Broader operational or economic effects require separate measurements and are not assumed from the existence of a prototype [1]. Earlier ICTU student work on related designs is included here for context [2], [3], [4], [5]. Related published studies provide context for the subject and methods [6], [7], [8], [9], [10]. These contextual works were selected for this English summary; they are not asserted to appear in the original thesis bibliography.

II. Methods

The student surveys the domain and develops an object-oriented analysis, use cases, database design, and proposed application architecture. The source emphasizes system design rather than a measured sensor deployment. The source is summarized through its stated design, implementation material, examples, and conclusion. Features shown in the manuscript are distinguished from proposals for later development. This review does not add a new experiment, fill missing measurements with estimates, or treat a planned capability as an observed result. The source thesis remains the provenance for the reported work [1].

Supervisor: Mai Văn Hoàn, Thai Nguyen University of Information and Communication Technology (mvhoan@ictu.edu.vn).

III. Results

The conclusion discusses a proposed information platform and possible links among users, experts, and farm managers. Order management, online payment, scheduling, AI forecasts, and cross-platform expansion are described as future possibilities. The report's screens, configurations, examples, or measurements constitute the evidence for this summary. A capability described only as a design intention is not counted as a validated operational outcome. No additional performance, adoption, financial, or safety figure has been introduced here. The result is interpreted within the scope of the student's documented setup [1].

IV. Discussion

The source does not show validated sensor readings, a field trial, crop-yield outcomes, or an operational IoT installation. A later prototype could specify actual sensors and data flows, then test reliability and usefulness with a farm under documented conditions. These limitations affect how the evidence should be read. The current manuscript can support understanding of the design and reported demonstration, while independent tests would be needed for stronger claims. Any later deployment should document its environment and separate observed outcomes from intended benefits [1].

V. Conclusion

The thesis documents an IoT-oriented solution design for smart agriculture. The conclusion discusses a proposed information platform and possible links among users, experts, and farm managers. Order management, online payment, scheduling, AI forecasts, and cross-platform expansion are described as future possibilities. The source does not show validated sensor readings, a field trial, crop-yield outcomes, or an operational IoT installation. A later prototype could specify actual sensors and data flows, then test reliability and usefulness with a farm under documented conditions. Accordingly, the present contribution is a source-grounded account of the student work and its tested or illustrated scope. Claims about broader effectiveness should be assessed in later work using explicit evaluation conditions [1].

References

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