

Modeling Driver Situational Awareness in Automated Driving

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Motivation

- Being able to model driver situational awareness in automated vehicles can help avoid unnecessary interventions and provide human support where needed.

Project Description

- This project aims to
 - Understand how factors impact driver situation awareness in automated driving.
 - Develop computational models that can predict driver situational awareness.

Context

- Existing research on situational awareness
 - Limited to certain scenarios (e.g., intersections)
 - Only gaze behaviors were used for modeling
- Our approach will
 - Investigate situational awareness in a variety of task, vehicle, environmental conditions.
 - Predict driver situational awareness using their physiological signals (e.g., gaze behaviors, heart rate activities, and galvanic skin responses) and environment data.

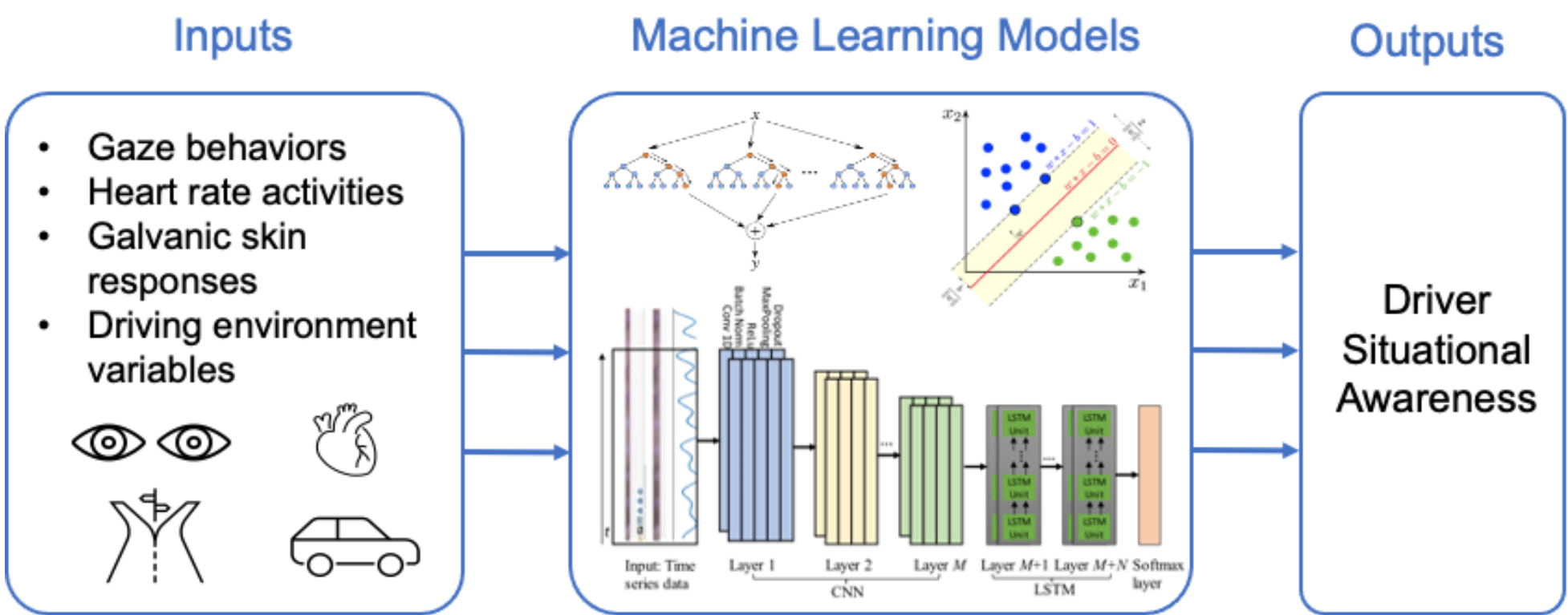


Figure 1: The framework of computational models.

Our goal is to model driver situational awareness in automated driving using their neuro-physiological signals and environment data

Project Deliverables

- A dataset that documents drivers' situational awareness, neuro-physiological signals, driving performance, and driving environments.
- Computational models that can predict drivers' situational awareness.
- This project will pave the way for large scope research projects on situational awareness in human-autonomy teaming.

Potential Impact

- The project will enable the development of in-vehicle monitoring and alert systems in real-world applications.
- Policy makers and car manufacturers can utilize our findings to inform policies and designs for road safety.

References and/or Acknowledgements

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