SMART KITCHEN MOBILE BASED APPLICATION WITH ARDUINO MODULE FEATURES
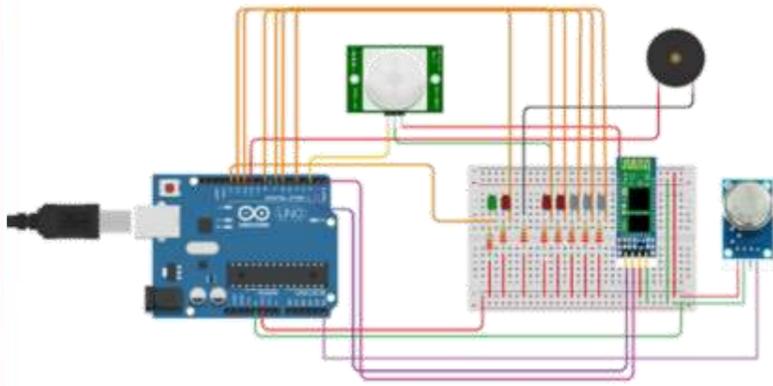
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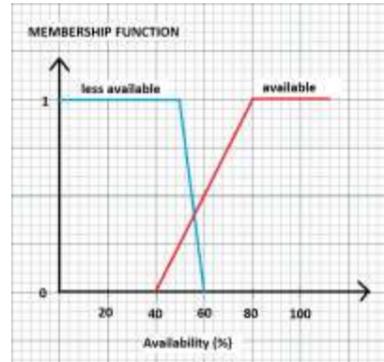CO-INVENTOR 2: DR. NUR SHAMSIAH BINTI ABDUL RAHMAN

Product Background

Kitchen is one of the important areas in the house as the kitchen serves many functions especially the cooking activity. Moreover, kitchen management such as managing the groceries items, electricity usage as well as gas management are also crucial activities in kitchen. Hence, a smart kitchen mobile based application with Arduino module features is developed which have four main functions: (i) to produce a recipe recommendation from available ingredients using fuzzy logic, (ii) to have a grocery tracker function, (iii) expiry notification function, and (iv) arduino features that enable user to control kitchen lamp, motion sensor and gas detection alarm.
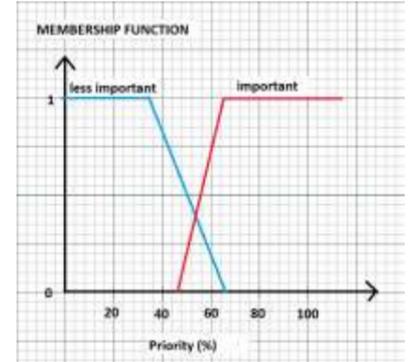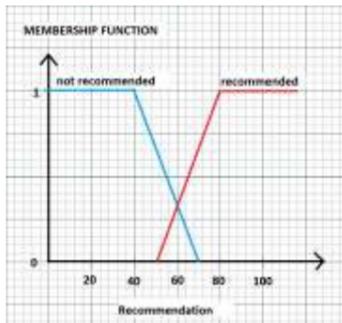
Methodology

(a)

(b)

(c)

(d)

Rules:
1. available (availability) ∧ important (priority) → recommended (recommendation)
2. available (availability) ∧ less important (priority) → not recommended (recommendation)
3. less available (availability) ∧ important (priority) → recommended (recommendation)
4. less available (availability) ∧ less important (priority) → not recommended (recommendation)

(e)

Figure 1. Methodology of system. (a) Circuit diagram for Arduino implementation. (b) Input membership function for ingredient availability. (c) Input membership function for ingredient priority. (d) Output membership function for recipes recommendation. (e) Fuzzy rules for the system.
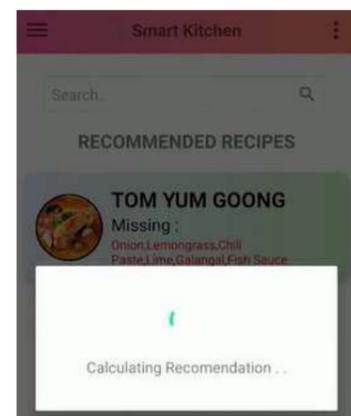
Results

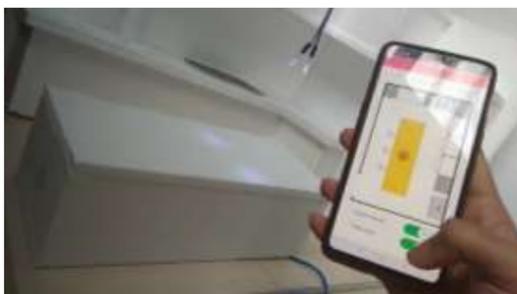| Set	Input Variable (%)		Output
1	Availability	70.33	Recommended
	Priority	50.33	
2	Availability	45.8	Recommended
	Priority	80.0	
3	Availability	75.33	Not recommended
	Priority	25.5	

(a)

(b)

(c)

(d)

(e)

Figure 2. Results. (a) Recommendation output based on the availability and priority percentage of the system. (b) Kitchen model installed with arduino. (c) Output of calculating recommendation for recipes. (d) Kitchen lamp control system. (e) Gas detection buzzer alarm system.

Benefits

- Help user auto-checking for expiry date of grocery items
- Recommend recipes to user from the available ingredients
- Help user in saving electricity using kitchen lamp control system in mobile
- Alert user in detecting gas leaking via buzzer alarm

Environmental Impact

- Reduce energy consumption
- Reduce excessive waste of grocery items