BBQS-CAMERA

A Brain Behavior Quantification and Synchronization for Context-Aware Multimodal Ecological Research and Assessment
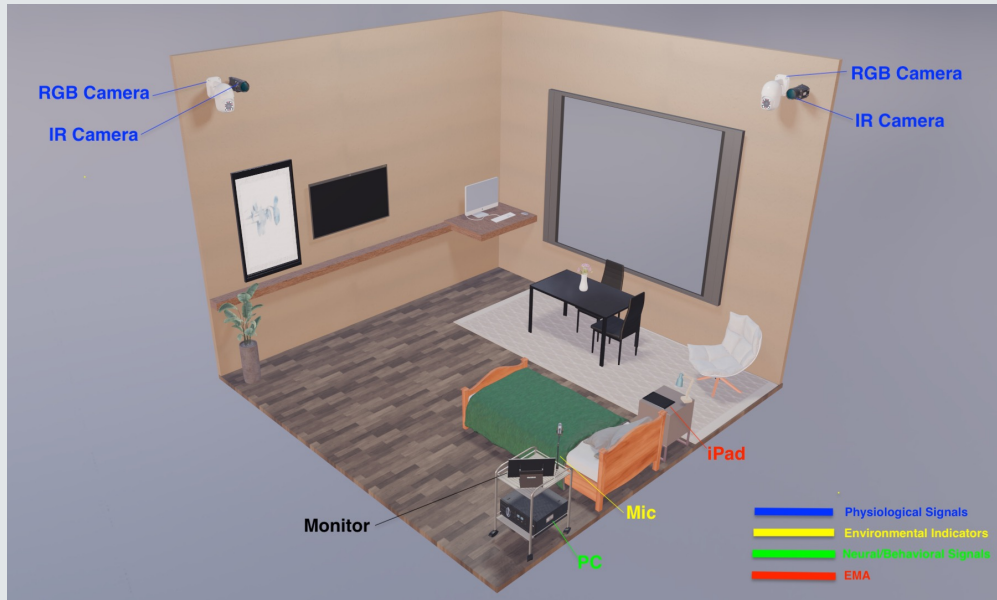
Project Overview

Goals:

- Development of multimodal models for inference of anxiety levels

- Studying the human brain-behavior relationships

Data Streams:

- Physiological indicators

- Neural signals

- Behavioral signals

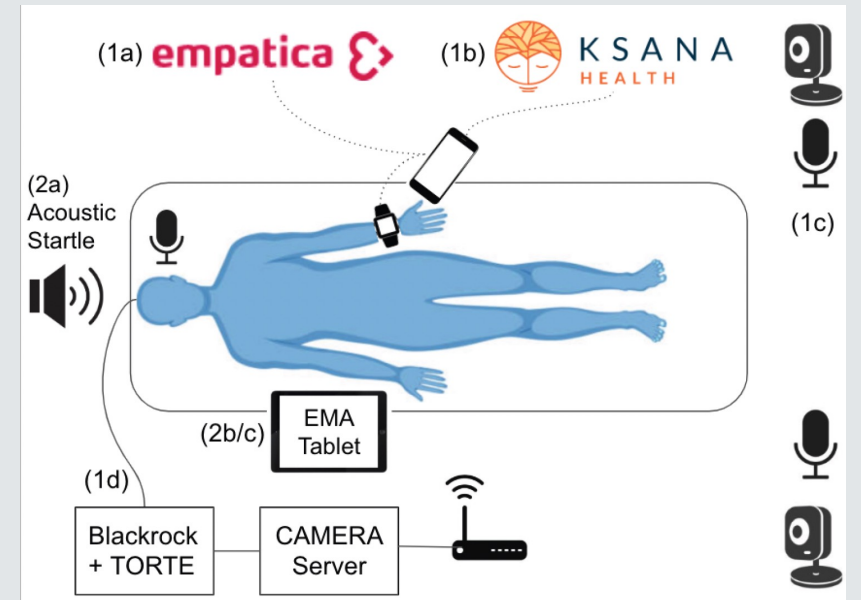- Environmental indicators

- Ecological Momentary Assessments (EMAs)

Study Setup

360-view of the hospital room

Actual hospital room

Patient setup

Phase 1

CAMERA Framework Development

Aim 1: Develop CAMERA hardware/software framework

Include methods for recording continuous neural, physiologic, audiovisual, and smartphone-usage data in the framework

Aim 2: Synchronize recorded sensor signals with intermittent Ecological Momentary Assessments (EMA)

Aim 3: Demonstrate CAMERA's ability to combine multimodal features

Predict subject's anxiety state and memory efficiency using CAMERA

DEMO

Future Directions

Expanded Data Sources:

- Camera and infrared imagery

- Ecological momentary assessments

- Direct brain probe data

- Ambient noise

Integration Goal: Combine diverse data into a learning model
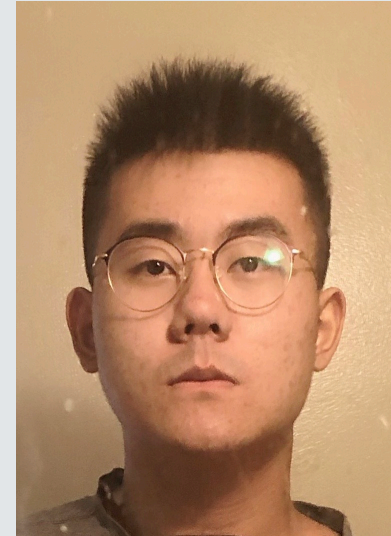
Outcome:

- Inference of behavioral biomarkers of anxiety

- Advancing mental health diagnostics

Thank you!

Taqiya Ehsan

te137@rutgers.edu

Shuren Xia

sx67@rutgers.edu