

Mission Statement

Our mission is to empower executives with a wearable solution that supports proactive cardiovascular health management through real-time biometric monitoring and integration with healthcare providers.

Background

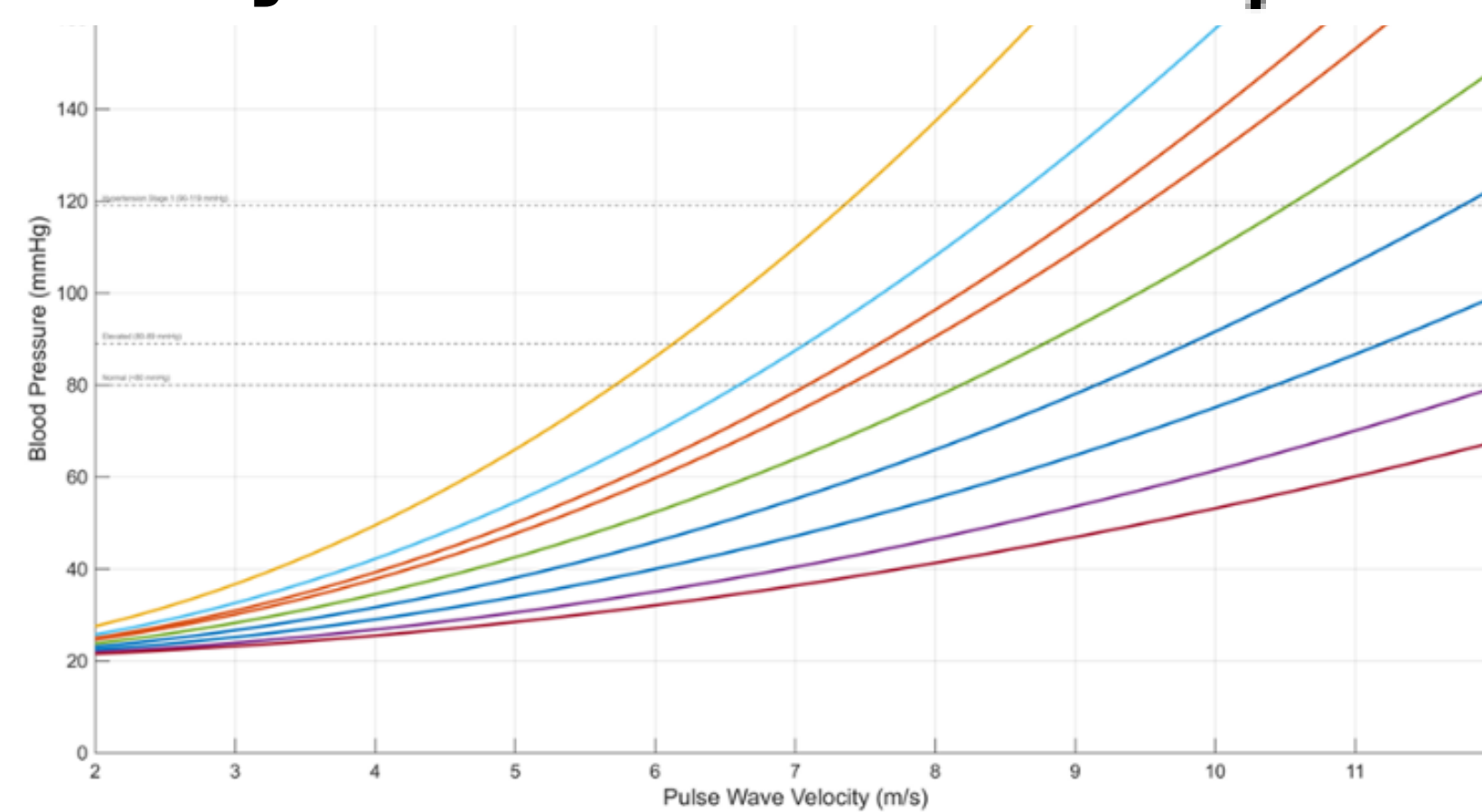
Busy executives lack time for regular health check-ups and face high stress in low-mobility environments, increasing their risk of chronic conditions. Physicians lack real-time data to address these early risk factors effectively. A solution that utilizes the modern ability to continuously monitor the health status of individuals paired with the electronic transfer of data will lead to consistent and constant oversight and care of individuals at risk for chronic conditions.

