



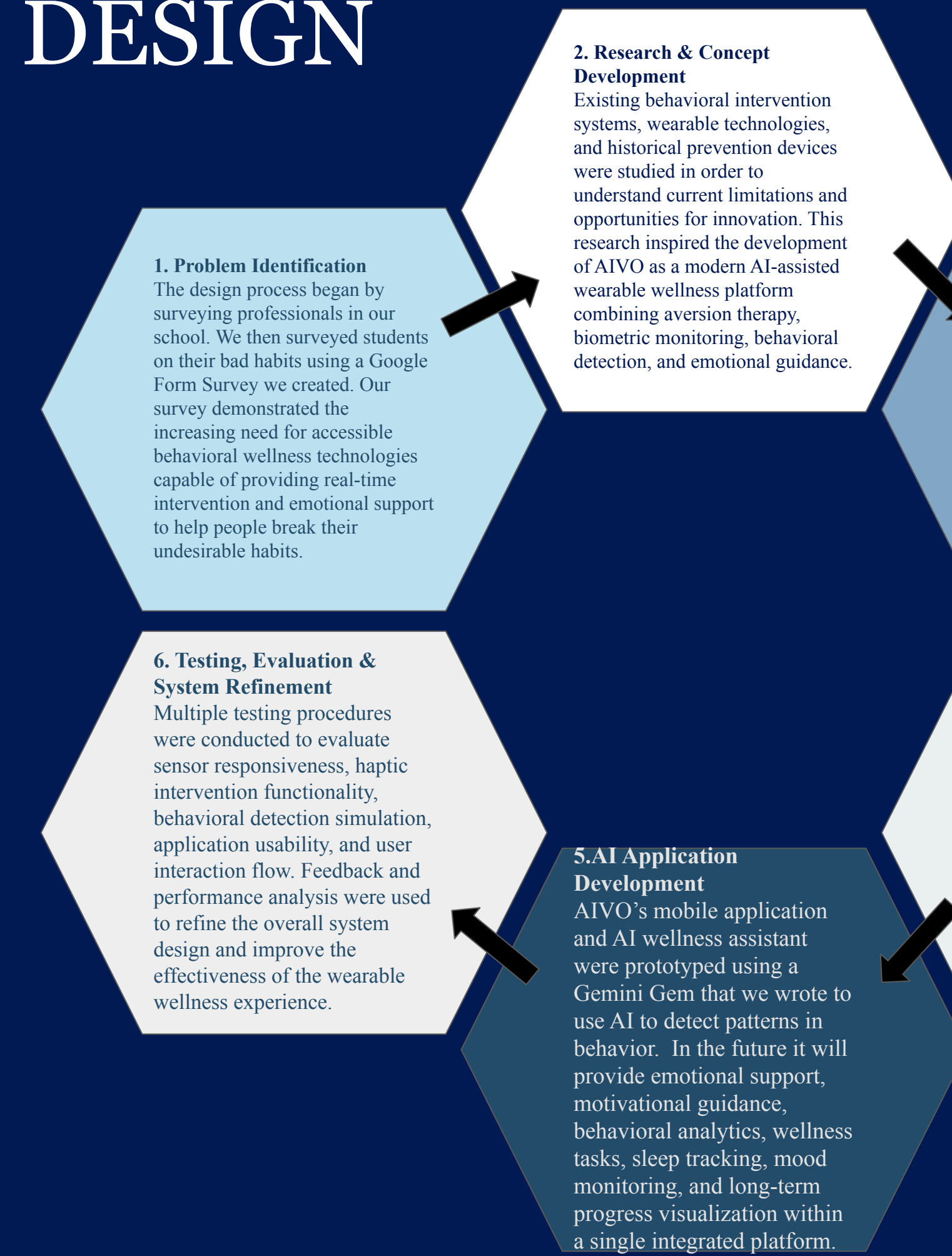
ADVISORS: TROY SILVA & ALISSON MURRAY

A.I.V.O

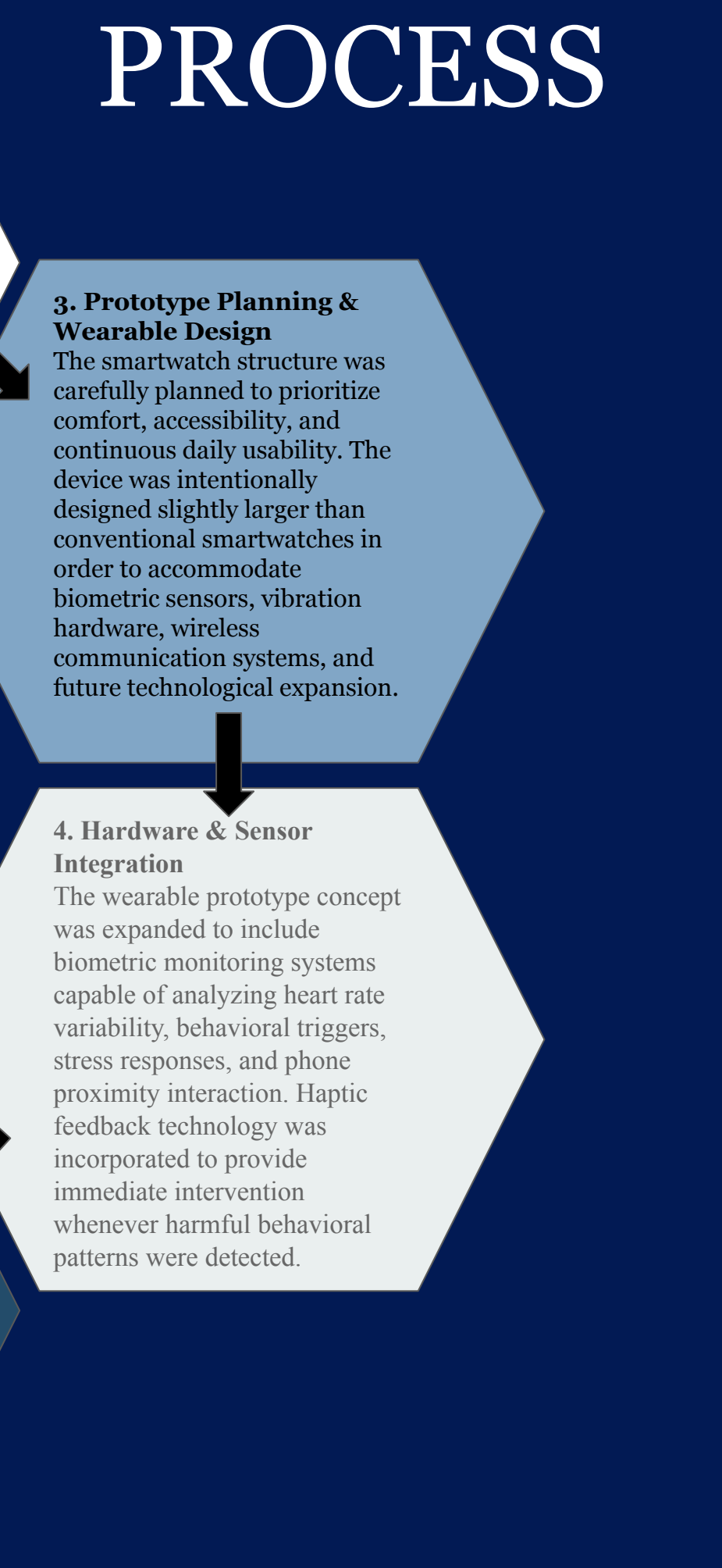
Aversion Intelligence for Vital Optimization
A wearable device that uses aversion therapy to break harmful habits and identify behavior patterns.
CENTRAL FALLS HIGH SCHOOL, CENTRAL FALLS, RI
By Emmanuel Sena, Ricardo Moreano & Nayddelin Manuico



