

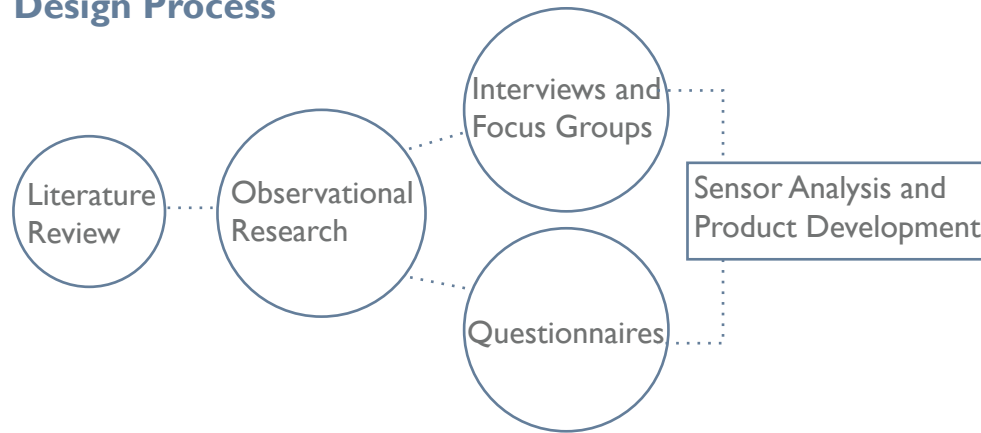
Ethnographic Contextual Research

Wearable Sensors in Safety Products - Case Study

This case study was conducted to develop a system to promote safety and situational awareness for runners/cyclists with sensory impairments. This was an interdisciplinary effort between the Virginia Tech Industrial Design and Electrical Engineering departments for my capstone senior project. Sensor research and analysis was performed to aid in detecting path interference for conditions in outdoor activities in addition to ethnographic studies and focus groups.



Design Process



In attempts to understand routine activities of runners and cyclists, contextual inquiry was used to examine the artifacts and devices typically worn, influences of environmental conditions, and motivations of safety product use. Online surveys were distributed through area listservs in the Blacksburg community and responses were aggregated for qualitative content. Personas were developed through interviews of identified target users with a sample size of 24 participants between the ages of 18 and 32. Focus groups were conducted to gain feedback on ideal product placement and functionality.

Findings

Visibility and vehicular accidents were listed as the two largest sources of anxiety for runners and cyclists during routine outdoor activities. Exercising during peak periods of traffic or hours where it was dark is of special concern to safety.

Both runners and cyclists noted preference for wearing safety devices on the wrist or upper arm, and mentioned the importance of visible interface and tactile feedback.



The wrist device would notify a user of path interference within a cylinder of detection of 30 ft. and respond with vibration and LED lights. This system would incorporate motion and small path optical interference sensors.

