

# eMindGuard - A Holistic Mental Health App

# Tejodbhav Koduru<sup>1</sup>, Amir Javed<sup>2</sup>, Diana Contreras<sup>3</sup>, Andrew Boyd<sup>4</sup>, Anuj Tiwari<sup>5</sup>

<sup>1</sup>Graduate Student, University of Illinois at Chicago (UIC); <sup>2</sup>Lecturer, School of Computer Science and Informatics, Cardiff University, UK; <sup>3</sup>Lecturer, School of Earth and Environmental Sciences, Cardiff University, UK; <sup>4</sup>Professor, College of Applied Health Sciences - Biomedical and Health Information Sciences, UIC; <sup>5</sup>Senior Research Associate, Discovery Partners Institute (DPI), Chicago, USA

#### Introduction

Mental health is a rising concern for young adults in today's digital world, often going unnoticed until it worsens. Early detection and intervention are crucial to prevent escalation.





Social media: Excessive social media has been linked to increased anxiety, depression, and feelings of isolation among young adults.



**Heat Stress:** Prolonged heat stress has been shown to elevate anxiety and exacerbate symptoms of depression.



**Sunlight:** Regular exposure to sunlight is crucial for regulating mood and preventing seasonal affective disorder (SAD).



Air Pollutants: High levels of air pollution associated increased rates of depression and cognitive decline.



Location: Urban environments often contribute to higher stress levels, while rural and suburban settings can impact access to mental health resources.

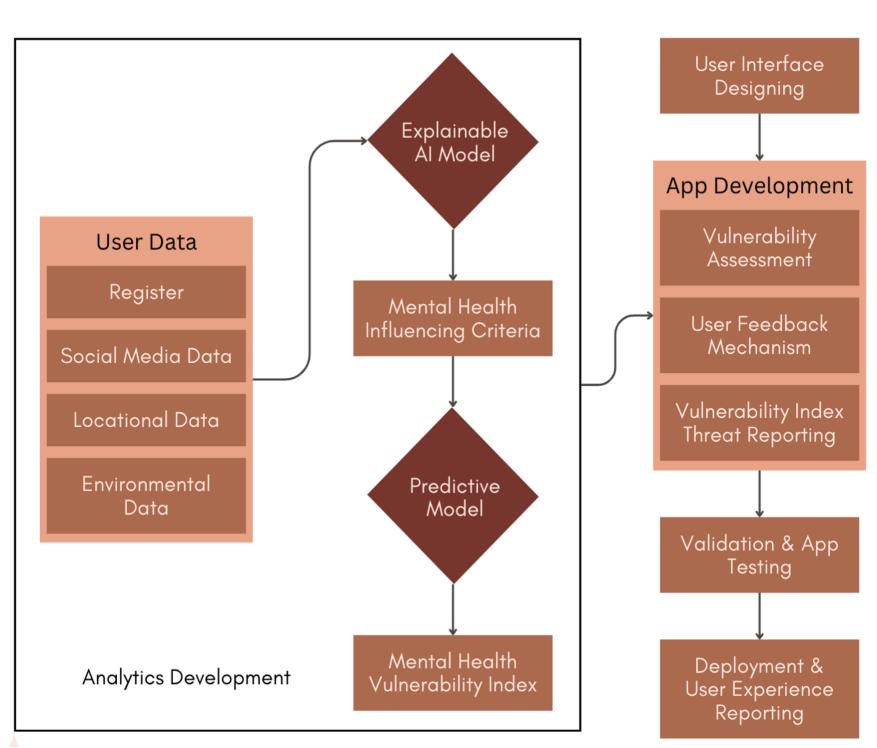


an innovative mental health **eMindGuard** assessment app designed for young adults, including college students. It utilizes a unique blend of Social Media data, Environmental factors, and Locational information to offer a comprehensive evaluation of an individual's mental health vulnerability.