DESIGN



PROCESS

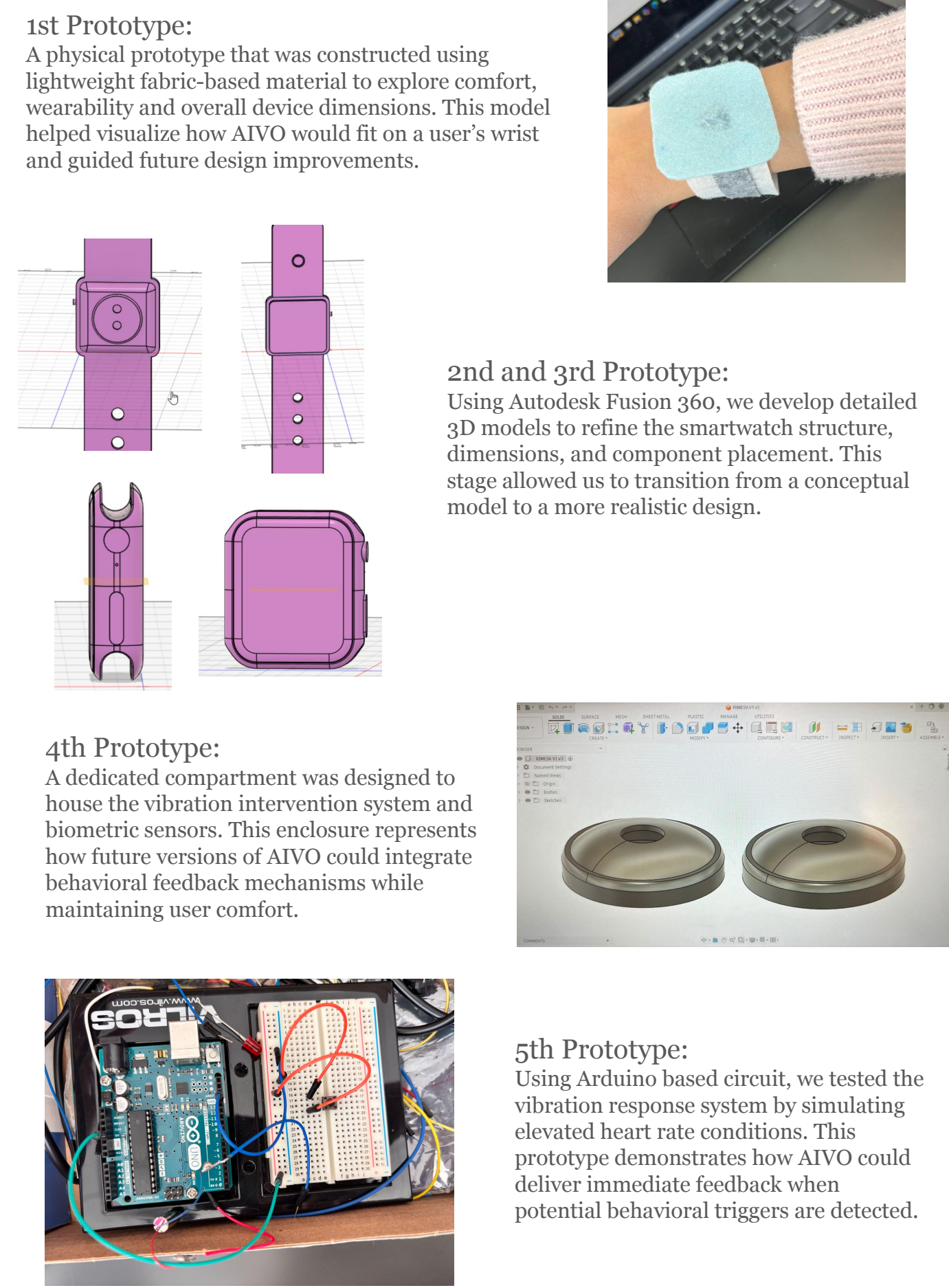


PROBLEM STATEMENT

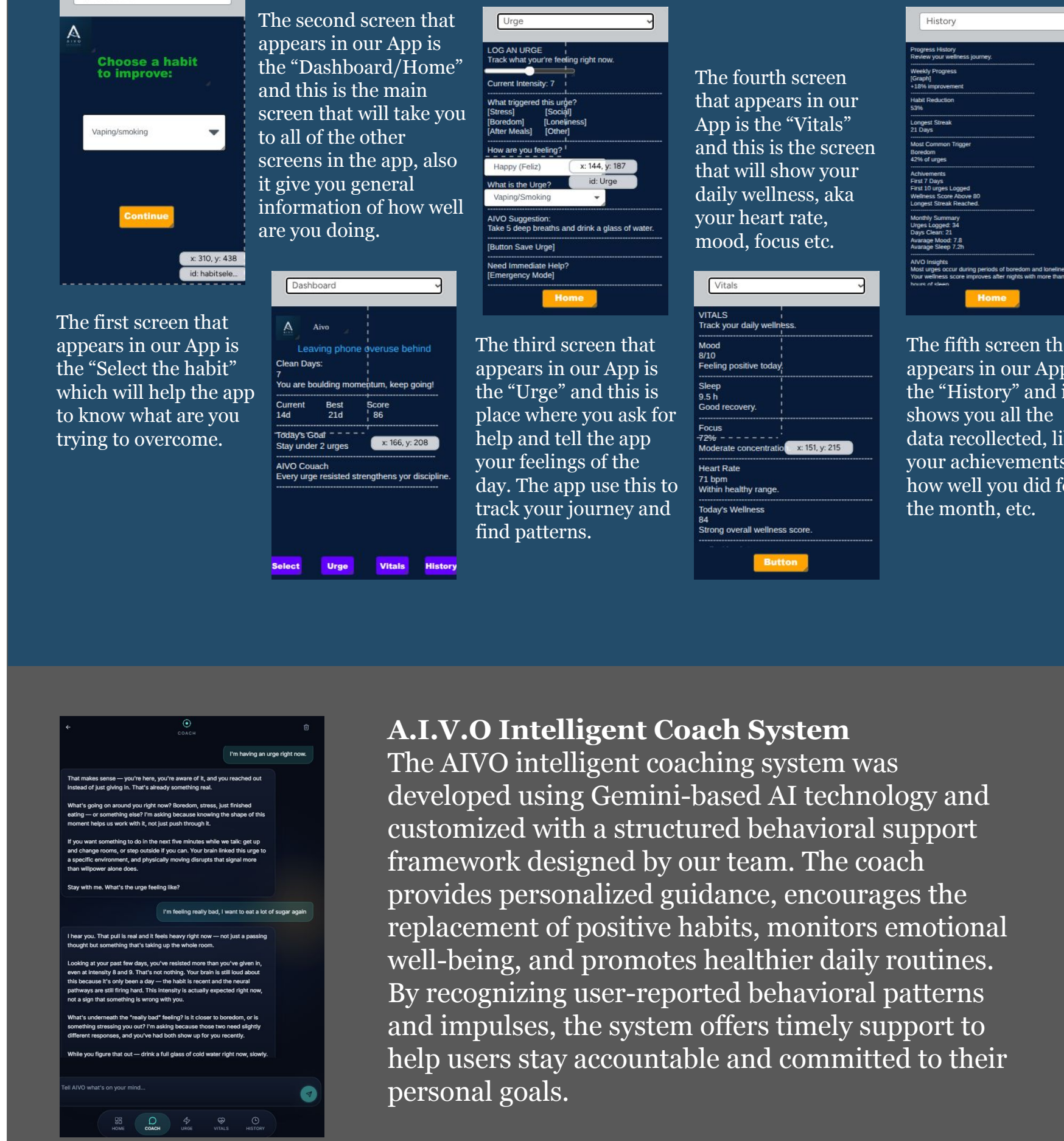
AIVO addresses an issue common in our community and others, whereas many people struggle with harmful, addictive habits such as vaping, smoking, and excessive phone or substance use. For some populations, traditional behavioral support, such as therapy, can be expensive, hard to access, or easy to ignore. As a result, people continue these behaviors in silence, risking their physical and mental health. Our solution offers private, inexpensive, effective, and consistent support to interrupt these habits.

PROTOTYPE GRAPHIC

A.I.V.O Prototypes



A.I.V.O App



OBJECTIVES

PRIMARY

To design and develop AIVO, an AI-powered wearable smartwatch system capable of detecting behavioral triggers associated with harmful habits such as vaping, smoking, excessive smartphone use, and repetitive behaviors related to stress or depression through biometric monitoring and real-time intervention technology to help break addictive behaviors.

