Computer Science Project

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MEET THE TEAM

Mentor: Dr. Nima Toosizadeh

Project Manager: Harshil Kumbhani

Back-End: Isauro Vazquez

Back-End: Mustafa Chaudheri

PT-Assistant: Muna Lamichane

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There are currently

57,800,000

Elderly Americans (65+)

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1 OUT OF 4

Senior Americans fall every year

1 OUT OF 5

Result In a serious head or broken bone injury

20 MIN

A senior dies from a fall in the United States

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Big Picture

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PRIMARY RESEARCH FOCUS

- **Muscle Strength Training**: Reinforce primary core muscles movements.
- **Proprioceptive Performance**: major or primary contributing factor to balance recovery.

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SENSOR-BASED REAL-TIME TRACKING-GAME (SRT)

- Dr. Nima's next step in his research it to inquire a commercial reach.
- We are to develop an android application.
- Using a wearable device like the google pixel watch.
- Store the patient's data so that it can be transferred or read through users.

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OUR PLAN IS SIMPLE

1. **RESEARCH** : To mitigate this risk and study ways to improve proprioception and muscle strength, which are crucial factors in fall prevention
2. **CONCEPT:** To leverages Google Pixel Watch and mobile software to create an interactive, gamified experience to assess and improve muscle strength and proprioception in older adults.
3. **UI MOCKUPS**: To priorities simplicity, clarity and accessibility for older adults interact with software easily.

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4. PROTOTYPE: Real-Time Data Retrieval, Dynamic Path Creation, Motion feedback, Session Logging.

5. REFINE : Testing Functionality, User Interface Testing, Iterative Improvements and Design Visualization.

6. FINAL APP: Real-Time Display, User Manual, Demonstration Video and Final Report

BUT COLLABORATION IS KEY

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Project Aim

Assess proprioceptive performance of the ankle joint by collecting data from the gyroscope and accelerometer sensors in a smartwatch device.

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Functionality

Motion Tracking

Sensor data is taken from the wearable as the user rotates his ankle and the data is sent to the phone it is paired with.

CSV Logging

All the collected data is stored in a Comma separated value file format.

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Functionality

Graphing

Using external libraries, the collected data is graphed and displayed on the phone screen.

Tracking

The x-y rotational data is visualized as a single point, moving in accordance with the wearer.

Path Tracing

A predefined path is outlined for the user to follow along by rotating the watch.

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GANTT CHART


Gantt
December 11, 2024 | 22:22:56
Q4 2024
September
October
November
December
January
Call & assign roles Sep 19 - 20
Receive slides from Dr. Toosizac Sep 20 - 24
1st meeting Sep 20
Finish Presentation Sep 20 - 23
Receive Pixel watch Sep 25 - Oct 2
2nd meeting Sep 25
Research methods Sep 27 - Oct 2
Project Report 1 Sep 30
3rd meeting Oct 2
Watch-Phone connectivity via Oct 2 - 22
Data Retrieve & Display on watc Oct 3 - 8
Create Github repo Oct 4
4th meeting Oct 9
Prototype 1 Oct 9
5th meeting Oct 16
Gyroscope & Accelerometer Oct 17 - 23
6th meeting Oct 23
Progress Report 2 Oct 24
7th meeting Oct 30
Prototype 2 Nov 4
8th meeting Nov 6
9th meeting Nov 13
Integrate Start/Stop button on Nov 14 - 19
10th meeting Nov 20
Save collected data in .CSV Nov 21 - Dec 3
Project poster Nov 21 - Dec 3
11th meeting Nov 27
Configure graph to show in real Nov 28 - Dec 3
12th meeting Dec 4
Create User Interface Dec 5 - 9
Create predefined path Dec 5 - 10
Display graph on predefnied pat Dec 5 - 10
Final Progress Report Dec 12
Present Final Product Dec 12

