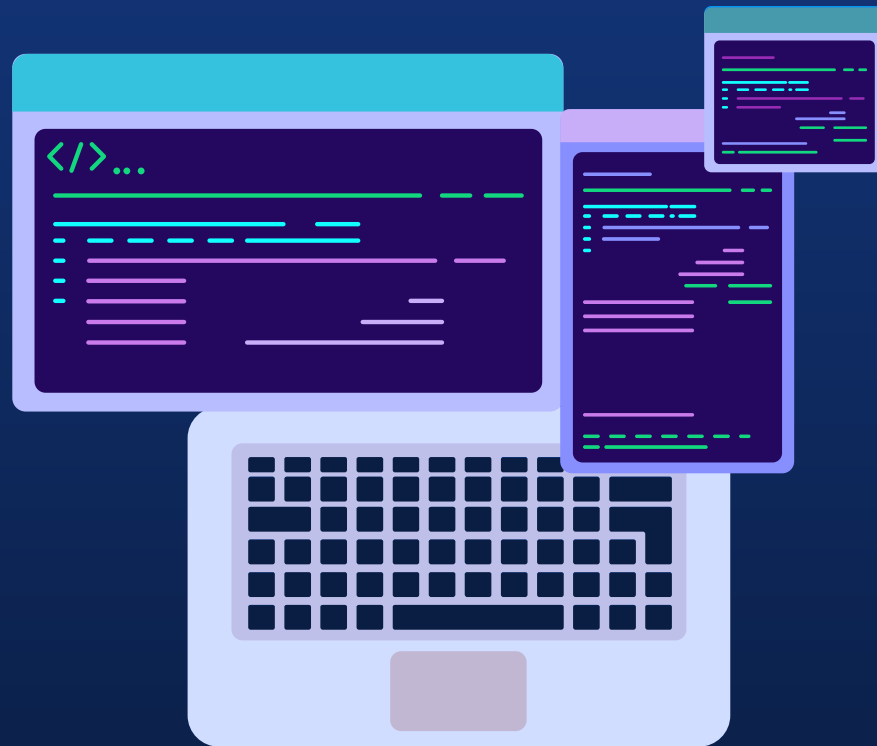# OPEN-SOURCE REHABILITATION GAME

OUR TEAM: Next-Step

Jett Koele   **Benjamin Huntoon**   **Naima Ontiveros**   **Kendall Callison**

CS Faculty Mentor: Scott Larocca

Project info: Open-Source Game Application to Aid Rehabilitation Technology

Robotic prosthetics designed to help patients with limb rehabilitation

Developed by the Biomechatronics Lab here at NAU

Our Goal -

To convert the raw data into interesting/gamified graphics to encourage patients to achieve personal training goals.
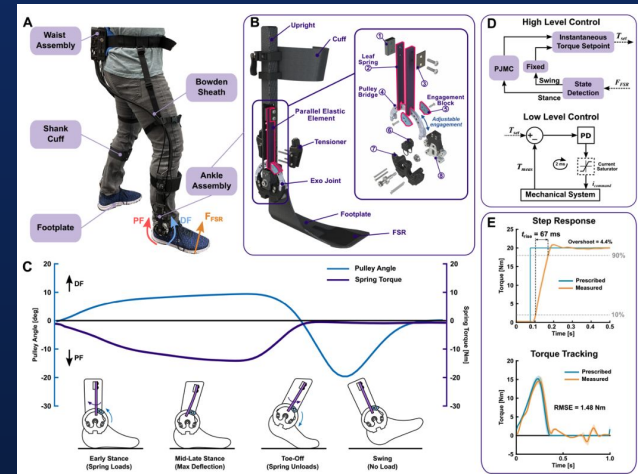
Project info: Open-Source Game Application to Aid Rehabilitation Technology

Key Components:

- Instant visual/auditory feedback

- Gamification of feedback - giving users a motivating progress

- Custom set goals - a PT has the ability to set goals based on each

  patient

- Open Source - the software must be designed to scale well with

  new implementations of the project

Client info:

Biomechatronics Laboratory

- Dr. Zachary Lerner, Associate Professor Department of Mechanical Engineering Northern Arizona University zachary.lerner@nau.edu

- Dr. Jack Williams, Postdoctoral Scholar Department of Mechanical Engineering Northern Arizona University jack.williams@nau.edu

The Problem and the Solution:

Problem:
- There is a lack of an impactful way to engage the user
- No real effective way for researchers to gauge users' progress
- No documentation being recorded for research purposes
- No sensor data being collected

Solution:
- Add a component to the current UI that will display a goal for users in a fun way and collect user data for researchers to analyze

- Add a backend component to the current app that will allow for storage of userdata for summary statistics for each user experience.
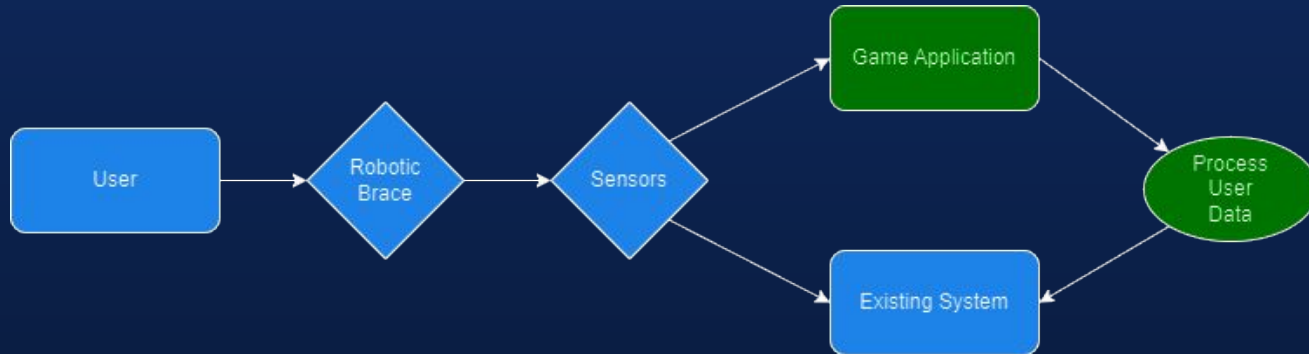
Development Plans:

To develop the project we must use the following:
- Python
- BLEAK - bluetooth library in Python
- Current version of the application developed
- Exoskeletons

Other concerns:
- Familiarize with how the current application is currently programmed
- Developing objectively fun games
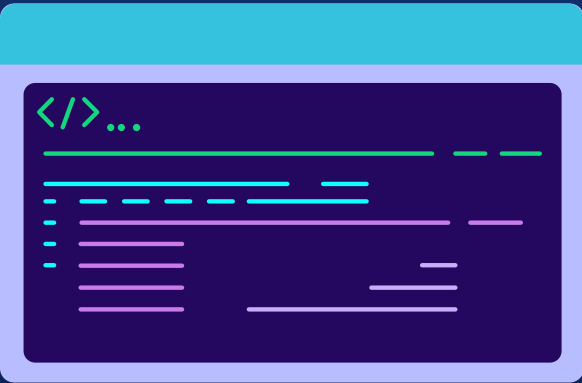- Creating a well structured, easy to use and colorful UI

Conclusion:

Our client has designed open-source software for biomedical exoskeletons to assist with rehabilitation. Together we (Next-Step) will deliver the following throughout the year:

- An eye appealing fun interactive python game
- Instant user feedback through use of hardware and bluetooth sensors
- Data collection for physical therapists
- Backend data analyzer for the data collected

THANKS

NS

NEXT - STEP