

Climbing Wall Route Design Software for Dynamic Route Planning/Modification

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The Project: A team of mechanical and electrical engineering Senior Design students has designed a system to allow people with significant visually impairments to climb independently and effectively in a climbing gym. They have designed the hardware and an initial software algorithm. The major priorities for the project are to make the new climbing wall easy to use for the climber and easy to install and affordable for the climbing gyms.

The final design consists of four separate subsystems: the hold locating, climber tracking, networking protocol, and hold design. The network design is a mesh network built on the Zigbee protocol with a central device acting as the network coordinator. Each hold contains Zigbee compatible hardware configured as routers in the network hosted by the coordinator. The coordinator is a Raspberry Pi with a Zigbee compatible antenna. Additionally, the Raspberry Pi can connect to wi-fi so that a route design web app can be implemented in a future version of this project. We're looking for a team to develop the route design web app.

Desired skills/experience: Web connected device (smartphone, tablet, PC) app development. A web based app would be preferred to minimize cross-platform compatibility issues and potentially to enhance security. Alternatively, an app that is compatible with both Android and iOS, and that shares data via the cloud will be considered if the student team can make a strong case for this solution.

Location: On campus, with potential for testing at VA or other site.