M.E.P. (Microwave Empowerment Project)

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Description:

The microwave nowadays is falling behind the era of artificial intelligence, an update is called for it to better serve humanity's daily needs. Our M.E.P. is therefore a project that focuses on empowering existing microwave designs with machine learning to attain a certain level of intelligence and improve life convenience.

We aim to integrate features like visual recognition, weighing, and database output to enable an existing microwave to provide a recommended time for heating or cooking purpose and even warning before non-permissible objects undergo heating process and cause irreversible damages to property and life. This project would be based on an Arduino model, Google vision API (/a self-developed visual recognition algorithm), database, and extension parts like load sensor etc.

Prototype Plan:

<Experimental Prototype>

1. **Testing the validity of using Google Vision to identify objects and learning about implementation of API call**
2. **Learning basic and advanced practical circuit knowledge**
3. **Learning how to set up backend server to host a REST API**

Schedule & assignments:

➢ 12 October 2017 – Proposal submission

➢ 13~ 22 October 2017 – Software establishment (Google Vision API & Database)

➢ 23~25 October 2017 – Hardware establishment (Camera)

➢ 26 October 2017 – Prototype Due

➢ 27 October ~19 November 2017 – Building the rest (WiFi &Arduino &Load cell & LCD-extended functions)

➢ 20 ~ 22 November 2017 – Practice for Demo

➢ 23 November 2017 – Project Demo

Possible obstacles:

1. Authentication for Google API call
2. WiFi connection and document transmission on Arduino
3. Database design – Efficiency
4. Unfamiliarity to Arduino
5. Adjacent file processing

Technology Involved:

1. Arduino (kit)
2. Micro load cell
3. High resolution camera
4. WiFi shield/Ethernet
5. LCD display Arduino IDE
6. Django
7. Google SDK (Vision API & Cloud Storage & AppEngine)
8. MongoDB
9. Github
10. **C & Python (programming language)**