TED UNIVERSITY

Faculty of Engineering

Department of Computer Engineering

CMPE 491 – Senior Project – Project Proposal Report

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Name of the Project:

AgroAutomaTED

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Our Web Page's URL Designed for the Project:

- https://agroautomated.me/

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Brief Description of the Project: AgroAutomaTED

In 2022, it was estimated that between 691 million and 783 million people suffered from a food shortage (World Bank, 2023). Therefore, we aim to produce solutions to the problem of zero hunger, one of the sustainable development issues that is one of the 17 goals of The Sustainable Development Goals (SDGs) (United Nations, 2023). To talk in terms of agriculture, in some drought-prone regions of the world, food shortages are a considerable problem since a lack of water might cause a lack of crop resources. To solve some part of the issue as much as possible, we first put our effort into managing irrigation in a better way.

If the water that is used for irrigation is not stored or delivered effectively, then product efficiency can be decreased (United States Department of Agriculture, 2023). Too much and unnecessary use of water may cause soil to be damaged, as indicated in Image 1. In order to bring solutions to this issue, there are some ideas, such as: improving water transport systems and managing applications to reduce the water flow (United States Department of Agriculture, 2023).

Figure 1: Inefficient use of irrigation water. The image is taken from https://www.farmers.gov/conservation/concerns-tool/water.

Our approach to find solutions for better use of the water is a mobile app and a physical device that will reduce insufficient use of irrigation water and inefficient soil moisture management issues. We decided to create an Arduino device that has several features such as a soil moisture level sensor, a water level sensor for the water tank, and a canal to establish efficient irrigation of the soil. This device shall provide the necessary pieces of information about the soil and send them to the mobile app. This app shall also provide some automation for better irrigation.

For the foreseeable future, food and water shortages are happening and will continue to happen. We would be very happy if we could do something to solve this problem even to some extent. With the help of this device installed near plants, the usage of irrigation water will decrease, the soil will not be damaged and some human labour can be avoided. Additionally, during the development phase of the project, we consider adding some extra functionalities if we have enough resources and time.

References:

1. United States Department of Agriculture. (2023). Water conservation concerns tool. Retrieved October 12, 2023, from https://www.farmers.gov/conservation/concerns-tool/water.
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3. United Nations. (2023). Sustainable Development Goals. Retrieved October 12, 2023, from https://sdgs.un.org/goals.