

# Cloud Control and Monitoring: Personal Food Computer

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### INTRODUCTION

Trends in Agricultural development and growth rates in crop yields have slowed down due to harsh weather conditions. Also, use of pesticides, fertilizers and genetically modified organisms in food(GMO) has caused attenuation of nutrition, thus giving rise to *Food Crisis*. To address this concern, Caleb Harper, Principal Research Scientist at MIT shares his vision of “Food Computer” through an initiative called OpenAg, that dwells upon the concept of Controlled Environment for the growth of the plant.

The objective of this research is to bring awareness in the young minds – the kids at K12 level to get familiar with current technology involving Internet of Things, and choose STEM as their career path by understanding the miniature version of Food Computer, thus drawing attraction to trending multi-disciplinary research fields. The concern of nutrient attenuation is addressed by using Hydroponics which is a method of growing plants using water infused with mineral nutrient solutions.

### PROBLEM DEFINITION

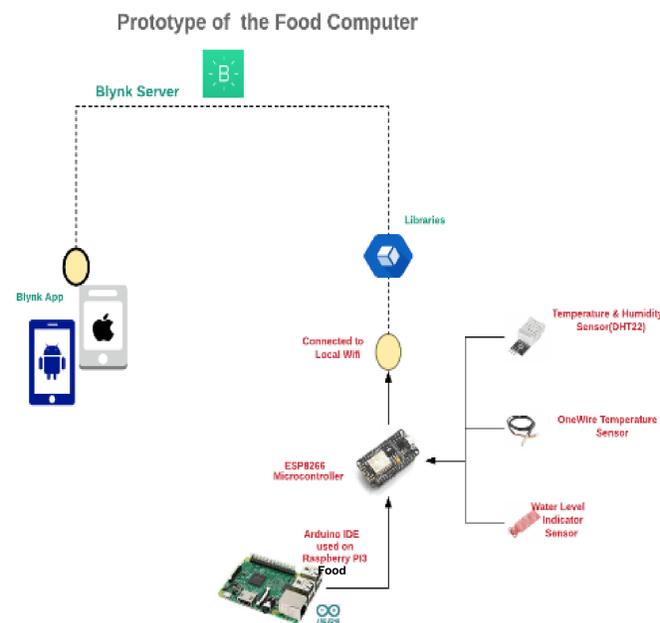
Sustaining to the basic needs of Food requirement when being impacted by weather, low nutritional rate that needs to be addressed at the earliest to ensure quality life for future generations. Awareness needs to be instantiated to consume nutritional food amongst the kids at K12 level. This project tries to closely connect the technological advances and Food Security using Food Computer as a viable option. This exposure will encourage students to consider STEM as a career path.

### MOTIVATION

According to the U. S. Department of Commerce, STEM occupations are growing at 17%, while other occupations are growing at 9.8%. STEM degree holders have a higher income even in non-STEM careers. STEM education aims to increase the number of future professionals who enter STEM jobs having educational competitiveness

From this Project, students have the opportunity to gain exposure in advanced technology such as IoT and components like Raspberry Pi, Arduino IDE, which is part of the Food Computer, that is affordable.

### PROTOTYPE - OVERVIEW



### LIVE SENSOR READINGS



### CONCLUSION

The entire set-up of this Project is less than \$100 , there by making it cost-effective in comparison with \$3000 build of a Food Computer, which is also portable.

The data can be fed in real-time to any Internet enabled device.

The set-up can be a good starter-kit for K12 students to gain exposure to IoT devices, thus encouraging them to adopt STEM.

With a wide-spread adoption of a mini Food Computer, students and public in general will have better access to nutritional food.

### FUTURE WORK

The future work involves scaling up the prototype version of Food Computer to a complete Build using combinations of sensors and actuators that monitors the device under control.

Grow and Educate with technology, to help smiddle school students participate in STEM by giving them more opportunities to interact with Internet of Things devices.

