Picking New Recipes with AI

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**The Problem**

An issue that people may come across when learning how to cook is choosing what recipes to make, and how to cook said recipe. This problem can also be caused due to a lack of free time outside of work. Smart Kitchen Software with Artificial Intelligence could fix this problem by providing recommended recipes and instructing the person on how to go through and cook said recipes. This software could keep track of what ingredients are in the person’s fridge and create recipes using the current ingredients that are present in the fridge. The current ingredients stored could be manually tracked by the user, or the fridge uses a camera to detect what food is currently in the fridge.

## AI Solution

Firstly, the AI must be able to track what ingredients are in the fridge. This could be done by the user inputting the ingredients into a list after they go grocery shopping, or by using camera object recognition software. Then after the AI gathers what ingredients are in the fridge and then searches for recipes on the internet that use the ingredients in the fridge. The AI could possibly give recipes with ingredients that are not present in the fridge, but those recipes would not be prioritized over recipes that only contain present ingredients. Once a recipe is chosen the program will display step by step how to proceed through the recipe. If the program can detect certain instructions, it could provide a graphical reference on how to perform said action. An example of this could be if a step is to whisk eggs, the screen on the fridge will display a graphic on how to whisk eggs. Once a recipe is completed the user can save this recipe for future reference if they enjoy it.

**System Components**

According to cprime’s “What is Object Recognition and How Does it Work” article, there are four difference types of object recognition techniques. The four types are Template matching, Color-based matching, Active and passive recognition, and Shape-based recognition. Template matching is a simpler technique that compared the visuals seen on the camera with reference images stored or found online to determine what the camera sees. Color-based matching is used when color is the main feature used for identification, but it relies on simpler colors and object pools for identification. Active and passive recognition is when an algorithm recognizes objects in existing images. Shape-based recognition is like color-based recognition but relies on the shape instead of color. For this software we would be using a camera with Active-passive recognition, as the fridge will have multiple items that will need to be recognized and separated from each other in the software. The hardware used as references will be the Samsung Smart Side-by-Side Refrigerator. It has a Full HD display, 1,8GHz quad core CPU, 2,5GB RAM, 8GB flash storage, and a Tizen 4.0 operating system (*Samsung n.d.*).

**Ethical Concerns**

The first ethical concern about this program is about the camera. Users may be concerned that the camera’s may be used to spy on and collect data on the insides of people’s fridges. Another concern would be if the AI can determine if the user cannot eat Kosher food. Because it would not be ethical for the AI to recommend recipes that use Kosher food to Jewish users (2024). This could be easily avoided by having the user tell the AI that they are Jewish. The same could be said for Muslim user and if food is halal.

References

*27.3 cu. ft. smart side-by-side refrigerator with Family HubTM in Black Stainless Steel Refrigerators - RS28A5F61SG/AA: Samsung us*. Samsung Electronics America. (n.d.). https://www.samsung.com/us/home-appliances/refrigerators/side-by-side/27-3-cu--ft--smart-side-by-side-refrigerator-with-family-hub--in-black-stainless-steel-rs28a5f61sg-aa/#specs

*What is kosher food? what does kosher mean? ou kosher rules & definition.* OU Kosher Certification. (2024, August 7). https://oukosher.org/the-kosher-primer/

*What is object recognition and how does it work?. Cprime. (2023, February 15). https://www.cprime.com/resources/blog/what-is-object-recognition-and-how-does-it-work/*