2.10 **3-D Markerless Motion Capture System for Active Shooter Response Training**

Our project’s objective is to work in conjunction with the Texas State ALERRT Center to create a sensor-based motion capture system to gather motion data at key points on a first responder’s body.

Using inertial measurement units we will turn analog motion to digital data in the form of an X-Y-Z coordinate system. This data will then be stored locally and then transmitted to a mobile device application where it can used to build a projection of the wearer in a virtual environment using either Augmented or Virtual technology. The long-term goal is to have untrained responders watch a virtual professional navigate an active shooting scenario.

We are pursuing this project because there’s a great need for active shooter training among police municipalities. Shootings can happen anywhere, and not all municipalities have the resources to train properly. We want to ensure that when shootings happen, those responding have the best training possible.



Bo Heyse Matt Healea Karina Paz

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| Function | Deliverable | Owner |
| Wireless start and stop capabilities | Smart phone application’s buttons start and stop the data recording session | Bo |
| Wireless Data transmission | Ability to transfer data to smartphone from three separate IMU Bluetooth connections | Matt |
| 2 Hour Battery Life and low power notifications | Software based battery management system | Karina |
| Centralized data collection | “Upload” button in mobile application that pushes data to cloud storage location | Bo |
| Non-Intrusive Design | 3D printed CAD designed enclosure | Karina |