### Methodology and User Journey

#### **Data Collection**

- ✓ Social Media Data: The app gathers data from social media platforms to analyze users' emotions, thoughts, and behaviors.
- ✓ Locational Data: It utilizes GPS coordinates and points of interest like urban facilities, events, and crime rates.
- ✓ Climatic Data: eMindGuard incorporates weather and air quality data, providing insights into external factors that affect mental health.

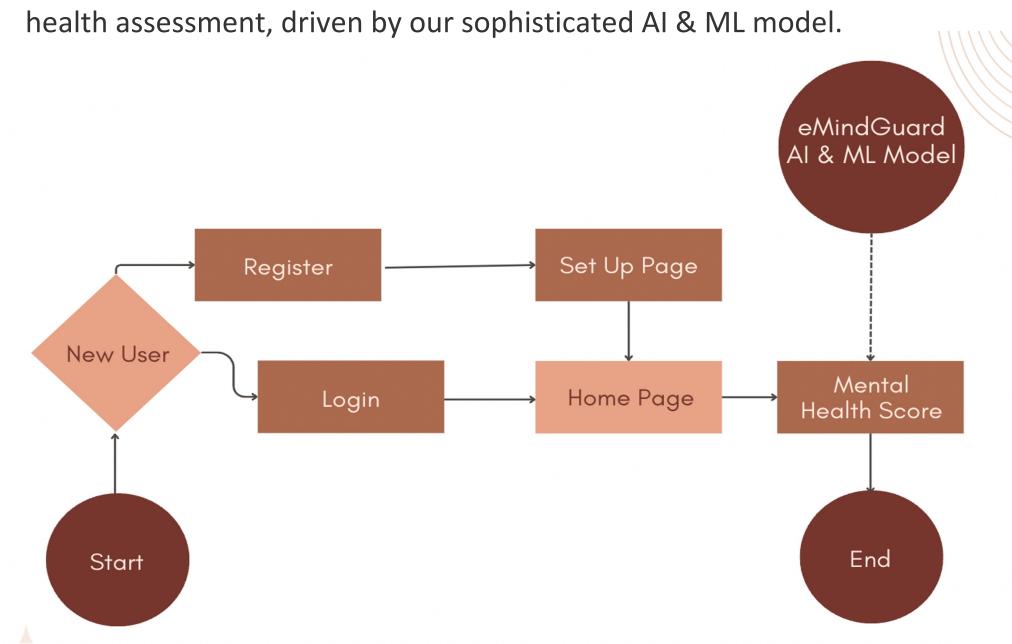


#### **Data Analysis and Predictive Modeling**

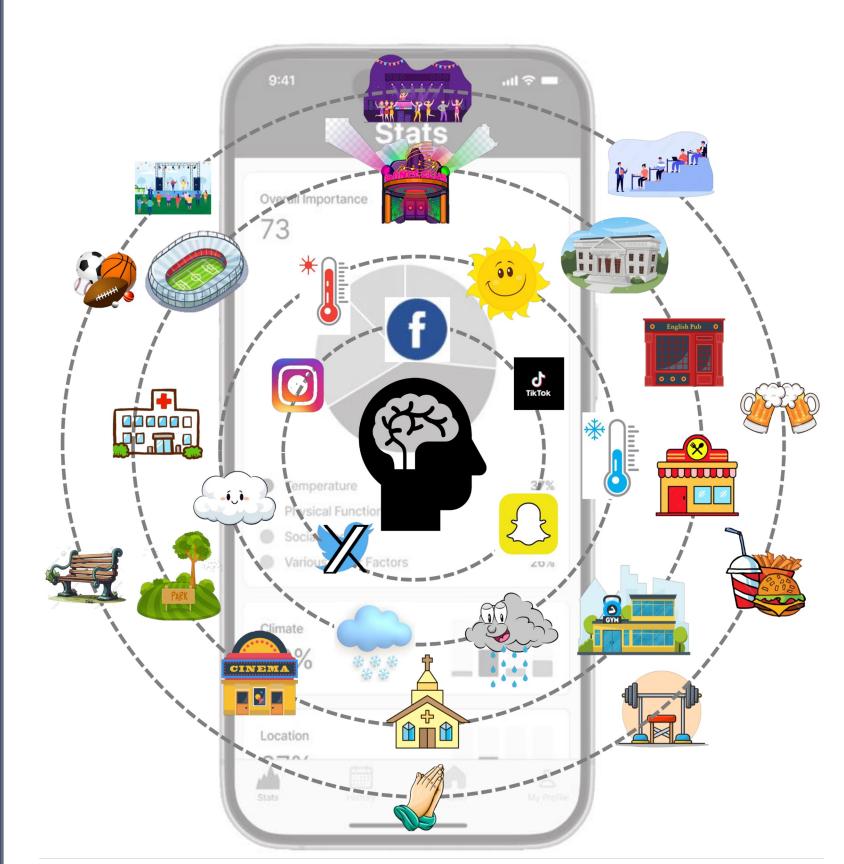
