

StaySharp

Anti-Drowsiness Monitoring

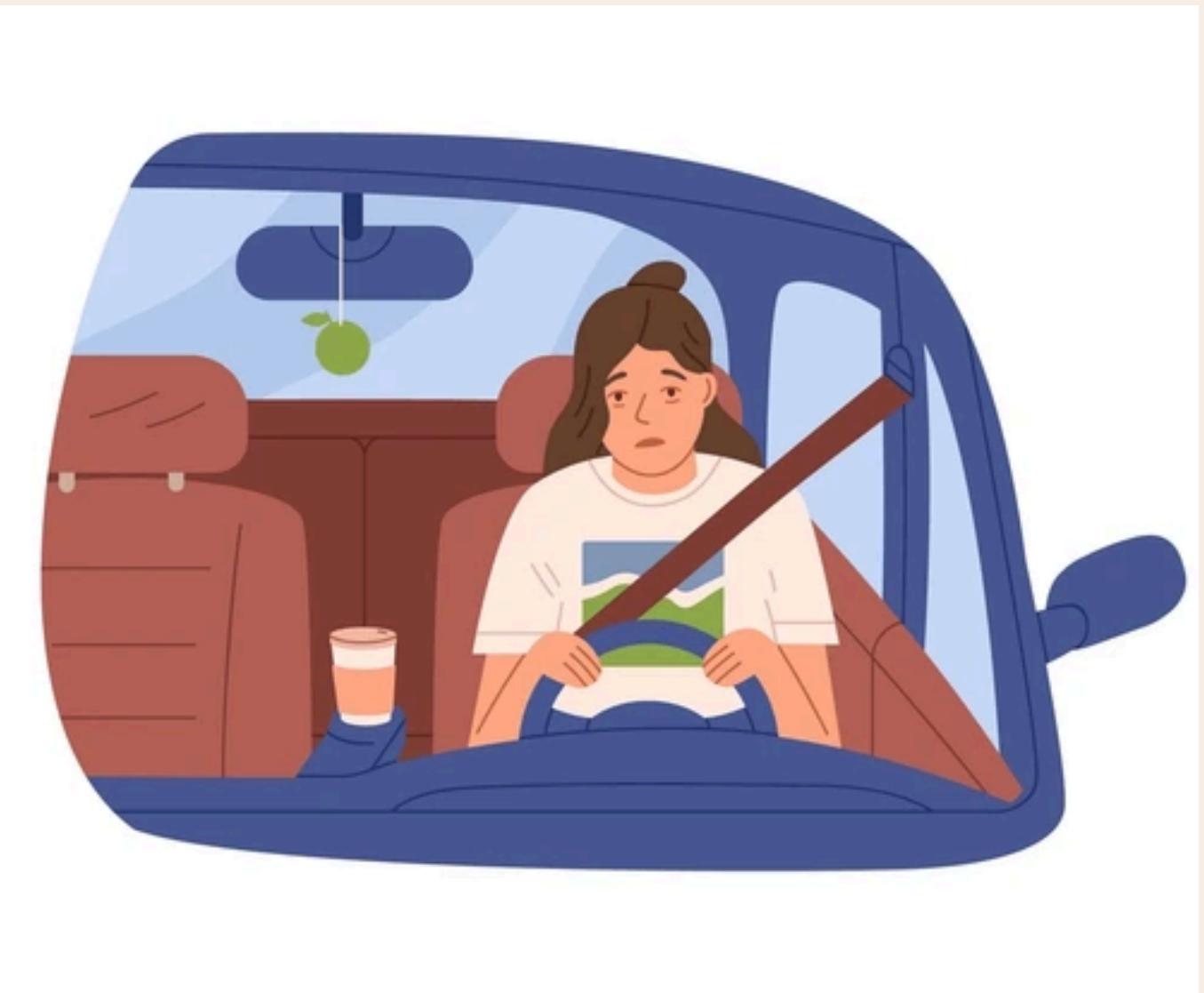


Risks of Fatigued Driving

- In Canada, fatigue is a factor in about 20% of fatal collisions annually, according to the Canadian Council of Motor Transport Administrators (CCMTA) [1].
- Drowsy driving impairs reaction time, decision-making, and awareness, increasing the risk of accidents

Impact on Road Safety

- Fatigue-related crashes lead to severe injuries and fatalities, particularly among long-haul and night-shift drivers [1].



Goal

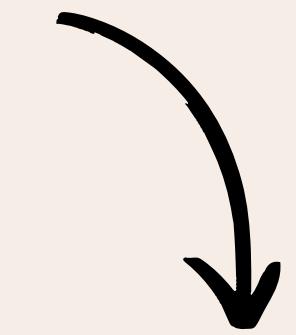
- Our program uses real-time heart rate data from wearable devices to detect driver drowsiness, helping prevent accidents and enhance road safety.

detect patterns of drowsiness, stress, and alertness in real time, helping gauge the driver's alertness level

HEART RATE METRICS

Features

- **Heart Rate Monitoring:** Simulates heart rate and heart rate variability (HRV) patterns.
- **Drowsiness Detection:** Assesses drowsiness levels and categorizes them by severity.
- **Alerts:** Issues critical alerts to keep users attentive and safe.
- **Daily Report:** Summarizes daily drowsiness patterns, allowing users to identify trends and make adjustments to improve alertness.



