Towards Supporting Situational Awareness using Tactile Feedback
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Background
• When engaged with an attention-demanding task, it can be difficult concentrating on the wider environment.
• Tactile feedback offer considerable potential, communicating detailed information within a short burst.
• The aim of the research is to determine the ways in which tactile feedback presented at the head can support situational awareness.
• Interested to see whether judgment and decision-making processes are supported.

Interface Design
• Developed using actuator technologies, auditory controller and a laptop running custom software developed to present cues.
• Can present tactile cues for up to 8 actuators. These are affixed to a helmet.
• Application presents tactile feedback in a specific sequence.
• Application also records responses when performing localization study.
• After performing pilot studies to better understand perceptual constraints, integrated C2 tactors with skullcap.

Research Aims and Objectives
• To communicate the following to increase situational awareness among mobile device users engaged within a task where the eyes are occupied:
  1. The number of obstacles within a fixed range of the user;
  2. The position of obstacles in relation to the user;
  3. Identify whether the distance between the obstacles and the user is narrowing/widening.
• Determine the maximum amount of information which can be conveyed.

Current and Future Work
• Developed use-cases where situational awareness is needed through interviews with mobile device users.
• Focus groups are currently being held to enable users to develop meaningful tactile cues, using a participatory-approach.
• Cues will be refined through a process of iteration.
• We aim to evaluate resulting tactile cues to determine their efficacy under realistic conditions.