- ✓ Advanced Analysis: Using state-of-the-art explainable AI techniques and predictive modeling, the app deciphers complex relationships among various determinants of mental health.
- ✓ Vulnerability Matrix: It generates an easily interpretable vulnerability matrix that provides users with a clear understanding of their mental health vulnerabilities and influencing factors.

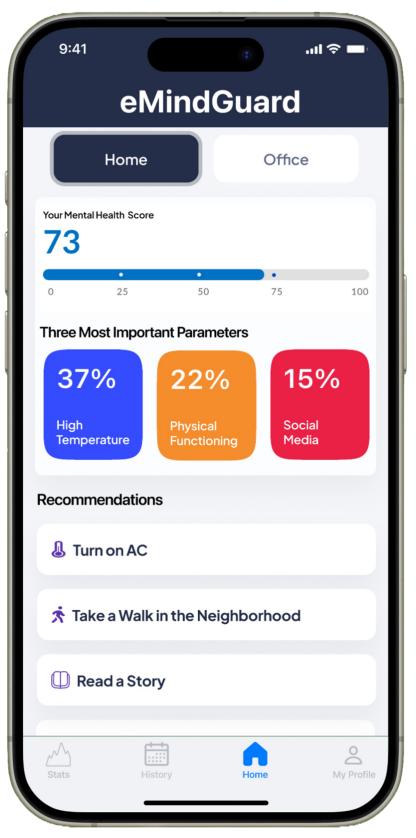
#### **User Journey**

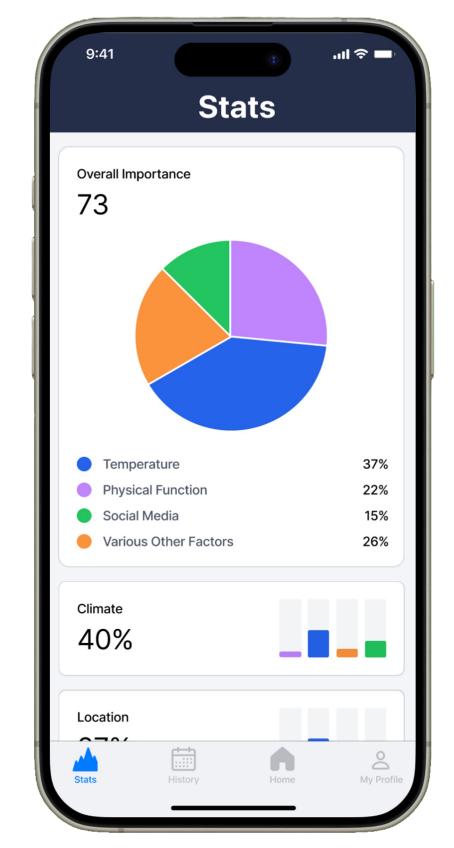
From initial sign-up and personal setup to receiving your tailored mental

