

# Hypertension Digital Health Study

Team Members: ZhiXin Li, Audrey Soares

Project Sponsor: Dr Peter Washington and Ali Kargarandehkordi

Hawaii Digital Health Lab



INFORMATION & COMPUTER SCIENCES

UNIVERSITY of HAWAII at MĀNOA



## Problem

According to the Department of Health Chronic Disease Prevention & Health Promotion Division, **one in every 3 adults in Hawai'i has been diagnosed with hypertension.**

Native Hawaiians and Pacific Islanders face a rate of 628 deaths per 100,000 residents which is far greater than the 154 deaths among Asians and 167 deaths among White residents in Hawai'i.

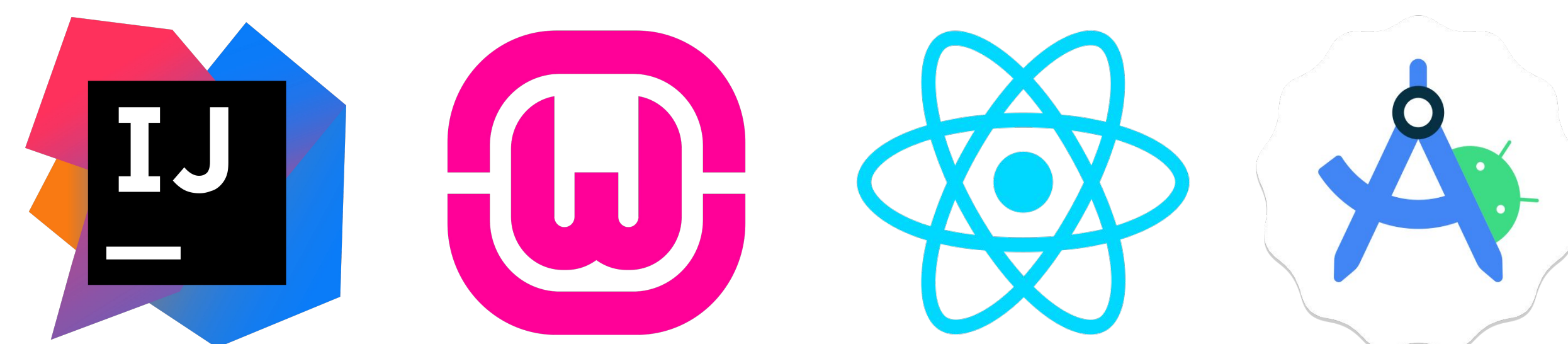
## Solutions

Integrates a cognitive-based Stroop game feature into STress ANxiety Detection App (STAND), uniquely designed to measure and analyze stress levels in real-time. This innovative approach allows users to understand their stress patterns, a crucial factor in managing hypertension.

## Methodology

- Agile methodology with weekly sponsor meetings
- Repository provided by Ali Kargarandehkordi
- Both team members took part in all roles and responsibilities

Tech Stack: IntelliJ, WampServer, React Native, Android Studio, Github



## Tasks Accomplished

The Stroop game in 'Stand' challenges users to quickly **identify colors of words under time pressure**, aiding in the assessment of cognitive stress responses.

