

Food For Thought

By Alicia Li

When I was little, the first Chinese poem my mom introduced to me was called The Pitiful Peasant. It explained how grains and food are the blood, sweat, and tears of hardworking farmers, encouraging people to finish their plates as a show of respect to the effort put into producing every single grain of rice. Humming the rhymes under my breath, before long I had memorized the poem. To this day, I can still see that textbook page in my head, characters arranged neatly, all crowned with pinyin.

I was inspired to delve deeper into food waste from something that occurs at home, actually: my family sometimes buys items that end up expiring before they're consumed, so we have to throw out food that was perfectly usable. Upon doing a bit of research, I realized that food waste has much larger implications than most people would think.

Besides discounting the efforts of those in food production industries, wasting food wastes tons of natural resources and is a significant contributor to environmental issues such as global warming.

With my project, Food for Thought, my goal is to help reduce food waste through an educational program and an accessible food tracking system. After all, education lies at the heart of change, and I hope that spreading awareness regarding the dangers of food waste encourages my students to actively make waste-conscious decisions at home and in school. This process is greatly aided by my AI model, SmartFridge, a website serving as a food log so you'll never forget what you have.

I designed SmartFridge with many artificial intelligence elements to streamline the user interface. Instead of having to manually input every single food item, its name, and an expiration date, users can simply upload a picture of their fridge or a scan of their grocery receipt. The AI is able to identify all your items and compile them into a list for you. Based on information from a collection of databases, SmartFridge assigns each item a food ID, a name, puts it into a food category, calculates a shelf life, and finally, sets an expiration date based on the time of input. When food is about to expire within three to five days, they will appear at the top of the list in red. SmartFridge isn't just a log.

锄禾日当午，汗滴禾下土。
谁知盘中餐，粒粒皆辛苦。

李绅

[Poem entitled "The Pitiful Peasant", by
Tang Dynasty poet Li Shen]

Another key aspect is the "Find Recipes" feature, where users can select any number of items from their list to obtain recipes. These recipes are designed to optimally include the selected items, which becomes especially helpful for those that are about to expire. Right now, I have SmartFridge in two languages, English and Chinese. When using the English version, a user tends to get more recommendations for western dishes, and in Chinese, one might get more recommendations for Asian recipes.

I'll continue to improve SmartFridge's accessibility by adding in new languages. To ensure the maximum accuracy, I'd like to incorporate manual inputting and expand the type of pictures that the AI can process, e.g. individual photos of each item. I'm also hoping that with more data, and therefore more training, SmartFridge can just get better and better. SmartFridge is my first major AI project.

I've been learning about AI, including its mechanisms and code, for about half a year now, but starting the project was overwhelming at first. I had to coordinate between the front and back ends of the website and make sure information was transported correctly between the two. On the front end, I learned new code for specific buttons, formatting, and navigation. In the back, I struggled to incorporate my methods of identification. After a couple months of editing the code, I was very happy with my first draft of SmartFridge. It can now be accessed online via my website. I'll continue to expand and revise as bugs come up and I have new ideas to make the model more successful.

Even though I've been quite interested in exploring AI the past couple years, I used to be afraid of the subject, afraid that it'd be too advanced. On the news you mainly hear about AI breakthroughs from huge companies like OpenAI or from notable universities that have come out with groundbreaking research. I always thought AI would be something I could try in or after college, when I had some more math and machine learning courses under my belt. There have been many bumps in the road in my AI journey. I still encounter so many knowledge points I'm unfamiliar with even in introductory material. Despite this, it's been incredibly rewarding to learn about something I've always wanted to try, and now I have SmartFridge. As Guy Kawasaki, chief evangelist of Canva, once said, "the hardest thing about getting started, is getting started."