

Where's Your Mind At? Video-Based Mind Wandering Detection During Film Viewing

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Abstract

Mind wandering (MW) is a ubiquitous phenomenon in which attention involuntarily shifts from task-related processing to task-unrelated thoughts. This study reports preliminary results of a video-based MW detector during film viewing. We collected training data in a study where participants self-reported when they caught themselves MW over the course of watching a 32.5 minute commercial film. We trained classification models on automatically extracted facial features and bodily movement and were able to detect MW with an F_1 of .30. The model was successful in reproducing the MW distribution obtained from the self-reports.

Overview

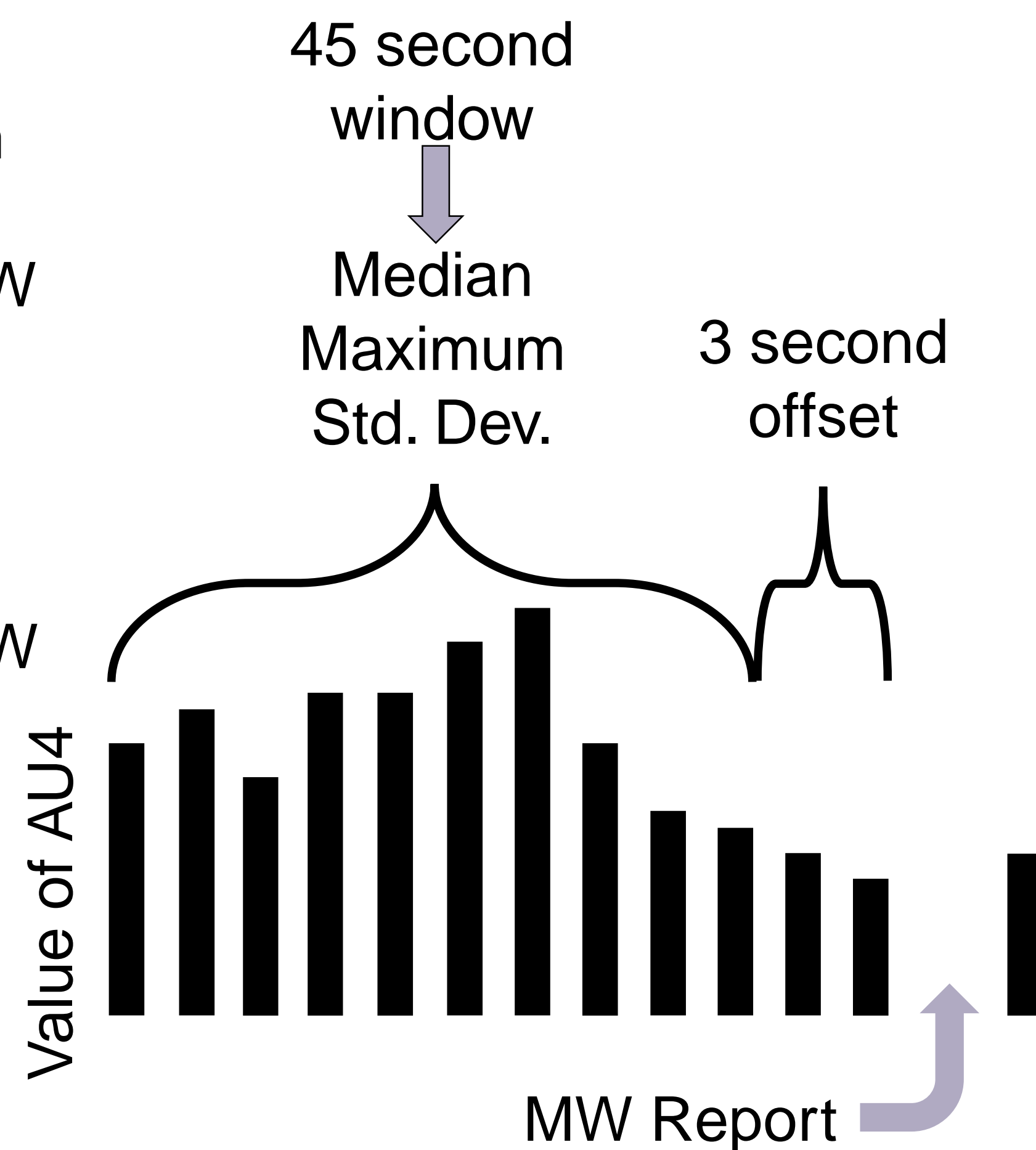
- Develop fully-automated video-based detector of MW during film viewing
- Explore effect of manipulating MW prediction rates