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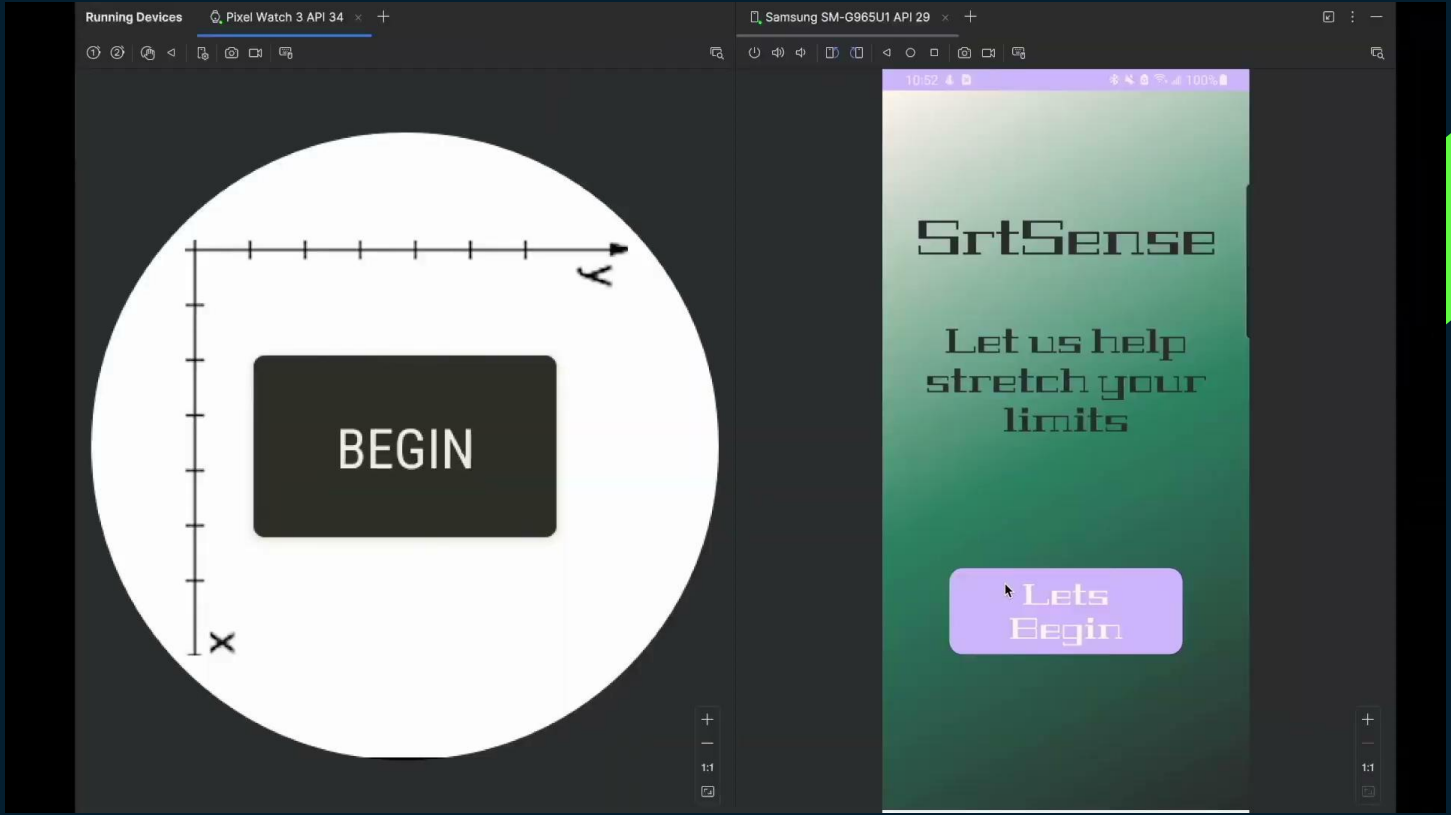
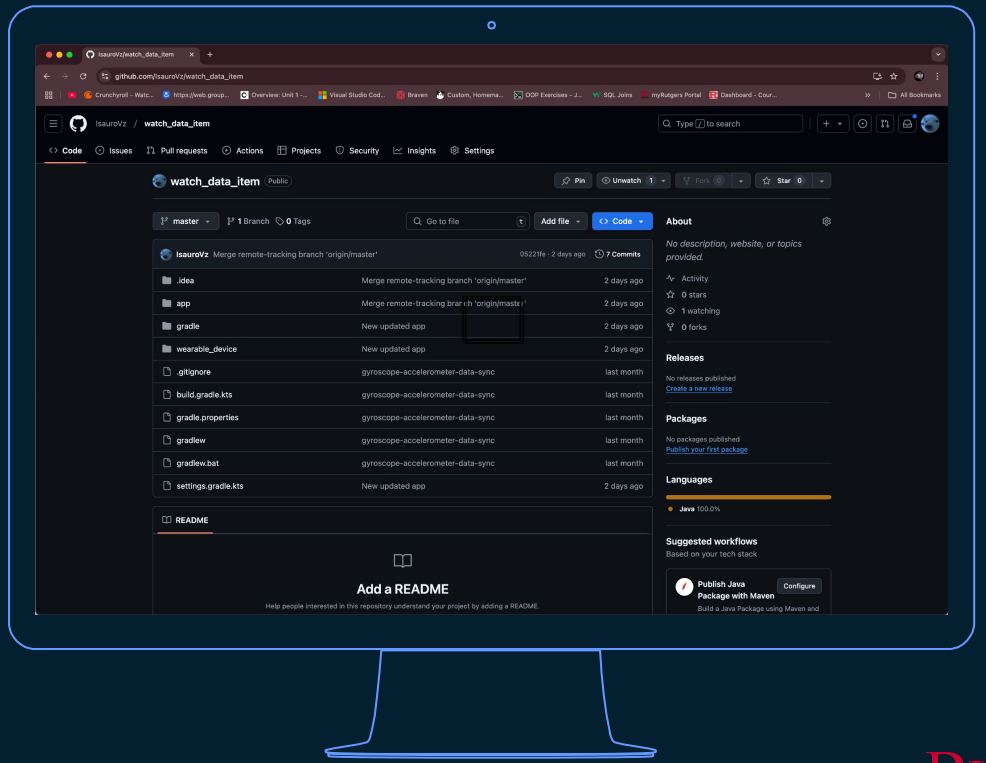
ANDROID PROJECT



GITHUB REPOSITORY

We uploaded our code to GitHub as a repository.



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THANK YOU!

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