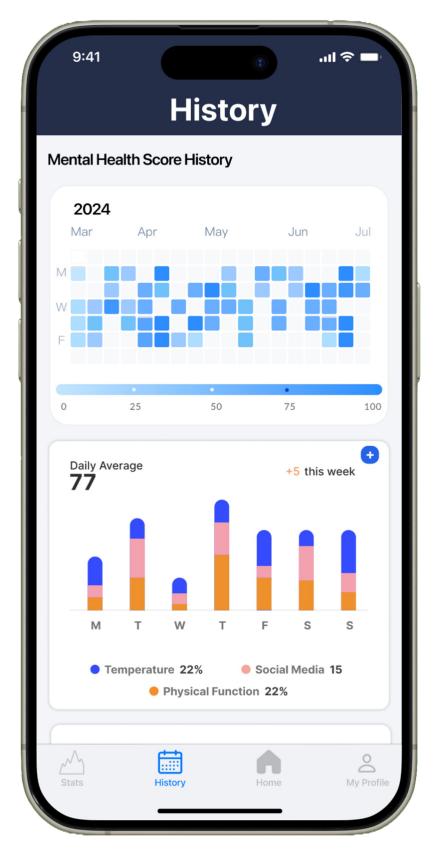


# eMindGuard Mobile Application

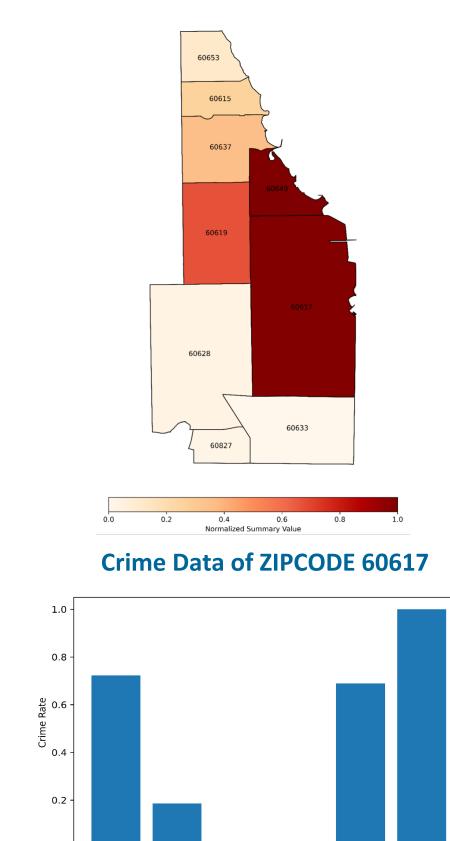


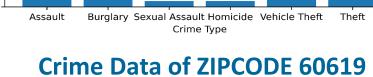


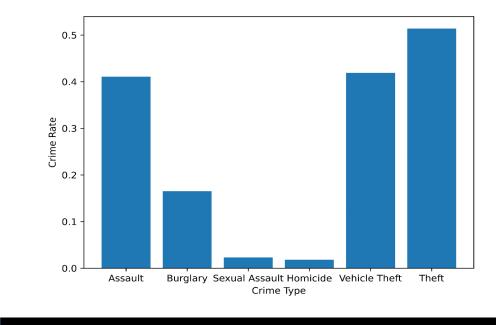




## **Crime Data Integration**







#### Why eMindGuard?



Holistic: eMindGuard combines social media sentiments, environmental data, and location for a full mental health picture.

Transparent: Explainable AI ensures clear and insightful assessments.

Personalized: Custom suggestions and alerts support users in critical moments.

**Scan to Visit eMindGuard Web Porta** 



**Sponsors** Our work is sponsored by **Cardiff-UIC System** Seed Grant and Global Wales Partnerships Fund.





