Blind Navigation System with Signal Processing Filters

Individual Contribution Summary

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INDIVIDUAL CONTRIBUTION

In this project I was mainly responsible to implement the decision making block from system architecture. I came up with algorithm/approach to decide direction determination and distance classification. Also I implemented the code for this block in Arduino.

In addition to implementation of decision-making block, I also came with different scenarios in which our prototype can be tested.

Prior to that, I came up with idea and approach to do overall project. I have seen few blind people back in days (in my country), which really struggle in their day to day living. So we decided on implanting the cost effective solution for blind people. Before deciding the final approach, I also surveyed current solutions and understood the drawbacks. Thus usage of multiple sensors to give the direction sense was decided. Also using vibrators was better approach than using stepper motor in some existing solutions. As no solution provided the sense of more than two directions, I suggested & implemented the approach to give sense of multiple directions.

Need of signal processing was recommended by my colleagues and they did implementation for those blocks. For the signal processing testing part I helped to generate & filter data as per our need. I also helped to integrate signal-processing code into our final solution.

Other than abovementioned points I also did initial testing for hardware. And I tested various use cases for ultrasonic sensors. Key point in using multiple Arduino sensors was to use them with particular angle between them to maximize the possible coverage area. It was also important in giving sense of multiple directions.

GROUP WORK

We worked together to do our end-to-end testing in different scenarios.