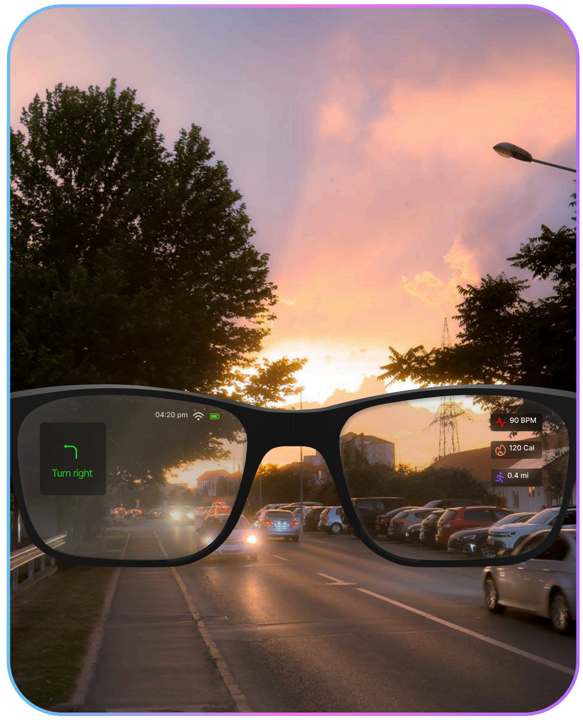
RunAR



IMT 540 - Group 5

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01 / Executive Summary

RunAR is an AR glasses concept that helps runners training for races visualize real-time performance data hands-free. Current solutions require checking phones or watches, disrupting flow and focus. Our glasses provide key running metrics and an AR ghost runner feature for enhanced motivation.

Through structured ideation and an Impact-Effort Matrix, we evaluated concepts against usability, feasibility, desirability, and impact. After exploring alternatives, we selected AR glasses for their ability to deliver comprehensive data while maintaining runner focus. Iterative prototyping included wireframes, cardboard models, and a Wizard of Oz prototype tested with real runners.

User testing revealed strong interest in navigation cues and ghost runner motivation, identifying pace and navigation as most valuable. However, users experienced visual clutter and cognitive overload, highlighting the need for a streamlined interface. Our roadmap focuses on simplifying hardware, reducing cognitive load, improving ghost runner animation, and positioning RunAR as a training tool rather than everyday running replacement.

02 / Design Problem

Runners training for races struggle to stay motivated and track their performance effectively during runs. Existing solutions require runners to frequently check their phones or watches, disrupting their flow and focus.

Our challenge:

> How might we help runners training for a race visualize real-time performance data in ways that keep them motivated?

03 / Research Strategy and Results

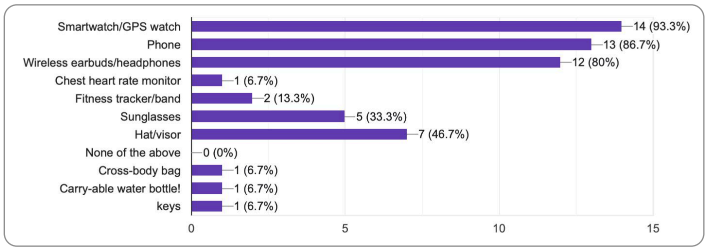
We used a Scenario-Based Design approach combining surveys and interviews to understand how runners track, stay motivated, and interact with technology.

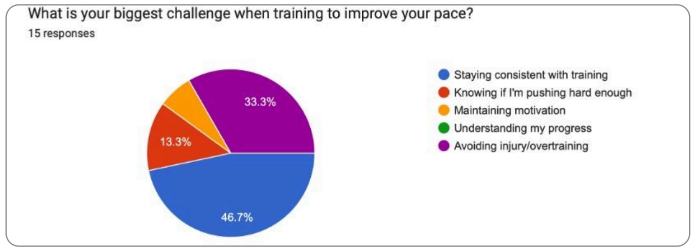
- Survey (5 questions): Devices, performance metrics, training challenges
- Semi-structured Interviews (6 participants): Habits, motivations, frustrations with tech
- Focus on user context: Looked at how runners track progress, stay motivated, and adapt to training disruptions.
- Technology-centered insights: Examined device inconsistencies, overload, and missing features like navigation.

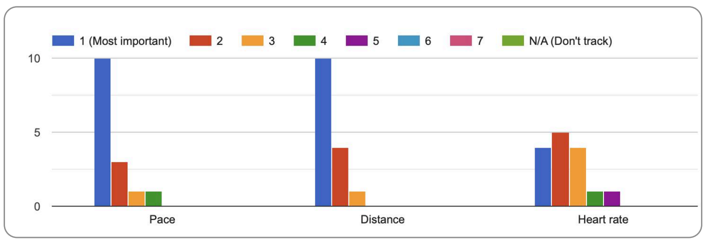
01 Survey	02 Semi-Structured Interview	03 Focus on User Context	04 Technology-Centered Insights

These insights informed five semi structured interviews exploring training habits, motivation, and technology frustrations.

