Biobehavioral Markers of Depression: Integrated Signal Processing of Speech, Facial Expressions, and Physiology
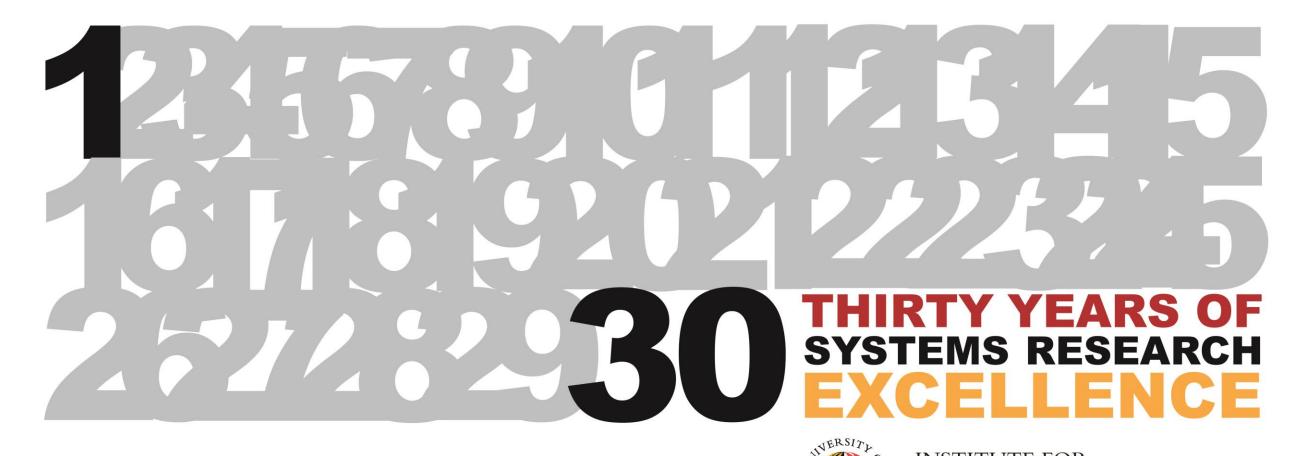
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BACKGROUND

- Depression affects 20 million people in the U.S.
- Physiological and behavioral changes can serve as indicators for disease progression.
- Mood and depression disease states can be assessed by real-time monitoring and analysis of patient signals.

LONG-TERM RESEARCH OBJECTIVES

- Comparison of healthy and depressed patients in empirical studies.
- Multi-signal integration and predictive analysis of mobile health technology sensor data.
- Beneficial Outcomes: Improvements in the way mental healthcare providers can diagnose and treat patients.

METHODS

Face Emotion Recognition
Face Action Units

Acoustic Signals
Jitter, Shimmer, Breathiness, Speaking Rate

Speech Content
Statistically Significant Textual Themes

Physiology
Heart Rate Variability, Heart Rate, Breathing Rate, Temperature

Signal Integration and Predictive Analyses for Depression Patient Health State