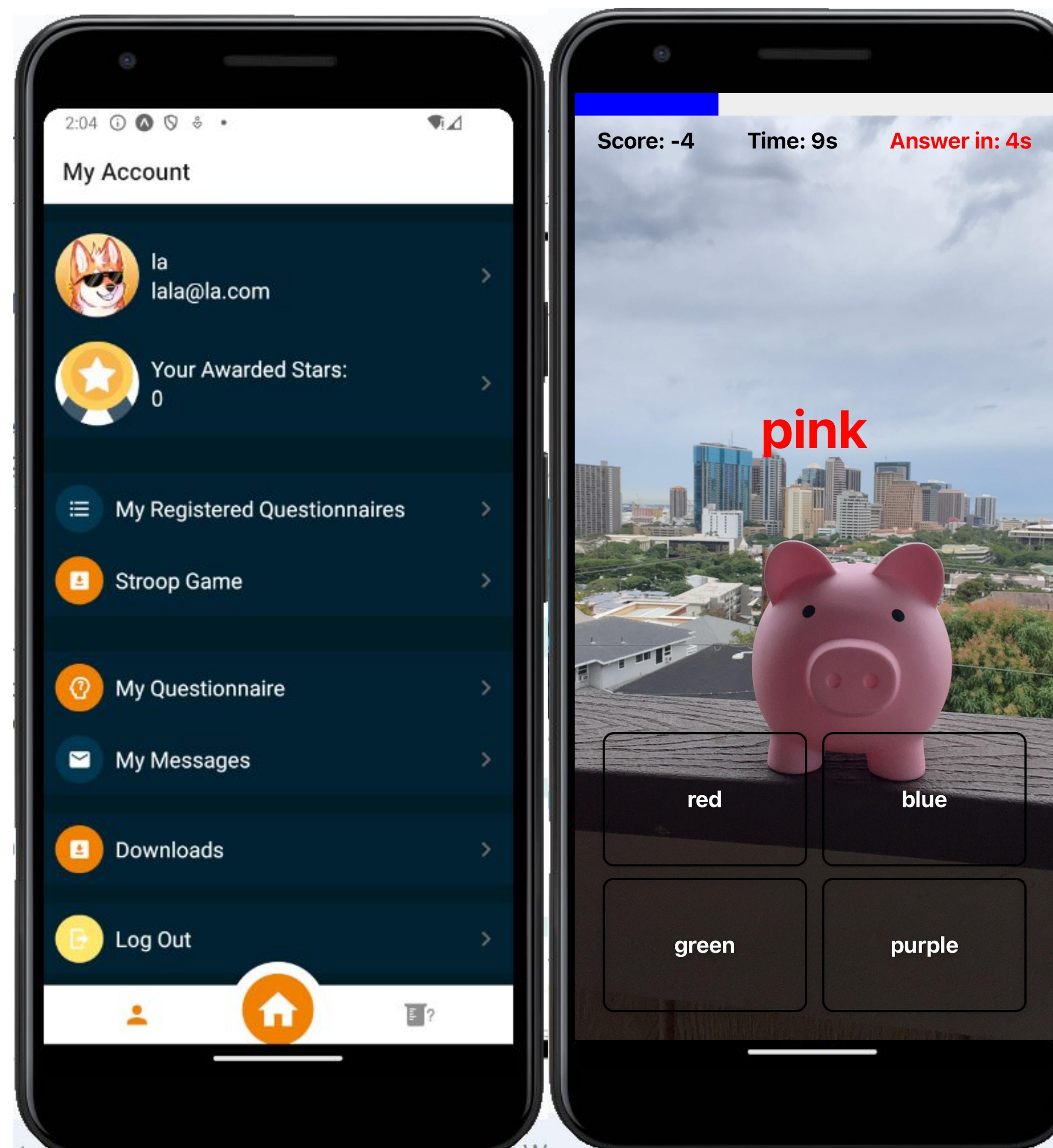


Figure 1: Account Screen

Figure 2: Stroop Game Screen

- Successfully implemented a Stroop game using React Native.
  - Users have 30 seconds to correctly answer as many choices as they can
  - Points are cumulative so a wrong answer results in a reduced score
  - Recorded participant interactions for data analysis.

## Challenges

- No prior experience with mobile games slowed down progress at the beginning of this project
- Difficulty upgrading from expo SDK 46 to 47
- The technical challenge of efficiently uploading and storing gameplay video recordings on the server for analysis.

## Learnings

- Mobile app Creation with back end and front end
- Familiarity with device emulators
- Expo SDK (software development kit)
- handling of camera permissions across iOS and Android platforms to ensure reliable access for video recording features.

## Next Steps

- Develop AI algorithms to analyze stress and anxiety from user interaction videos, enhancing the precision of our health assessments.
- Integrate Fitbit to facilitate real-time heart rate monitoring during gameplay, offering an immediate and comprehensive assessment of the user's physiological response to stress.

## Play the Game

- Install Expo Go on your phone
- Scan the QR code