ITE STUDENT ACHIEVERS' AWARDS 2025

Lee Kuan Yew Technology Award

FOOD PAL

Track, Not Toss

The sight of spoilt food items in the refrigerator underscores a food waste problem that could be avoided through effective tracking. This prompted the team comprising mechatronics and culinary students to investigate methods for monitoring and managing perishable items within a refrigerator. Following extensive research into scanning mechanisms, app integration, and the nutritional analysis of recipes, the team developed FoodPal, an AI-powered food inventory management app.

With a simple photograph of their refrigerator's contents, users can leverage the app's AI model to accurately identify food items, track quantities and monitor expiration dates. The team also implemented push notifications for food expiration and personalised recipe suggestions based on identified refrigerator contents.

This interdisciplinary collaboration resulted in an innovation that helps users manage their food inventory effectively, promoting consumption prior to spoilage and contributing to the reduction of household food waste.

Innovators' Inspiration

"Isn't it sad to toss out expired food items? Especially when it hasn't even been cooked. With this app, we can see what's in the fridge without even opening it. My mom loves that everyone can help track groceries remotely. I'm incredibly proud of my team for overcoming the obstacles to create this useful tool. It was definitely a challenge, but I believe life is most rewarding, and way more fun, when you challenge yourself."

~ Ng Cai Yi, Brandon

What's So Special

- Food items are auto-identified by an in-app object detector AI model. This saves the user time from manually entering the information. The user can also add or remove items easily from the app.
- FoodPal sends periodic reminders, notifying users three days before food items expire and continuing until the expired items are removed.
- The integration of ChatGPT 4.0 into the app combats food waste by providing recipe recommendations based on available ingredients, addressing the issue of unused ingredients caused by lack of cooking inspiration or knowledge. Users can select the preferred cuisine, key ingredients, dietary requirements, and specify the number of servings required.
- Aligned with the Singapore Green Plan 2030, FoodPal supports sustainable development by reducing food waste, promoting efficient resource use, and fostering eco-conscious habits.
- The app's functionality can be expanded to monitor consumable goods and raw material shelf life in the retail and manufacturing sectors, respectively. The app's Gen AI can also suggest discounts or bundles for soon-to-expire stock in retail and recommend efficient production plans based on material availability and expiration in manufacturing.

Members:
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