

# #1840167: An Embodied Intelligent Cognitive Assistant to Enhance Cognitive Performance of Shift Workers

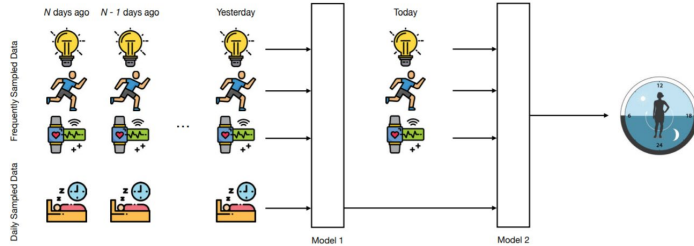
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Project goals: To develop a closed-loop Intelligent Cognitive Assistant (1) to infer circadian rhythm, alertness, and stress levels and (2) to provide personalized feedback to enhance users' cognitive ability and wellbeing in an unobtrusive manner.

## Sensor-Based Estimation of Dim Light Melatonin Onset (DLMO) Using Wearable Data

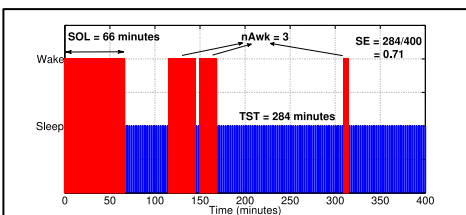


## Personalized Wellbeing Prediction and Doctor-in-the-loop Sleep Advice System for medical professionals and Caregivers



- Wellbeing Prediction
- Burnout Prediction
- Multimodal behavioral routine/pattern analyses
- Personalized Cognitive Behavioral Therapy For Shift Work Sleep Disorder
- Decision support for personalized sleep advice

## Contactless Sleep Sensing with UWB Radar Array



- ❑ UWB Radar Array-based Localization and Tracking
- ❑ Vital Sign Monitoring using UWB Radar-Array
- ❑ Ongoing Deployment and Validation Studies (Emergency Room at UMass Med, Sleep Lab at Yale Med, Dorm at UMass)
- ❑ Sleep Quality Measurements

## Modeling Shift Workers' Circadian Disruption and Alertness