Final Technical Model

Pulse Wave Velocity: $P = \alpha V^2 + \beta$

V = Pulse Velocity
 β = Shift Constant
 $\alpha = [c \cdot a \cdot (h/r)] / (2 \cdot d)$

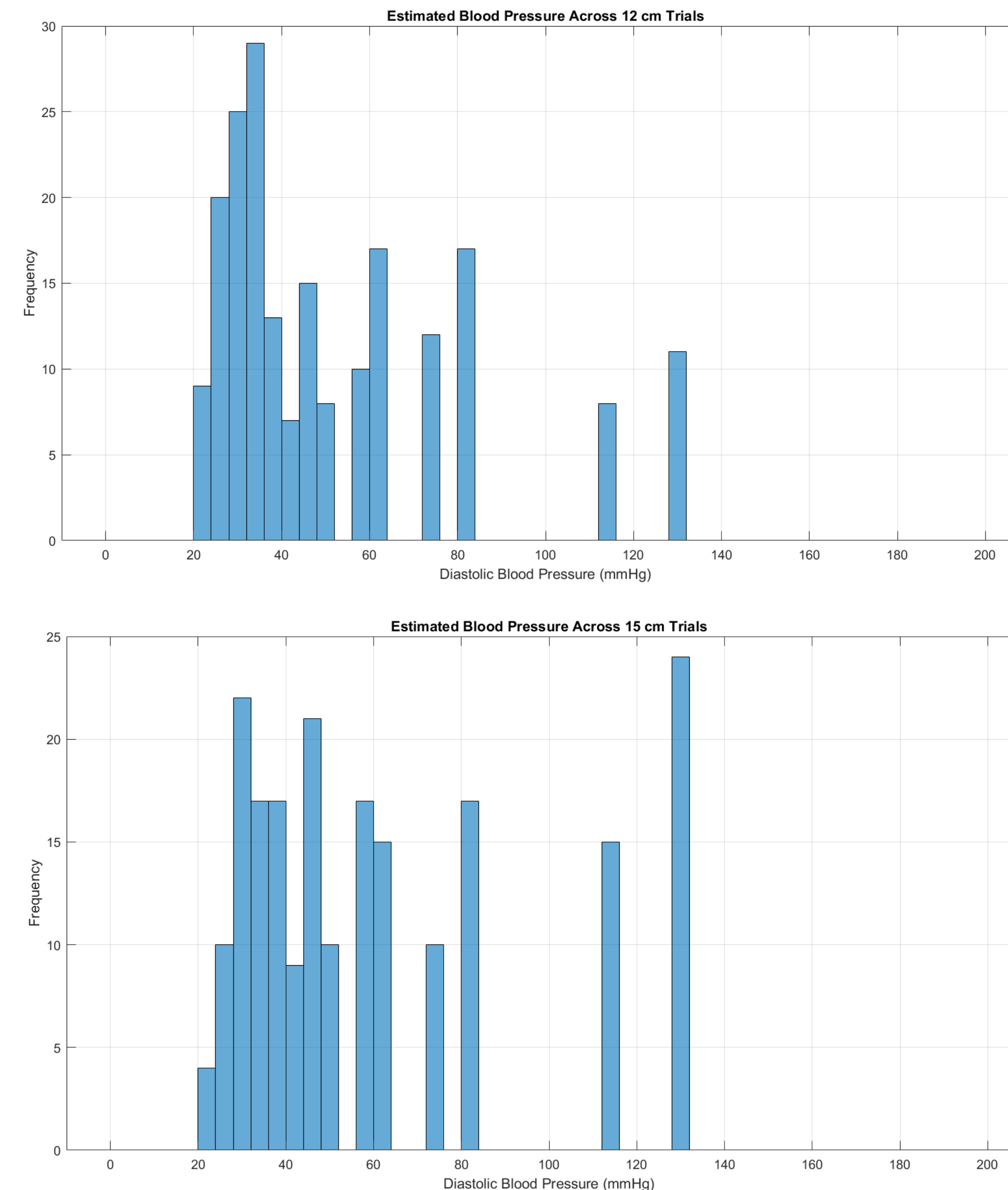
- c = Young's Modulus of Artery
- a = Material Constant of Artery
- h = Artery Wall Thickness
- r = Artery Wall Radius
- d = Density of Blood