Data Collection

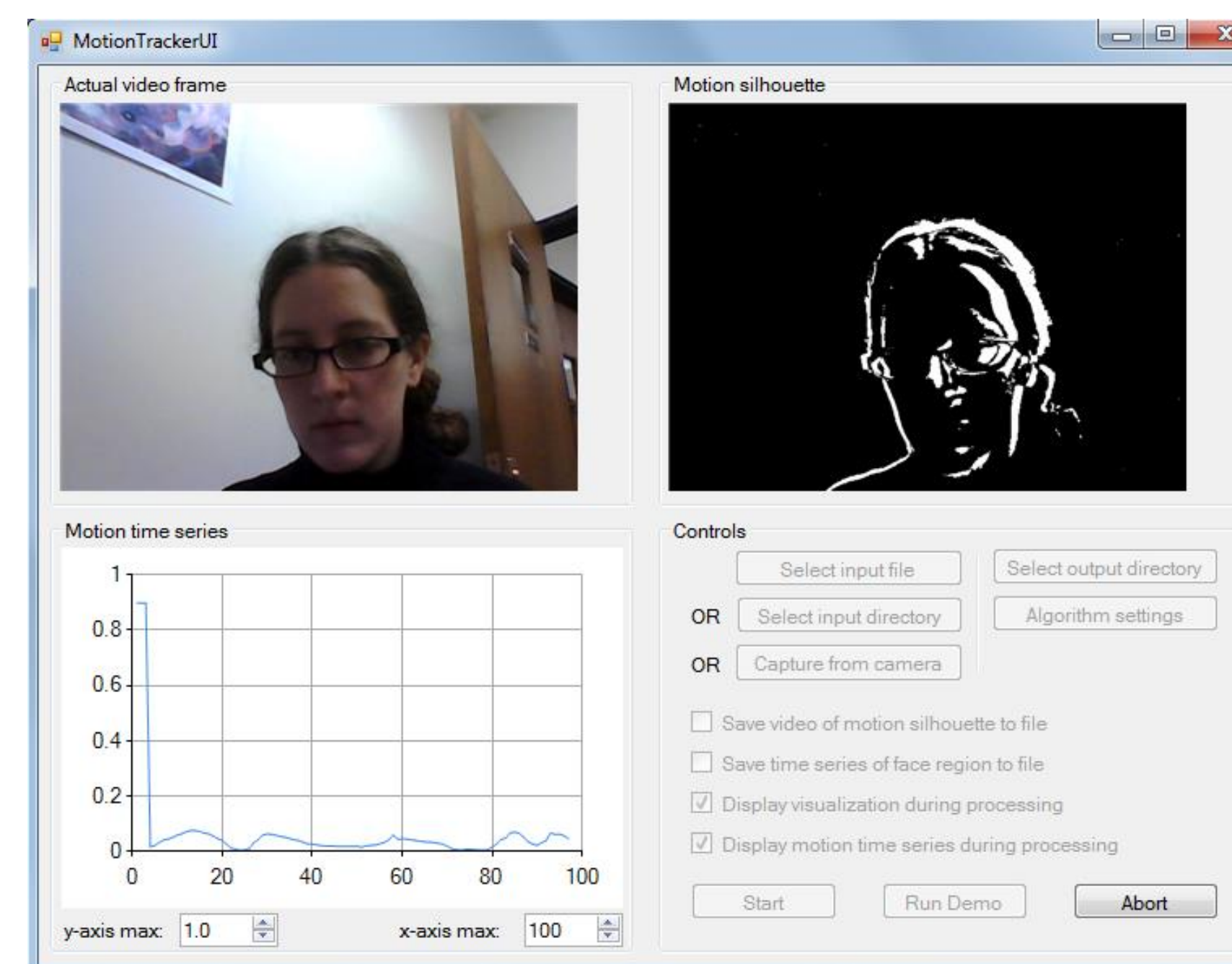
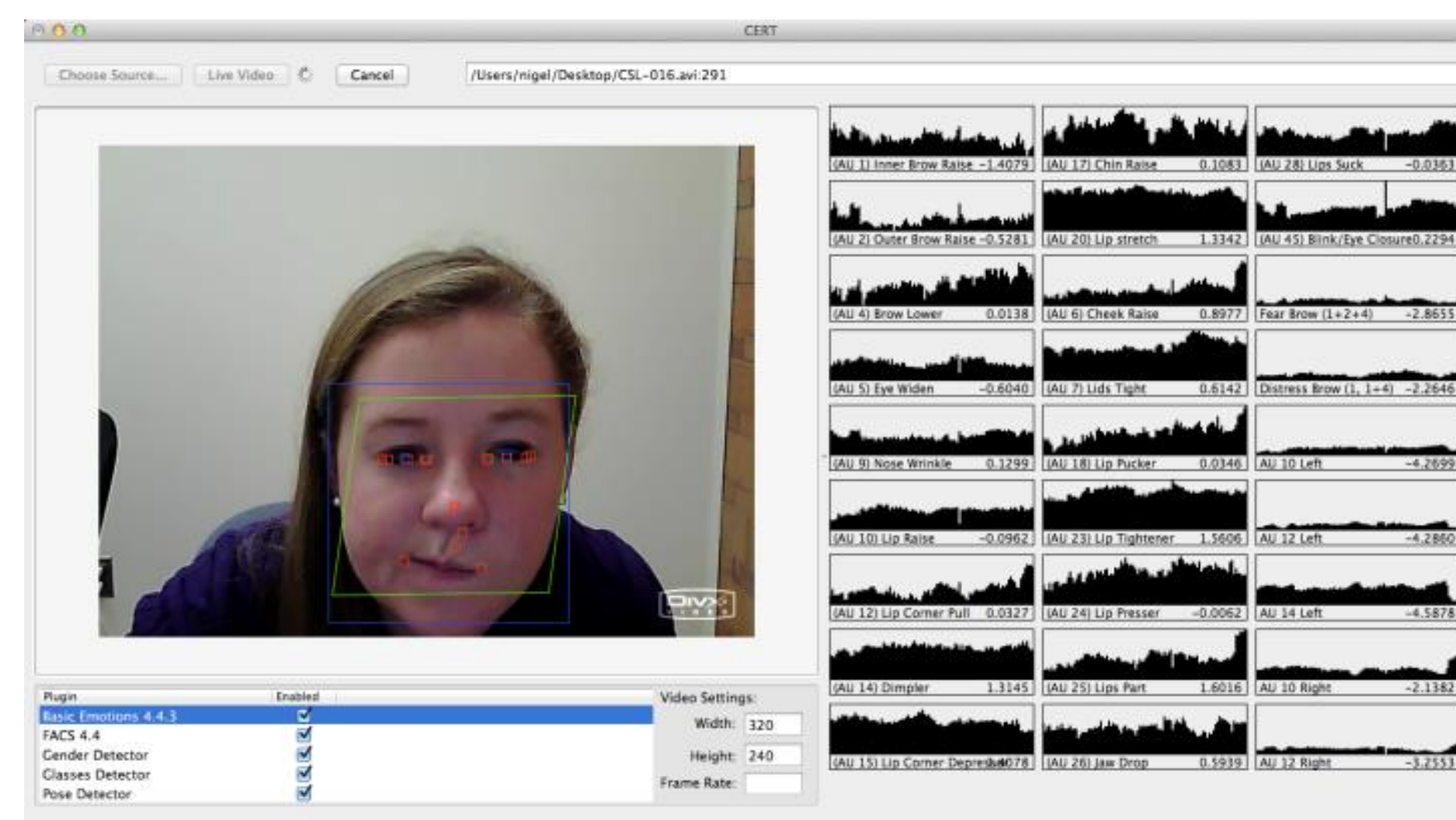
- 107 participants self-reported MW while watching French film "The Red Balloon"
- Video of face and upper body recorded



