

Project Map

Have you ever played a game in which you must explore a world and if you explore that world, a map gets generated in a pause menu or a mini-map? We want to do this with the world around us.



Our project consists of a portable touch screen device equipped with small ultrasonic sensors the user can clip to his pants at the level of the belt. Using the information received from the sensors and the accelerometer inside the device, the system will generate a live preview of the user's surroundings including the places he visited before. The map generated will include information including walls and the height of the ground. In terms of the software, the project will involve majorly the usage of the Arduino's TFT touch and display libraries to display our generated content on the touch screen. We plan to include some interaction between the user and the device, including the possibility to zoom and un-zoom the generated map, but also to move around with four arrows. The project might also include a simple user interface to let the user save the map that has been generated. In the background, a lot geometrical mathematics will be used to generate the map accurately from the very few information received in real-time. For this project, we intend to use an evolutionary prototype plan, since we know most of what we are doing will be done the way as we intend right now, though we might want to improve or add some functionalities during the development process. We already acquired a lot of hardware to make this project possible. The list includes an Elegoo Mega 2560, a 2000mAh battery pack, five ultrasonic sensors, an accelerometer chip, a 3.5 inches touch screen and a starter kit including a bread board, wires, resistors, and many other useful hardware components. We know this project will involve a lot of challenges, including the following. We will have to generate walls only based on the user's displacement and distance from objects. We will have to think seriously about the way we will implement the mathematics that will generate the map from this information. Moreover, using the Arduino hardware for the first time will also consist of a challenge for us (e.g. assuring we are giving the right current and tension to the different components of the system in a self-contained circuit).

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