Company Name: HapWare
Website: https://hapware.com
Primary Contact: Jack Walters, Co-founder & CEO, Bryan Duarte, Cofounder & CTO
Email: jack@hapware.com, bryan@hapware.com
Location: Golden, CO (Hybrid options at Beck Venture Center)

Company Background

At **HapWare**, we provide people who are blind or have low vision access to nonverbal communication and social cues through real-time wearable technology. Our flagship product, **AIEye**, uses computer vision (CV) and explainable AI (XAI) to detect facial expressions, emotions, gestures, and body language—then translates these into intuitive vibrations on a wristband.

The system includes smart glasses with an integrated camera, a discreet haptic wristband, and a smartphone, which acts as the **central processing unit** for all CV and AI models. The phone handles real-time inference and connects via **Bluetooth** to the wristband and **Wi-Fi** to the glasses.

AIEye allows users to perceive nonverbal cues like smiles, hand shakes, waves, and people walking away, empowering them to navigate social settings with confidence. After just 90 seconds of use, users can learn to recognize up to **seven new cues** at 95% accuracy.

Project Title

AIEye Mobile App: Computer Vision to Haptics

Project Description

This project centers on building the **AIEye mobile app** the command center for the entire wearable system. The app will be responsible for:

Core Functions:

1. **Centralized Processing**
    - Implement on-device processing of live video feed such that each frame can be processed using Google MediaPipe Face Landmarker, Hand Landmarker, and Pose Landmarker, yielding three distinct vectors of landmark values.
    - Each landmark vector can be further processed using simple numpy operations.
    - Each processed vector is mapped to a classification label, which can be interpreted as a bit string that can be sent via bluetooth to the wristband.

2. **Bluetooth & Wi-Fi Integration**

    - Utilize the on board Bluetooth module to communicate with the wristband for sending signals (vibration output)
    - Utilize the on board wifi module to communicate with an ESP32SR chip and camera for streaming video from the camera integrated glasses
3. **AIEye Mobile UI**
    - Familiarization
        - Interface to allow the user to familiarize themself with the haptic patterns
    - **Customization**
        - Interface to allow the user to select which patterns they would like to enable or disable (smile, handshake, peace sign, Etc.)
    - **Profile**
        - **Interface that allows the user to create a profile for the AIEye application**
4. **Presets**
    - Create and save profiles for different settings like “Job Interview,” “Classroom,” or “First Date”
5. **Over the Air Updates**
    - **Apart from the mobile app updates which will be done through the App Store, we would like to be able to push out software updates to the glasses and/or wristband from the application**
6. **Subscription management**
    - Allow users to control their subscription and payment options (subscribe, pause, cancel)
    - Integrate with Apple Pay, Google Pay, and secure credit card
7. **Community Feedback**
    - Allow users to give feedback and make recommendations from the app
8. **System Logging**
    - Log system events such as when the app is being used, duration of use, which patterns are selected, Etc.

Desired Student Skills (not required—students are expected to learn):

- iOS mobile app development
- Computer Vision model integration
- Bluetooth and Wi-Fi networking in mobile apps
- Developing accessible mobile UI (VoiceOver screen reader)
- Git version control
- Agile SCRUM development workflow
- JIRA project management and progress tracking
- Clear documentation of work
- Team work, communication, and time management
- Fast learning cycles and lean methodology

Preferred Team Size:

4–5 students

Internship Potential:

Yes. Top-performing students will be considered for internships or full time paid roles with equity packages following the project.

Work Location:

Remote-first. Hybrid in-person meetings at Beck Venture Center.

NDA & IP Statement:

Students will be asked to sign a **mutual non-disclosure agreement (NDA)**.
Students will **NOT retain ownership** of their work.

Why Choose This Project?

- **Mission-driven**: Help unlock communication for blind, low-vision, and deafblind individuals.
- **Real Experience:** mobile app, computer vision, AI, Bluetooth/wifi communication, it's all here.
- **Real-world application**: Build technology that’s being piloted in schools, nonprofits, and vocational rehab programs.
- **Startup momentum**: Collaborate directly with the founding team of a Mines-born, venture-backed startup.
- **Post-project opportunity**: Internship and fulltime potential.
- **Remote-friendly and flexible for your schedule**