- Mostly use Smartwatches or Phones
- Key Metrics: Pace, Distance, and Heart Rate
- Main challenge: Maintaining Consistency in Training







Leading to semi structured interviews:

1. Training Habits
2. Motivation
3. Technology Frustrations

From the interview, we identified four major categories of pain points:

1. **Real-Time Feedback Limitations**: Many runners told us they were tired of constantly checking their watches and wanted more proactive, hands-free alerts.
2. **Training Gaps**: Users felt they lacked proper guidance on things like nutrition, hydration, warm-ups, and joint protection
3. **Motivation Barriers**: Life disruptions and training alone made it hard for them to stay accountable.
4. **Technology Issues**: Users frequently experienced inconsistent data across devices, inaccurate heart rate zones, and even lost workout records.

Based on all of our research findings, we made three key design decisions.

1. Shifting the focus toward runners who are training for races, rather than casual runners, since their needs for accuracy and consistency are much stronger
2. Accurate tracking, hands-free metrics, and real-time alerts became must-have features
3. Incorporating gamification and community features to support both motivation and retention

04 / Concepts and Preferred Approach

Our ideation process combined structured brainstorming with collaborative refinement. We began with a creative warm-up exercise, then used mind mapping to capture initial ideas without filtering.

Through Round Robin sessions, the team collaboratively built upon and strengthened promising concepts. Finally, we applied an Impact-Effort Matrix to prioritize solutions based on feasibility and potential impact.

Key Activities:

- Warm-up exercise: Generated 100 brick use cases to activate creative thinking
- Mind mapping: Brainstormed and documented all initial ideas and concepts
- Round Robin: Collaboratively refined and built upon promising ideas
- Impact-Effort Matrix: Evaluated and prioritized solutions based on implementation feasibility and potential user impact

04 / Concepts and Preferred Approach

We established four key criteria to guide our design decisions: usability (how easy the glasses are to use), feasibility (whether it's possible to create), desirability (will people actually want to use them), and impact (will they genuinely improve users' pace).

Usability

How easy is it to use the glasses?

Feasibility

Is it possible to create?

Desirability

Will people actually want to use the glasses?

Impact

Will people actually improve their pace?

Through ideation, we narrowed down three design concepts. The projection hat would project visual cues onto the runner's path but offered limited information display. The running companion robot would provide motivation and analytics but required too much effort to prototype. We chose AR Glasses, which allow runners to view key data and run with an AR ghost runner of themselves or friends, enhancing motivation and engagement.

Projection Hat

The projection hat would display visual cues onto a runner's path, but the limited information display and low impact on user goals made it less effective despite its prototyping feasibility.

Running Companion Robot

The running companion robot would run along with a runner and they would offer support. They could motivate a runner along with providing analytics while on a run. The limited information it is able to provide, medium impact on user goals, and high prototyping feasibility makes it a unfavorable option.

AR Glasses

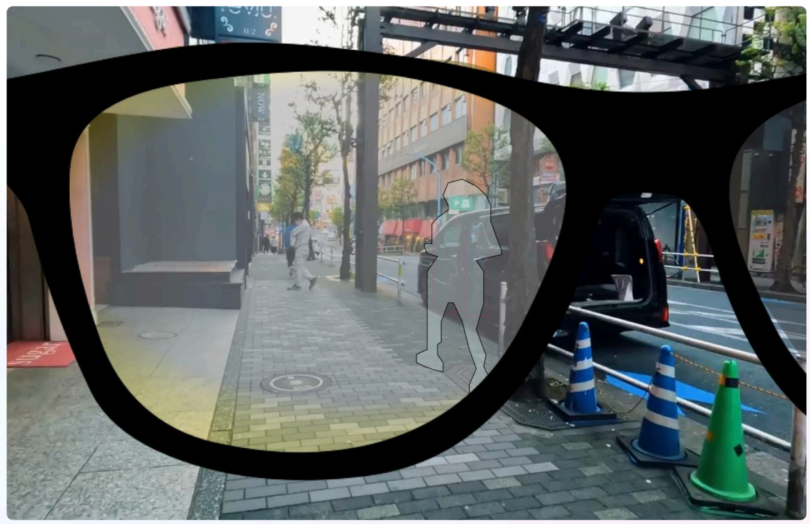
This design could project an AI-powered “ghost runner” to help users pace themselves, connect with friends through shared runs, and display key data such as distance, speed, and heart rate, all within a hands-free interface that enhances both motivation and community engagement.

