Multimodal Interactions in Connected and Automated Vehicles

MICHIGAN TECH
RESEARCH FORUM
MOBILITY TECHTALKS

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Areas of research/expertise

Auditory Displays

- Sound Design
- Sonification

Automotive User Interfaces

- Intelligent Transportation Systems
- Connected/Automated Vehicles

Affective Computing

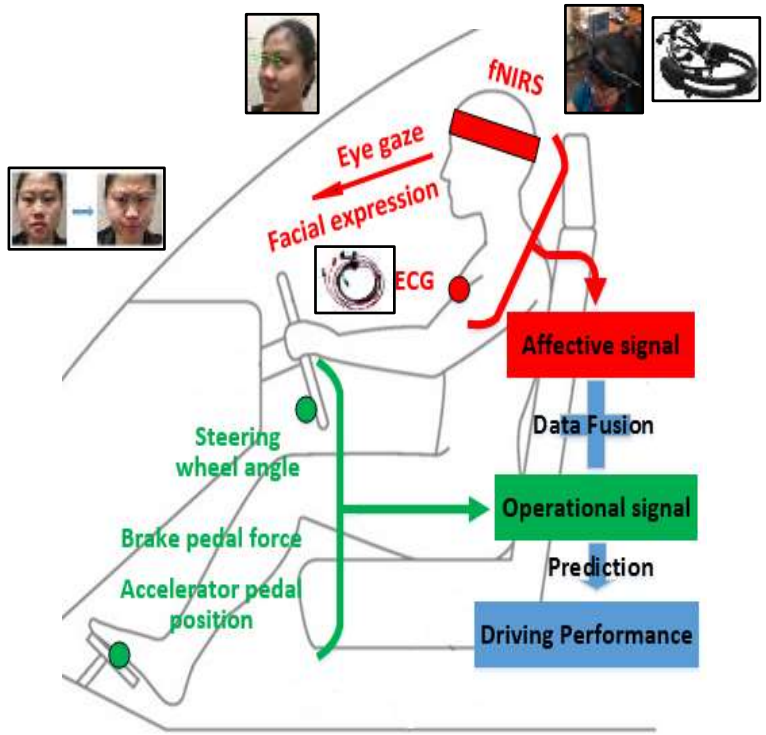
- Estimate users' emotional states
- Intervene with technologies

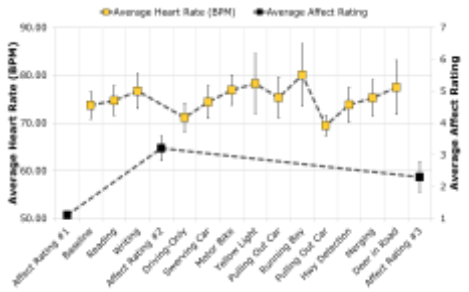
Assistive Technologies

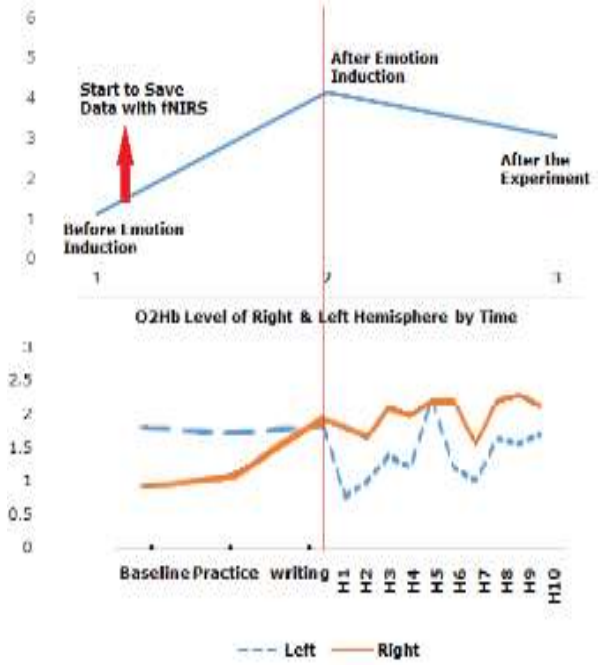
- Blind People
- Kids w/ASD
- Older Adults

Fully Equipped Simulated Driving Research

- Manual / automated driving modes (standardized, scenario-writable)
- Behavioral, neural, & physiological sensing of drivers' states (ABC of Psych)
- Empirical experiments about the effects of emotions and affect on driving

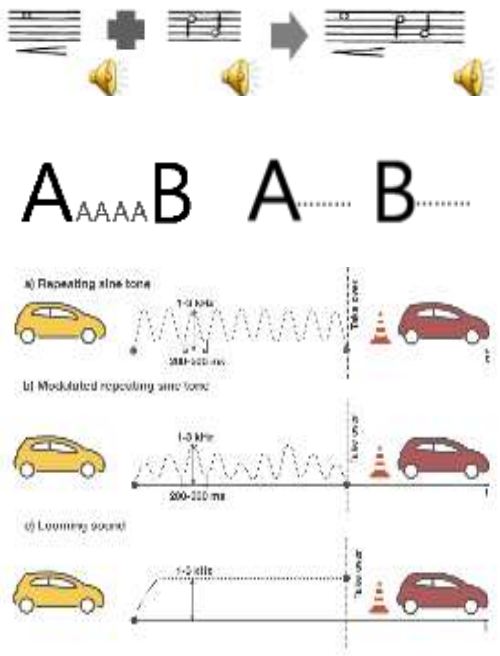






In-vehicle Multimodal Interactions

- Discrete auditory displays (e.g., warnings, speech, alerts for take-over)
- Real-time sonification (“Listen2YourDrive”, target matching sonification)
- Gesture interaction (elicitation, sonically-enhanced menu navigation)



Connected Automated Driving Research

- Collaborative driving at cognitive levels by combining multiple simulators
- For people with difficulties/disabilities, older adults, etc. (e.g., platooning)
- Interactions with pedestrians (NHTSA G/L)