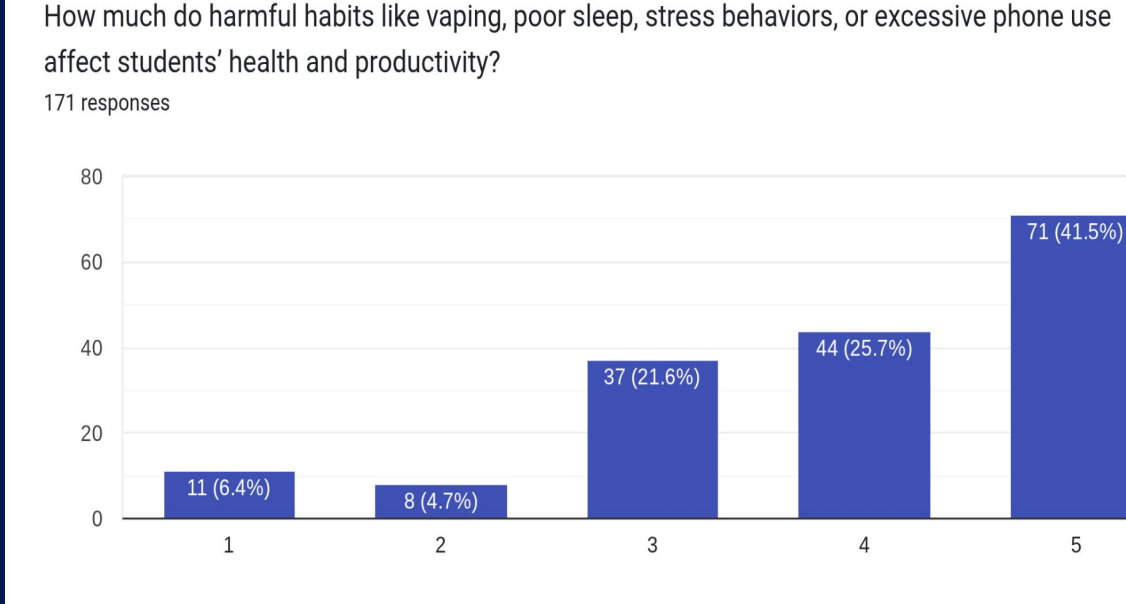
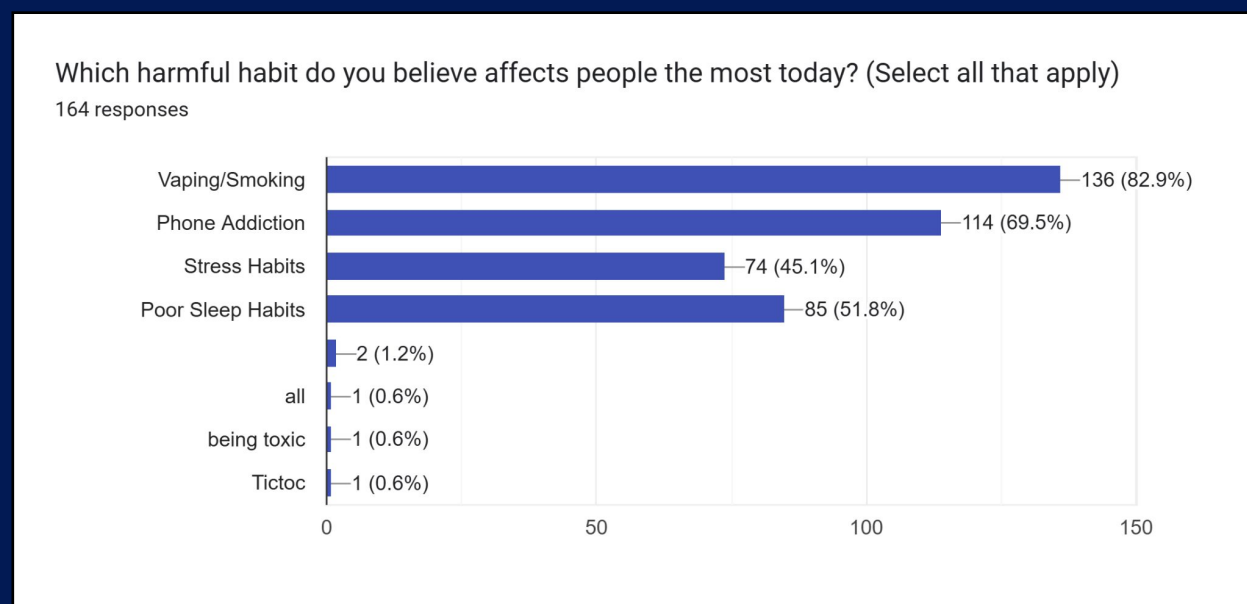
SECONDARY

