Australian Government
Department of Defence

NEXT GENERATION TECHNOLOGIES FUND

UNSW THE UNIVERSITY OF NEW SOUTH WALES

Predicting and Improving Team Performance by Incorporating an Autonomous Advisory System

Purpose

- Create and demonstrate an adaptable and expandable operational model of a distributed real-time system able to:
  a. Identify individual and group signifiers of cognitive stress under critical conditions, and
  b. Rapidly distribute this information to assist in task allocation to improve team performance.

Product

- Real-time metrics of cognitive load from physiological measurements utilizing wearable sensors.
- Machine learning for cognitive load identification.
- A human-machine interface (HMI) that assists in improving team performance and an autonomous advisory system (AAS) for dynamic re-allocation of tasks.
- Improved collective performance of a team through dynamic re-allocation of tasks from an autonomous advisory system.

Partners

- The University of New South Wales: Mari Velonaki, Katsumi Watanabe, Teresa Crea; The University of Sydney David Rye
- DST Group: Vicki (Dawei) Jia, Chris Best

Schedule

- FY20/21: Select and characterise sensors. Simulate conditions in the target use case and reliability evoke cognitive stress to single persons and non-collaborative groups.
- F21/22: Examine cognitive load capacity in team-based collaborative work.
- FY22/23: Evaluate HMI and AAS in the field.