Reimagining Human-Machine Interactions Through Trust-Based Feedback

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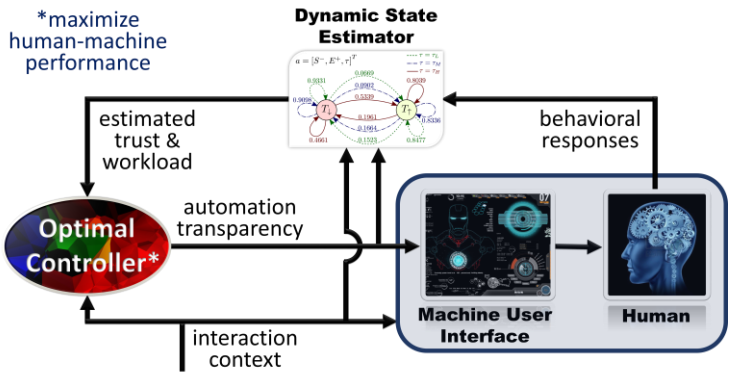
Project Description

Design intelligent machines that can *respond to changes in human trust in real-time* by

- measuring and/or estimating the human's trust level
- affecting a change in the human's trust state through changes in the machine user interface (UI)

Approach

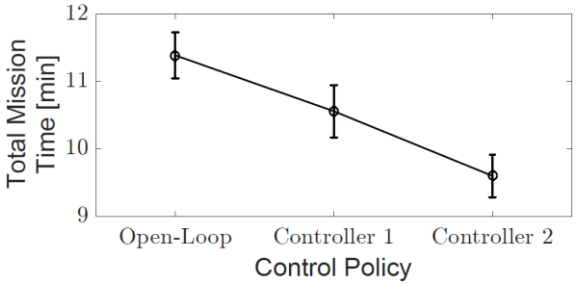
- Estimate gray-box models of human trust behavior based on human-subject data
- Design trust-based feedback controller



Discussion

- Varying UI transparency (amount of information presented) affects human trust and workload
- Human cognitive trust and workload can be estimated using psychophysiological measurements

Results



Closed-loop controllers improve performance of the interaction (i.e. reduce mission time in the study)

- Optimal controller that aims to maximize human-machine interaction performance by varying UI transparency
- Performance improvement by 15.72%

Improved human-machine collaboration performance through trust-driven adaptive user-interface

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