- Utilize biometric sensors to monitor heart rate changes, motion patterns, and behavioral indicators associated with impulsive habits.
- Develop a wearable invention system capable of detecting behavioral triggers associated with harmful habits through biometric monitoring and movement analysis.
- Create a real-time behavioral feedback system capable of delivering alerts and haptic intervention responses intended to interrupt repetitive unhealthy actions.
- Design a mobile application capable of monitoring user progress, emotional wellness, sleep patterns, urges, and health-related analytics within a single organized platform.
- Implement a phone proximity detection feature capable of identifying excessive smartphone interaction and encouraging healthier digital habits.
- Explore how wearable and artificial intelligence can be combined to modernize traditional behavioral history analysis.

INNOVATION STATEMENT

AIVO represents the next technological evolution of behavioral intervention systems. While previous solutions focused primarily on simple reminders or isolated habit detection methods, AIVO modernizes these concepts by combining wearable technology, biometric monitoring, artificial intelligence, emotional support, and real-time intervention into a single integrated platform. By building upon past behavioral prevention technologies, AIVO transforms traditional habit interruption methods into an advanced AI-powered wellness ecosystem designed for modern lifestyles.

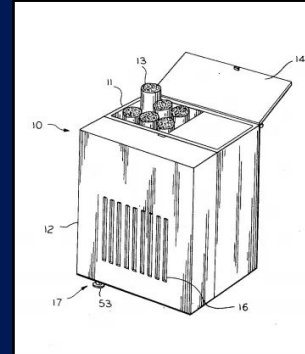
VISUAL DATA



RESEARCH

Historical Behavioral Intervention

In 1992, inventor Lewis R. Toppel patented an anti-smoking reminder device designed to discourage smoking behavior by producing coughing sounds whenever users attempted to access their cigarette pack. This demonstrated early attempts at behavioral interruption through physical reminders and negative reinforcement. More recent technologies have explored the use of smartwatch and motion-tracking sensors capable of identifying repetitive hand movements associated with smoking behavior. Some mobile applications can also generate notifications before users engage in harmful actions by analyzing behavioral patterns and predictive triggers.