Alerts through vibrations (wearables) and notifications.

ALERTS

Test Run



Challenges Faced

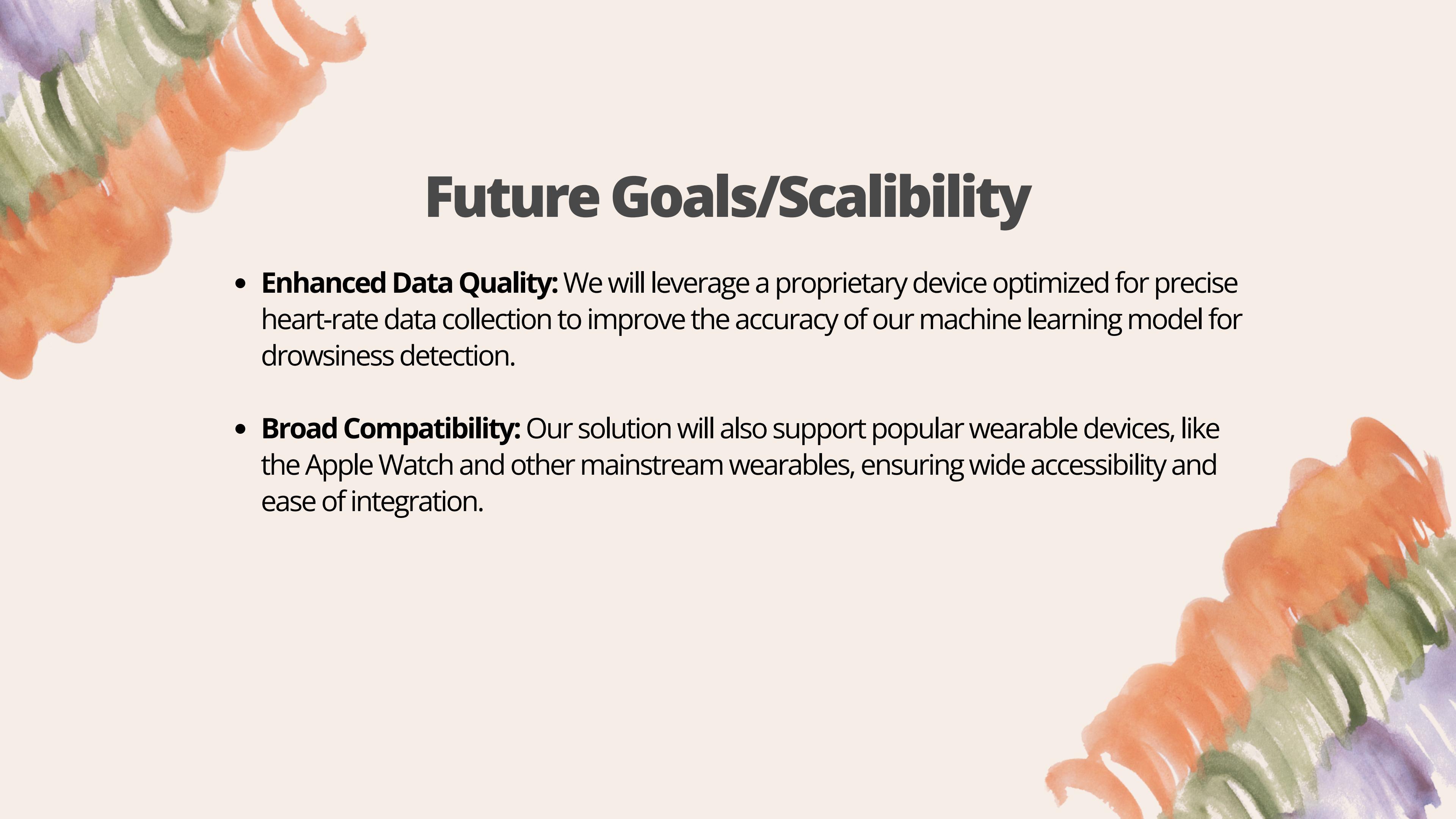
1. Limited Access to Real Data

- Privacy restrictions from wearable APIs (such as Google Fit and Fitbit) prevent real-time access to user heart rate data.

2. Data Simulation

- Simulating realistic heart rate patterns is essential for our project; however, achieving accurate, lifelike data remains a challenge at this stage.





Future Goals/Scalability

- **Enhanced Data Quality:** We will leverage a proprietary device optimized for precise heart-rate data collection to improve the accuracy of our machine learning model for drowsiness detection.
- **Broad Compatibility:** Our solution will also support popular wearable devices, like the Apple Watch and other mainstream wearables, ensuring wide accessibility and ease of integration.

Citations

[1] Canadian Council of Motor Transport Administrators, "Fatigue-Related Collisions," [Online]. Available: <https://ccmta.ca/en/fatigue-related-collisions>.



**THANK YOU VERY
MUCH!**