



Project title: RollIt!

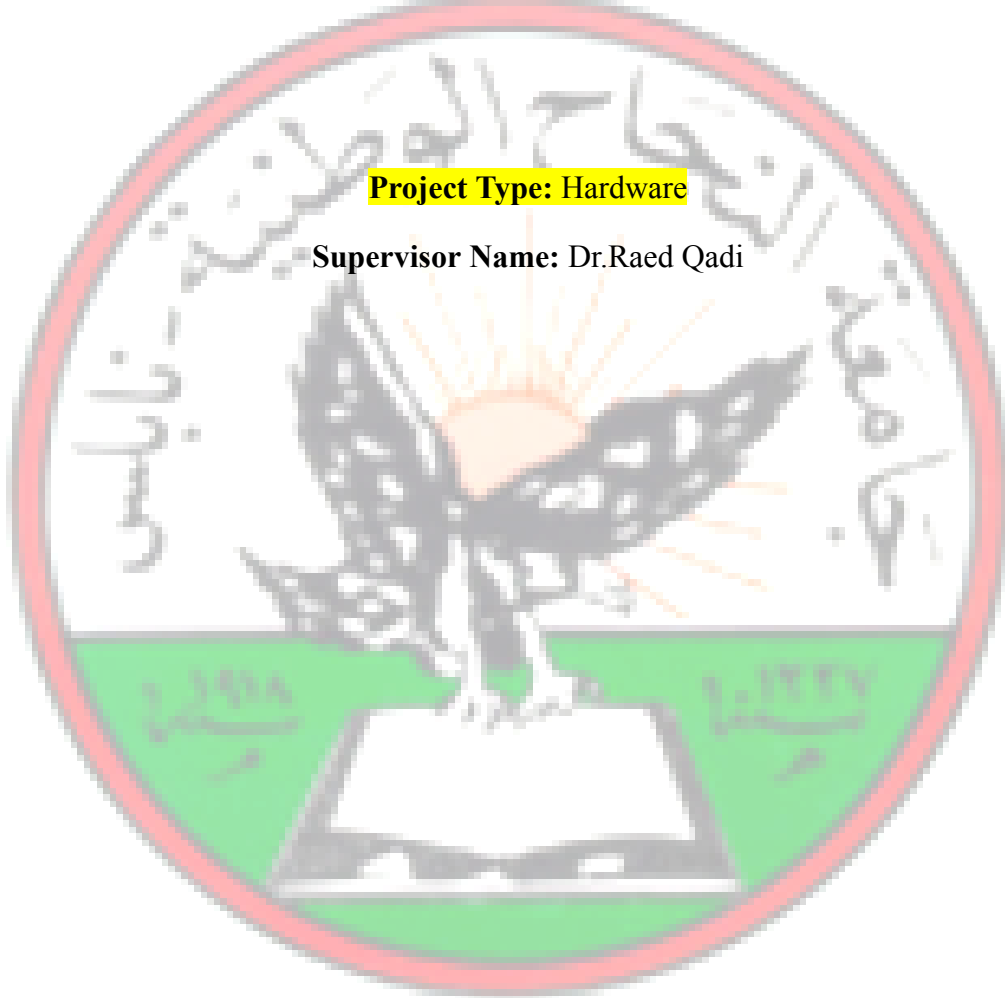
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Project Type: Hardware

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Project's Abstract:

Automation of food processing has gained lots of interest in recent years, and this project deals with the design of an automated sushi production line. This project is important because it addresses the increasing demand for speed and consistency in food preparation, while still allowing for customization based on user preference input. By automating the process of sushi preparation, this machine avoids human error; preparation time is saved, and such consistency in quality makes the machine very useful in restaurants and catering services.

The significance of this project is the potential to show ways in which robotics and automation can be applied to enhance productivity in the food industry. Due to the increasing demand and desire of the consumers for speed with personalized service, this system is another alternative that fulfills the requirements of customization with high precision and efficiency. It also offers the opportunity to reduce labor costs in food production environments.

The important aspects it must address are the design and integration of hardware components, including but not limited to stepper motors and their respective drivers, and the controller itself, an Arduino Mega controller. For its entire successful working, it has to be in total control of the machine with each step: spreading rice, adding fillings, rolling, cutting, and plating. This system will be designed such that the experiences of users are seamless regarding the input of their sushi preference while delivering consistent sushi of the highest quality.

The major objectives in our project are the design of a user-friendly machine that would allow the consumer to prepare their sushi by selecting the fillings and sauces. To automate the whole process of making the sushi and to ensure the process is efficient, consistent, and scalable for commercial use.

The methodology involved will entail the construction of the hardware system, supported by a stepper motor for precision, drivers that control movements, and an Arduino Mega for central control. Every step on the machine is to be effected sequentially, starting from the spreading of rice to plating the sushi. And through the process of making the machine, a lot of testing will be done to make sure that the system meets all functional specifications and the performance is stable.

While there are sushi-making machines in existence, they are far from being fully automated. Ingredients such as rice, nori, and fillings are added manually, and the cutting part is also absent in most of these machines. Furthermore, no such machines provide the option to choose certain fillings; that is, users cannot choose their preferred filling, but our project will fill that gap by bringing together automation with personalized user input, making it unique in the market today.