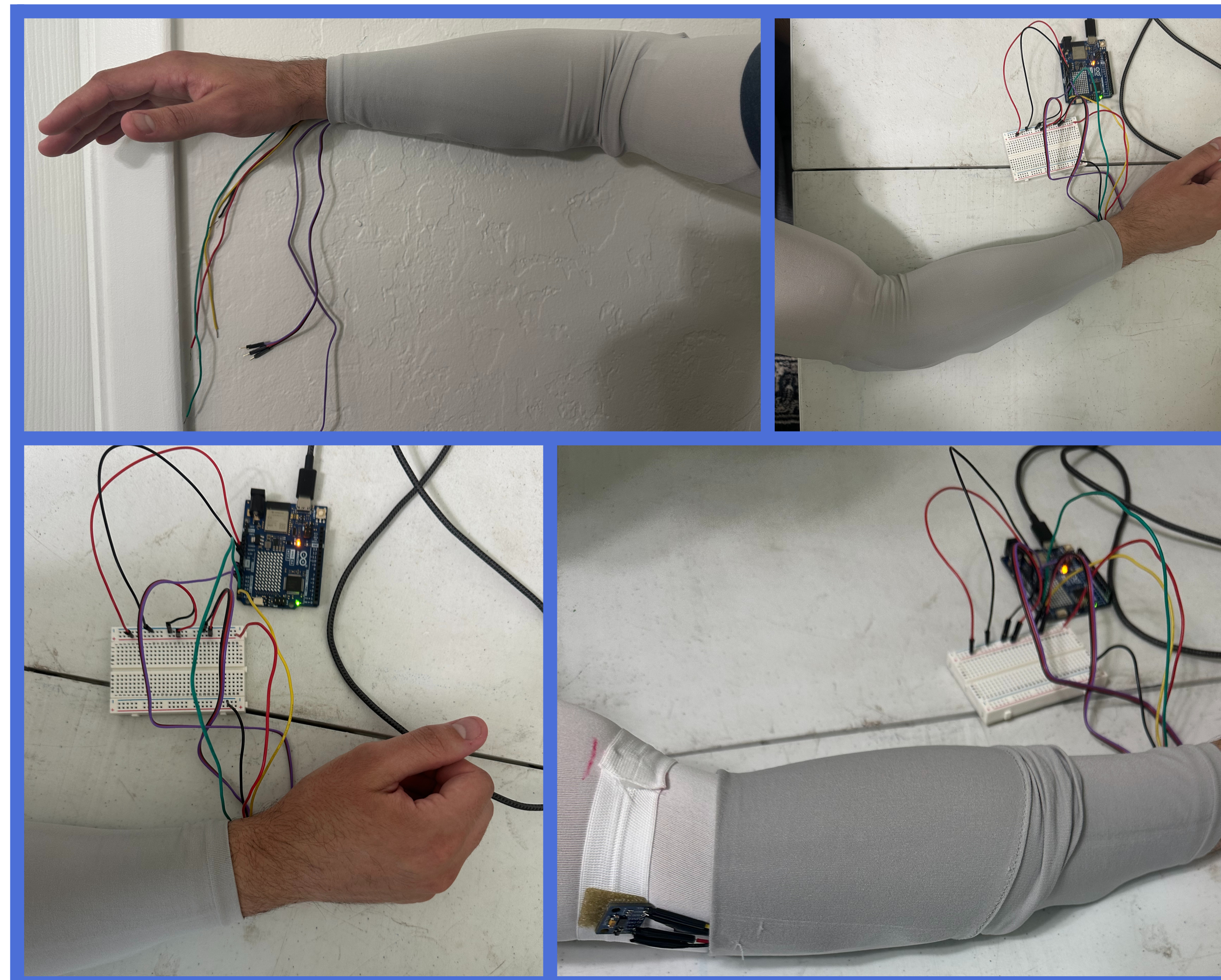
Design Status and Future Steps

The current status of our design is a wearable beta prototype that collects data which is processed externally using our specialized code. Future steps for this project include the design of a custom printed circuit board that would bypass the need for an external microcontroller, procurement of more accurate sensors to increase the precision and accuracy of the data collected, and execution of clinical trials to validate the design. The regulatory pathway for our device would include filing for 510k premarket approval as well as following current GMP and special controls for wearable devices.