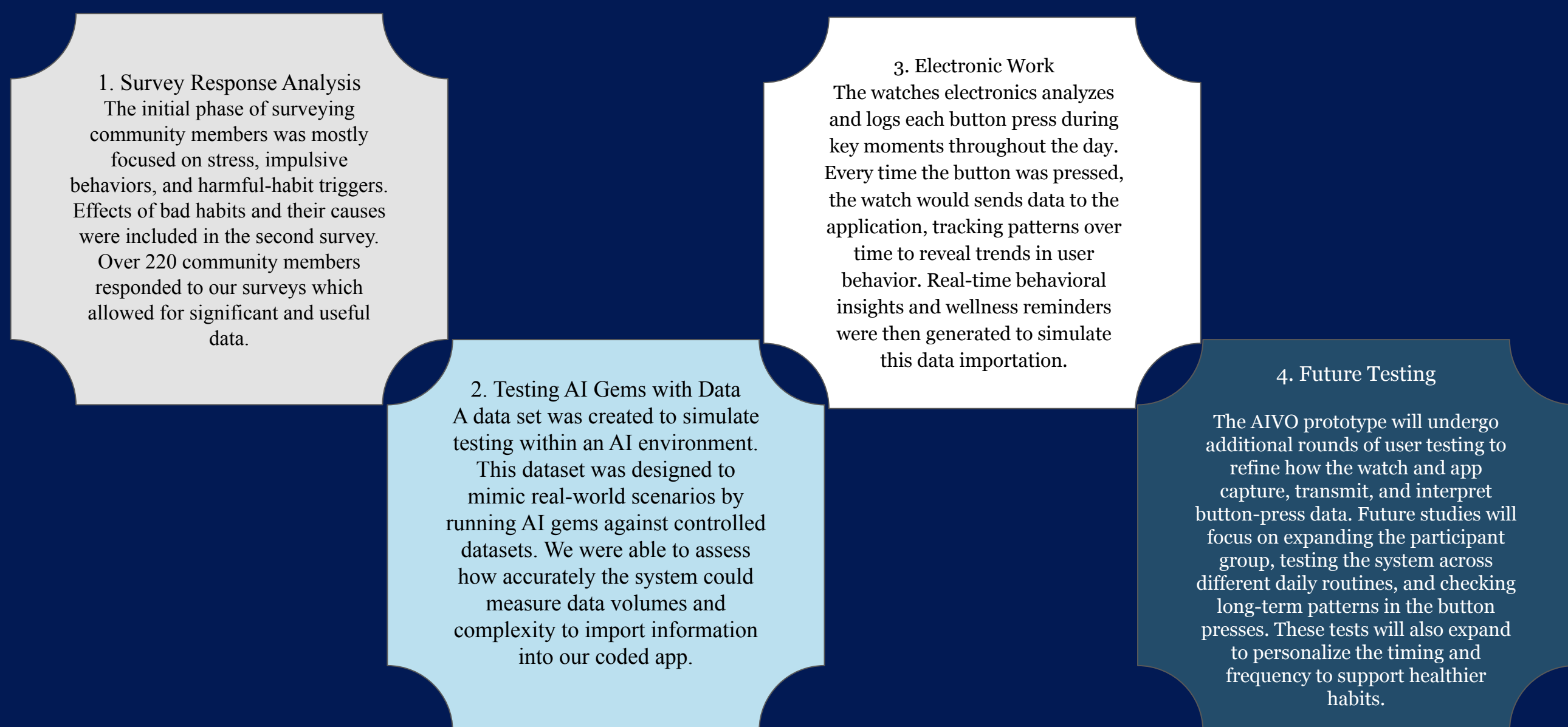


Wearable Technology & Behavioral Health Research

Recent advancements in wearable health technology have demonstrated the growing potential of smart devices to monitor physical activity, stress levels, sleep quality, heart rate variability, and behavioral patterns in real time. Modern wearable systems, such as smartwatches and biometric monitors are being utilized with increasing frequency in healthcare settings to foster healthier routines and enhance user self-awareness. Furthermore, various studies focusing on behavioral intervention systems have suggested that immediate reminders, sensory feedback, and personalized support can positively influence habit disruption and long-term behavioral awareness. Additionally, artificial intelligence is playing an increasingly significant role in wellness technologies, thanks to its capacity to analyze behavioral trends, personalized recommendations, and provide adaptive emotional support.



TESTING PROCESS



USER REQUIREMENTS

- The AIVO wearable system must continuously monitor biometric indicators such as heart rate variability and stress-related behavioral patterns in real time.
- The smartwatch and mobile application must provide immediate intervention through motivational alerts, wellness reminders, and haptic feedback whenever harmful behavioral triggers are detected.
- The device must remain lightweight, comfortable, visually organized, and suitable for continuous everyday use while securely storing user wellness and behavioral data.
- The AI-powered wellness assistant must deliver personalized emotional support, behavioral guidance, and healthy alternative activities based on user interaction and behavioral progress.

CONCLUSION & RESULTS

Results:
We obtained positive results because subjects said that when they felt the vibration on their arm, they forgot what they wanted to do and focused on the vibration, which made them more aware of what they were doing. Our survey showed data that supports the fact that our idea is very helpful and would greatly benefit people.

Conclusion:
As a team, we managed to create the app, we created the Arduino prototype, and we also developed a Gemini Gem, which accurately looks for patterns in a simulated set of data. Because of the time and equipment, we have not yet made it detect the vital signals, but the vibration motor is working correctly when the button is pushed.

Our next steps are to work on the app are to integrate everything together and test the full system on potential users. We continue to work on refining the physical design using Fusion 360 CAD design and 3D printing.

CITATIONS

How Does Aversion Therapy Work to Fix Unwanted Behaviors?, www.verywellmind.com/what-is-aversion-therapy-2796001 Accessed 5 June 2026.

Results from the Annual National Youth Tobacco Survey (NYTS) (2024), https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey-nyts Accessed 5 June 2026.

Youth and Tobacco Use, https://www.cdc.gov/tobacco/php/data-statistics/youth-data-tobacco/index.html Accessed 5 June 2026.

Community & Professional Support Integration
To create a more comprehensive wellness ecosystem, future versions of AIVO may include optional connections with counselors, educators, healthcare professionals, and support communities. This would allow users to receive additional guidance and accountability while complementing the wearable technology and coaching platform.