04 / Concepts and Preferred Approach

In the end, we decided to go with the AR Glasses as it would have both a high impact and medium effort to prototype. This concept would be able to combine features that users would want along with displaying key data that runners value. We also believed that this concept would have a medium to low effort to prototype due to us being able to leverage previous products as references for our design.

AR Glasses

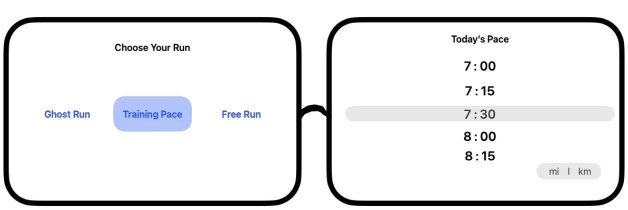
- High impact & medium effort
- Combines features users want
- Reference previous products such as Meta Glasses



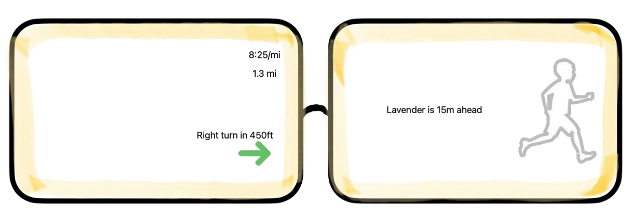
05 / Prototype Design

Moving into prototyping, we ensured each prototype served a purpose by testing one of our four key criteria. This led to designing wireframes for both the physical and digital experience, cardboard prototypes for the hardware, and finally a Wizard of Oz prototype to integrate everything for user testing.

Mode and Pace

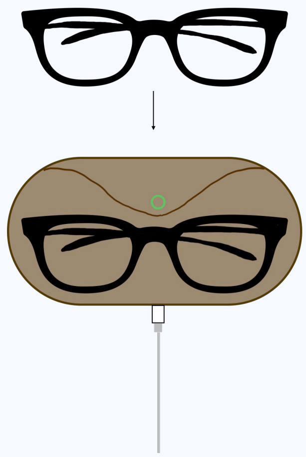


In-Run View

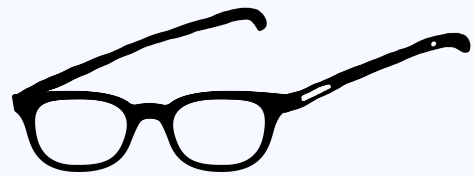


These wireframes helped us get an idea of how we wanted to make our cardboard prototypes

Glasses Case

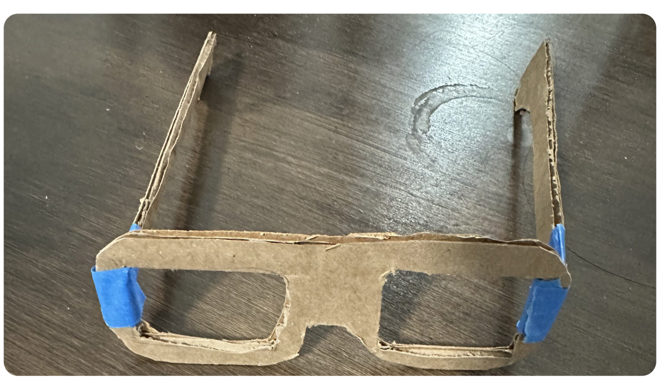


Hardware

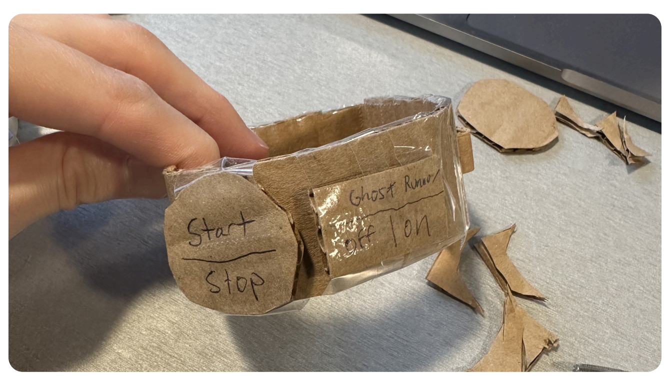


We next created cardboard prototypes to test usability and feasibility. These low-fidelity physical models allowed us to quickly evaluate the ergonomics and comfort of the glasses design, assess whether users could naturally interact with the interface while running, and identify any practical constraints before investing in higher-fidelity prototypes.