Modeling and Verification Results

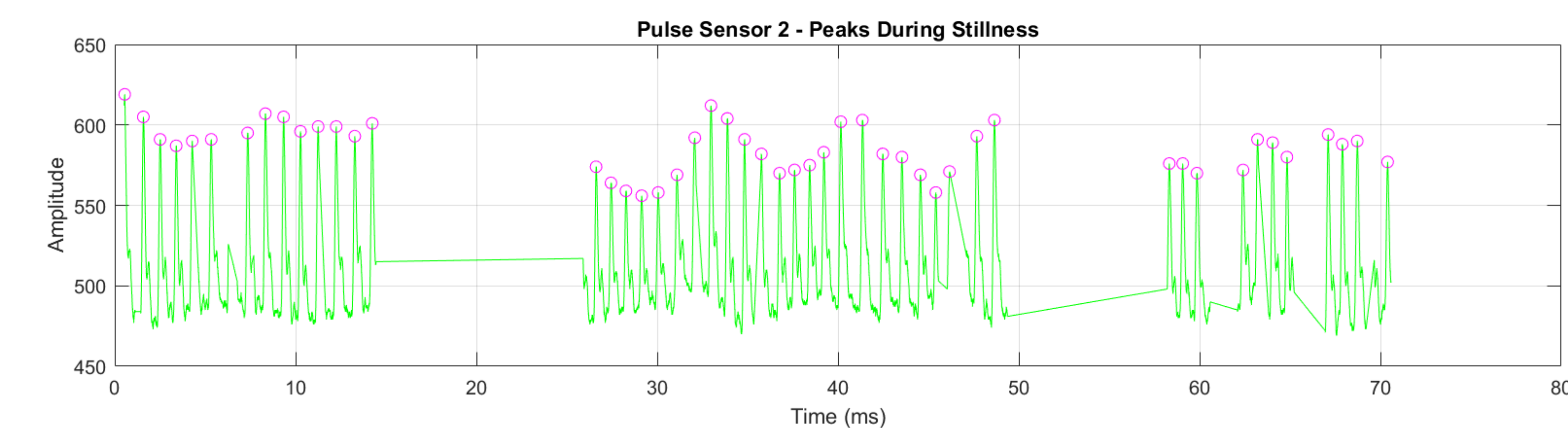
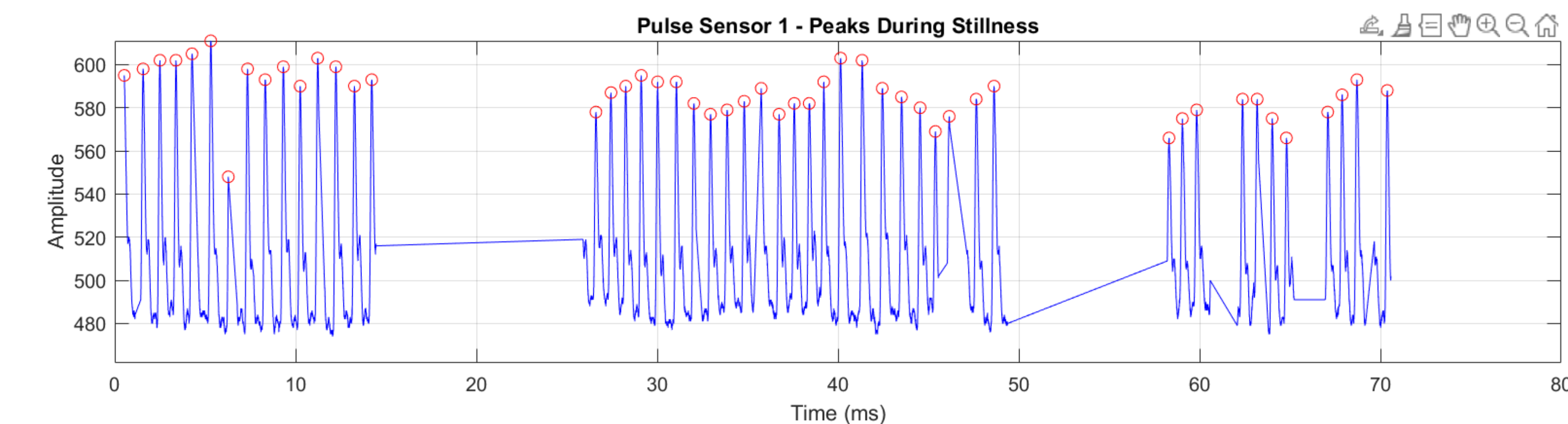
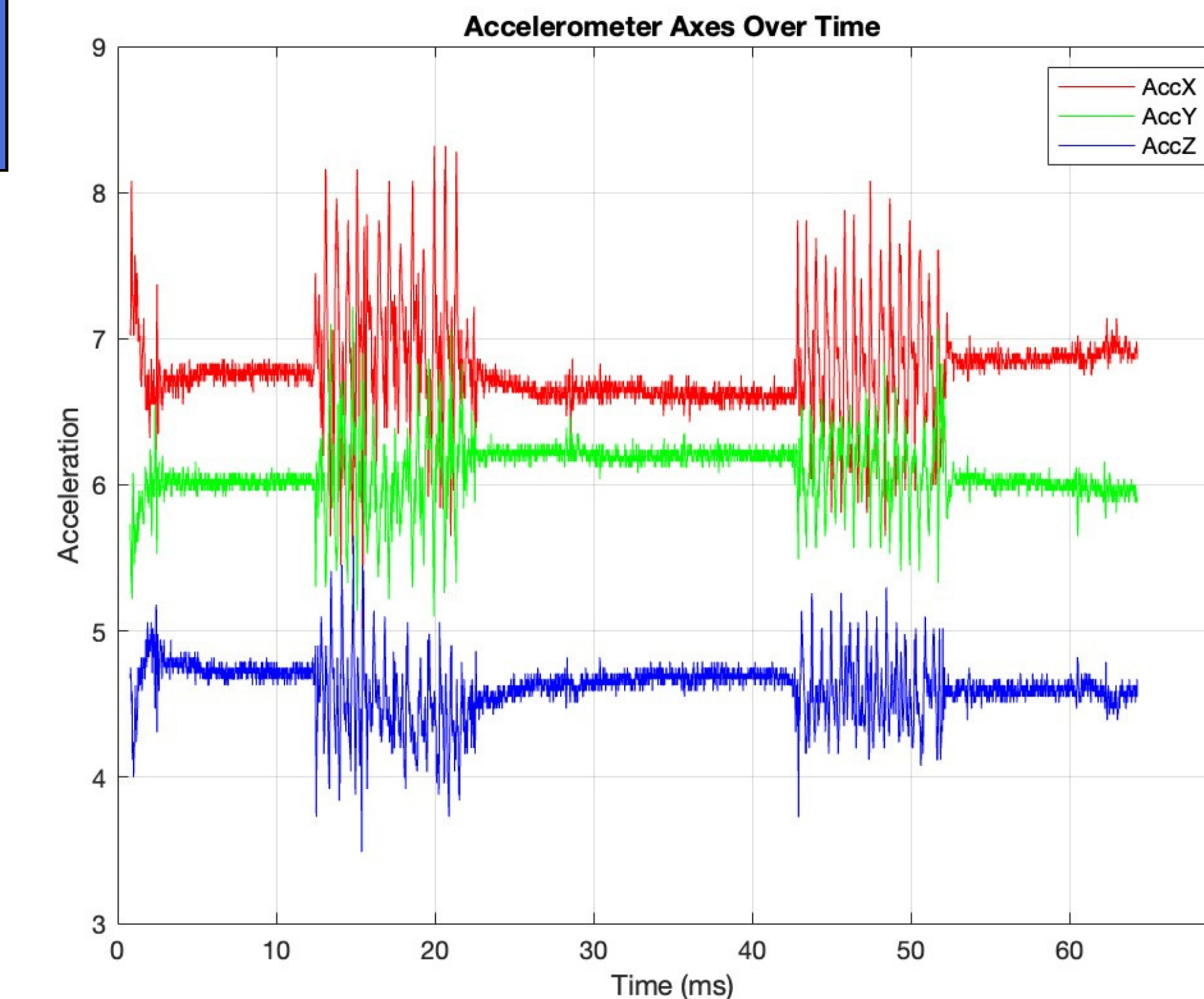


Current Prototype



Product Specifications

Device Material	Polyester/Spandex Blend
Biometric Sensors	PPG, Accelerometer
Others	Arduino, Electrical Wire



Acknowledgments

We would like to sincerely thank our clinical mentors, Drs. Michael Hayden and Atul Jain for their expert guidance, along with the Synapse Program for their support throughout this project. We also extend our gratitude to our faculty mentor, Jenny Wong, for her invaluable mentorship and encouragement. Their insights and dedication were essential to the success of this Capstone Project.



Scan for Gantt Chart



Scan for MatLab Script



SOP Documentation