Feature Extraction



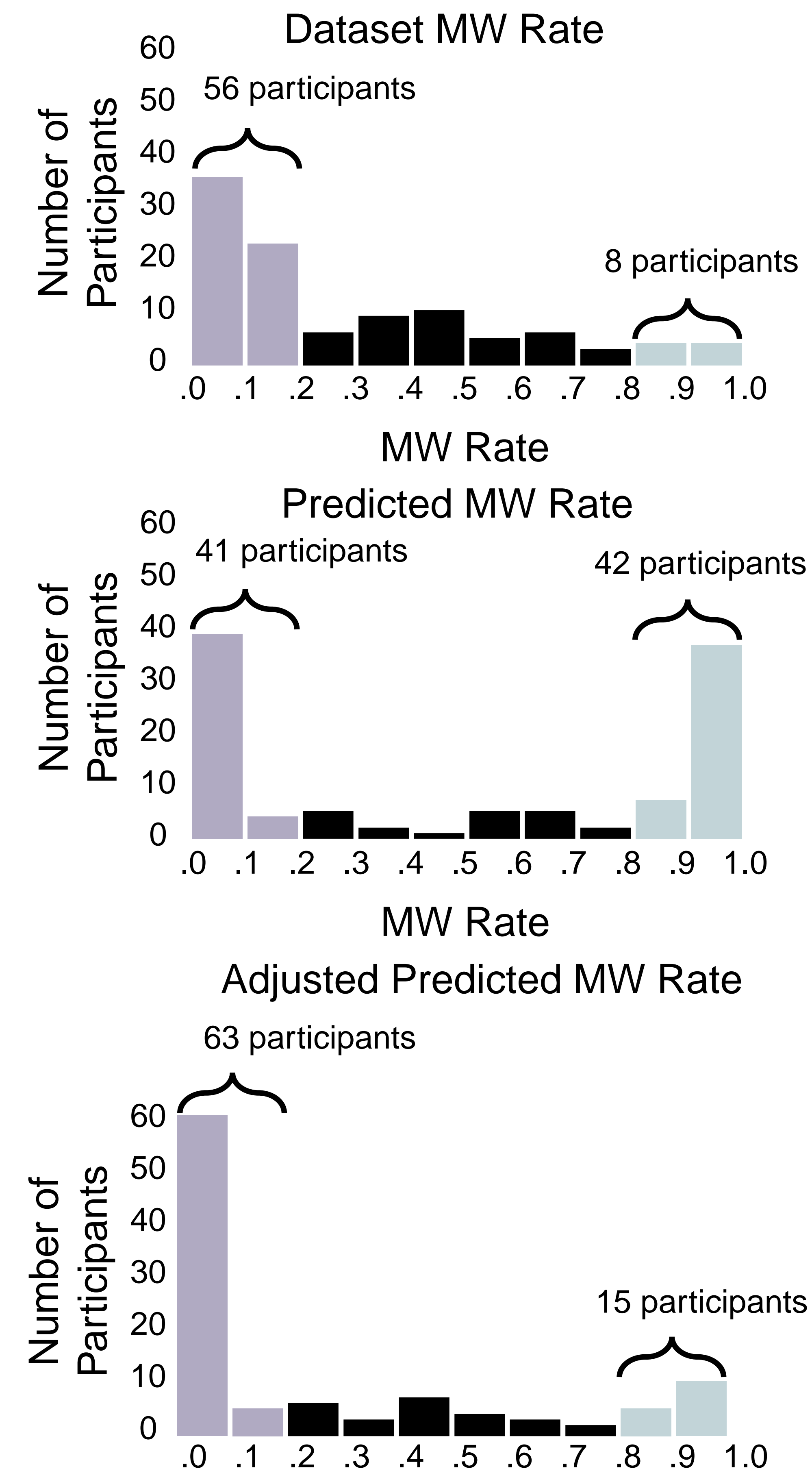
- Automatically detected Action Units (FACET) and motion



Machine Learning

- SVM classifier with SMOTE
- Relief-F for feature selection
- Leave-one-participant-out cross validation

Results



- F_1 before MW rate adjustment: .39 (chance = .30)
- F_1 before MW rate adjustment: .30 (chance = .22)

Window Segmentation