AR Glasses

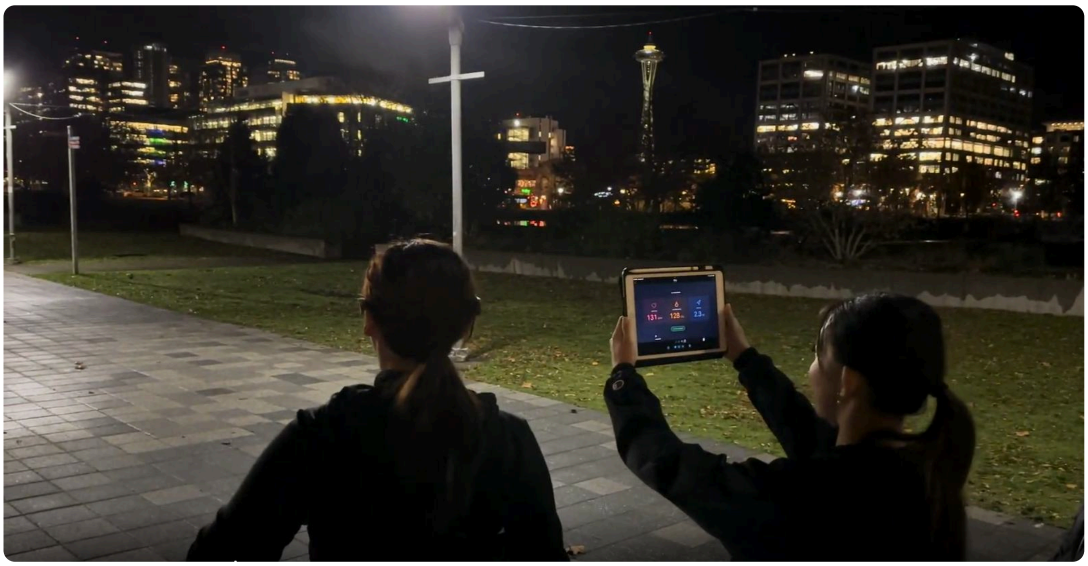


Data Wrist Tracker



05 / Prototype Design

Finally, we developed a Wizard of Oz prototype to test usability and desirability in a realistic context. A team member held an iPad displaying the interface while the participant ran, simulating the AR glasses experience. This approach allowed us to assess whether runners found the glasses intuitive to use during actual runs and whether the features genuinely motivated them and enhanced their running experience.



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06 / Stakeholder Feedback

User testing revealed both strengths and limitations of our AR glasses concept. Runners responded positively to navigation cues and the ghost runner feature, identifying pace and navigation as the most valuable information.

01
What Worked

- Navigation cues
- Ghost runner motivation
- Interest in hands-free AR guidance
- Pace and navigation were most valuable information

02
What Didn't Work

- Visual clutter and overload
- Caloric and heart rate data felt irrelevant
- Unreliable heart rate feedback
- Ghost runner animation was not smooth enough to follow
- Bulky hardware

06 / Stakeholder Feedback

However, significant challenges emerged. Users experienced visual clutter and cognitive overload from too much simultaneous information. Caloric and heart rate data felt irrelevant, the ghost runner animation wasn't smooth enough to follow, and the bulky hardware raised comfort concerns. Runners appreciated the guidance concept but needed a more streamlined, focused interface.

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07 / Future Design Work

For future iterations, we plan to simplify the hardware through a glasses-only solution with fewer setup steps. We'll reduce cognitive load by prioritizing essential information during runs and improve the ghost runner with smoother animation and clearer visual behavior. Finally, we'll strengthen our value proposition by positioning RunAR as a training tool rather than an everyday running replacement, emphasizing its hands-free advantage for specific use cases.

01 Simplify Hardware

- Explore glasses-only solution
- Move biometric sensors into the frames
- Reduce setup steps to match smartwatch simplicity

02 Reduce Cognitive Load

- Prioritize only: Pace, Navigation, Ghost Runner (optional mode)
- Hide or delay: Calories, Rapid heart rate updates, Secondary metrics
- Implement progressive disclosure of information

03 Improve Ghost Runner Logic

- Smoother pacing animation
- Clearer visual distance indicators
- More predictable behavior patterns

04 Strengthen Core Value Proposition

- Position RunAR as: A training tool, not an everyday running replacement
- Best for structured runs, intervals, and race prep
- Emphasize hands-free advantage for specific use cases

07 / Future Design Work

Our roadmap prioritizes short-term prototype refinements by building a minimal UI and testing a glasses-only approach that shifts controls from the wristband to the frame. We'll conduct additional research by interviewing more athletes about gear tolerance and comfort, followed by second-round testing to evaluate the updated UI's readability during movement and validate cognitive load reduction.