Chat-Based Ordering For Beverage Shops

Authur : Noppavit Putthanbutr **Adviser : Dr. Kamonphop Srisopha**

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Abstract

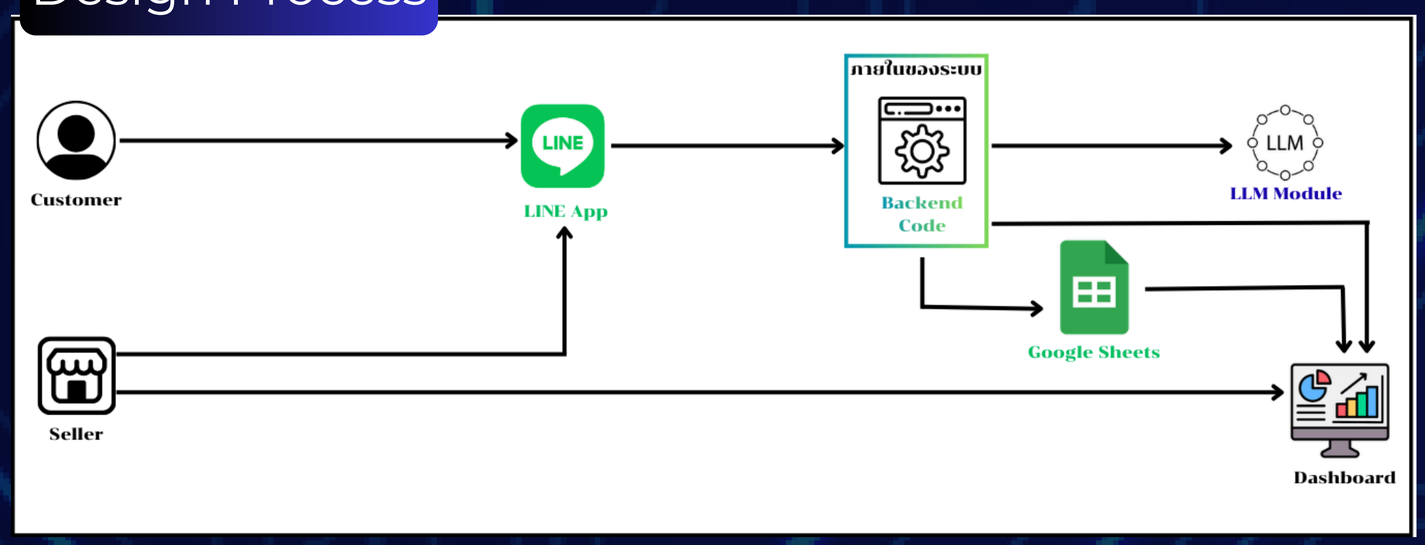
This project presents an intelligent beverage ordering and management system developed for the Faculty of Science, Chiang Mai University. The system integrates the LINE Messaging API, a Large Language Model (LLM), and Google Sheets to automate order processing through natural language interaction. Customers can place multi-item beverage orders via LINE, and the LLM extracts structured information such as drink type, size, quantity, sweetness level, ice level, toppings, and special preparation notes. The system performs automatic price calculation, order confirmation, and real-time status tracking. Order records are stored and managed through Google Sheets, which functions as a cloud-based database and supports dashboard-based sales analytics, including daily summaries and top-selling items. By combining conversational AI, cloud APIs, and lightweight web technologies, this project demonstrates a scalable and cost-effective digital ordering solution that enhances operational efficiency, reduces manual errors, and improves customer service within an academic and institutional environment.

Introduction

In the digital era, beverage shops increasingly require efficient and automated ordering systems to reduce manual workload and improve service speed. This project presents an intelligent beverage ordering and management system developed for the Faculty of Science, Chiang Mai University. The system integrates the LINE Messaging API, a Large Language Model (LLM), and Google Sheets to enable customers to place natural-language, multi-item orders through LINE.

By automating order extraction, price calculation, data storage, and real-time status tracking, the system enhances operational efficiency, minimizes human error, and provides a scalable, cost-effective digital solution for institutional environments.

Design Process



Technology

node.js · VS Code · ex · Google Sheets · ngrok · OpenAI · LINE

Result

Cloud-Based Order Management and Analytics

All confirmed orders are stored in Google Sheets, functioning as a real-time cloud database. The dashboard interface provides automated sales summaries, including daily revenue, monthly revenue, and top-selling drinks and toppings. Order statuses are updated dynamically, allowing efficient monitoring of ongoing and completed orders.

Natural Language Order Processing

After integrating the LINE Messaging API with the Large Language Model (LLM), the system successfully extracts structured data from multi-item beverage orders. Information such as drink type, size, quantity, sweetness level, ice level, toppings, and special preparation notes is accurately identified and processed. The automatic price calculation module ensures precise computation of unit prices and total costs before confirmation.

System Performance and Efficiency

By combining conversational AI, cloud APIs, and lightweight web technologies, the system demonstrates reliable performance, reduces manual workload, minimizes operational errors, and improves customer service efficiency within an institutional environment.

Conclusion

This project successfully demonstrates an intelligent beverage ordering system that integrates LINE, LLM-based natural language processing, and Google Sheets as a cloud database. The system automates order extraction, price calculation, data management, and real-time tracking, reducing manual errors and improving operational efficiency. It provides a scalable and practical digital solution suitable for institutional environments.

References

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