LANEBOT

Finding the Lane to Smarter Driving.

AKSITHA VIJAYRAJ, ISHA RAO, SREYASRI SURAPANENI, RASHEKA SENTHIL KUMAR

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01. PURPOSE

Advanced driving assistance features are often exclusive to newer vehicles, leaving older cars without essential safety support.

LaneBot brings AI-powered lane & object detection to any car through our app.

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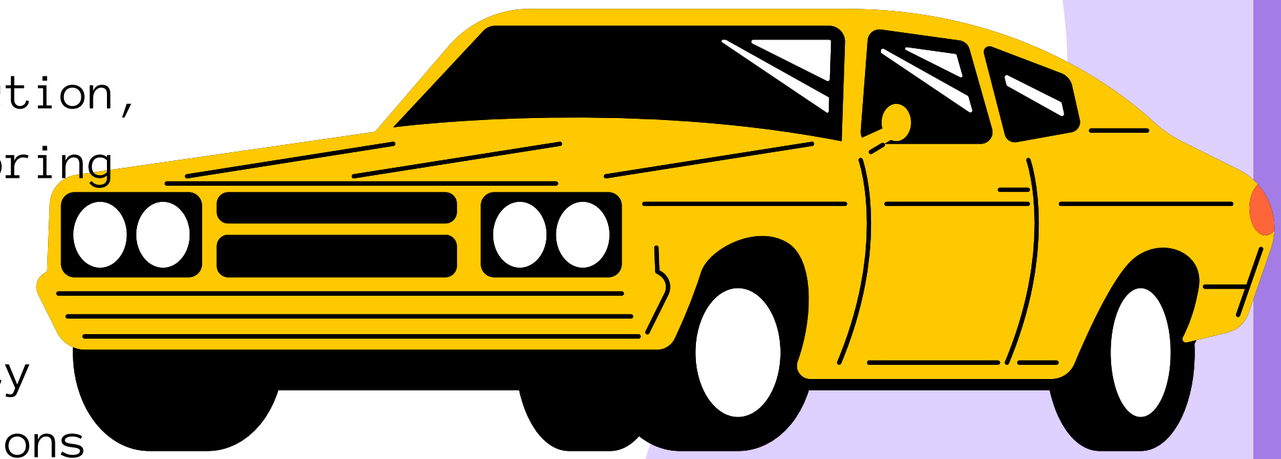
02 INSPIRATION

LaneBot embraces the theme by creating a seamless bridge between past, present, and future driving experiences

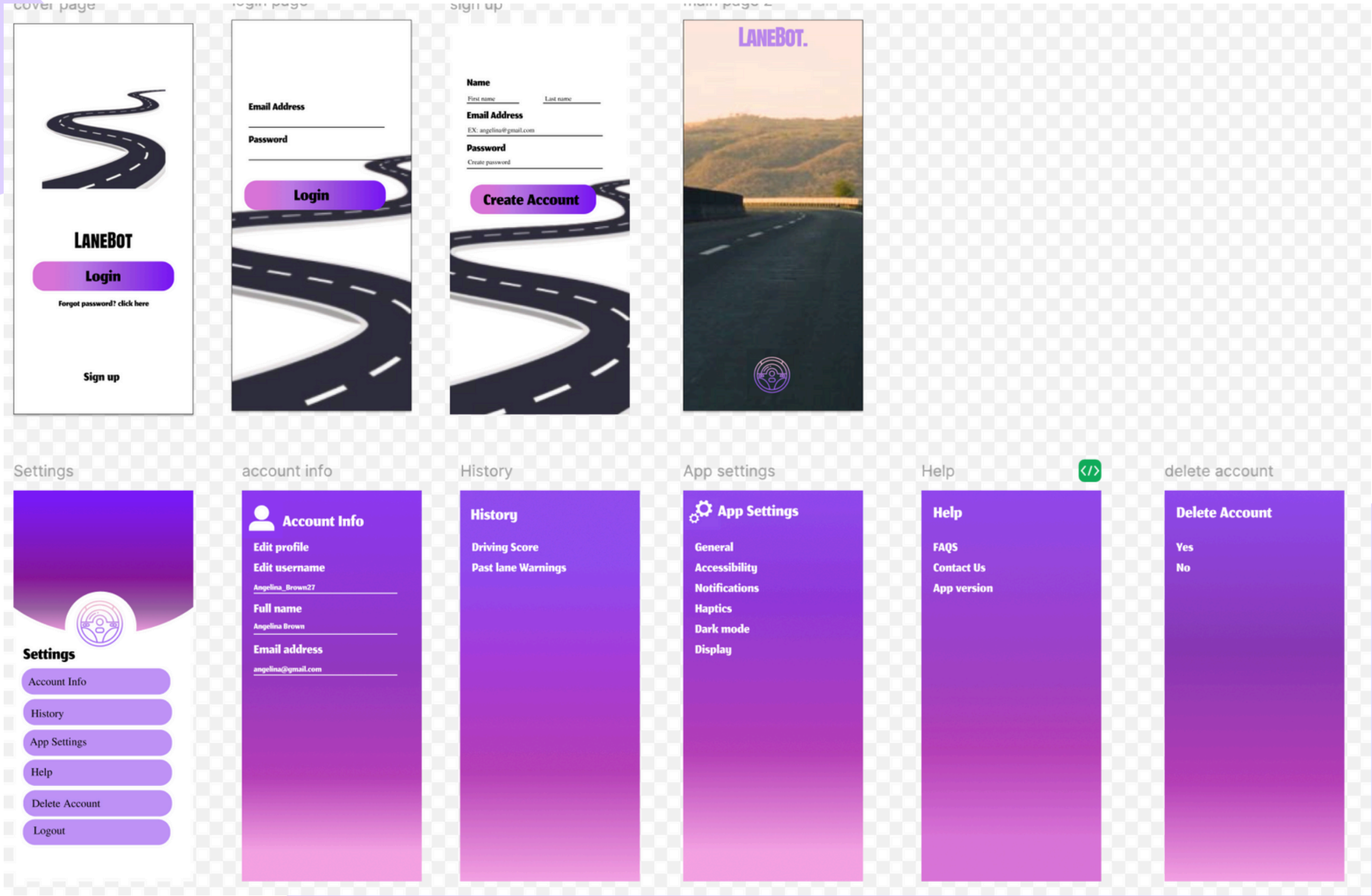
Past: Older cars lack modern safety features. LaneBot brings advanced safety to them, preserving their usability.

Present: Provides real-time lane detection, obstacle alerts, and lane score monitoring for safer driving

Future: Potential for predictive safety features and personalized recommendations to improve driving habits.



OUR UI - FIGMA



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OUR UI - FIGMA

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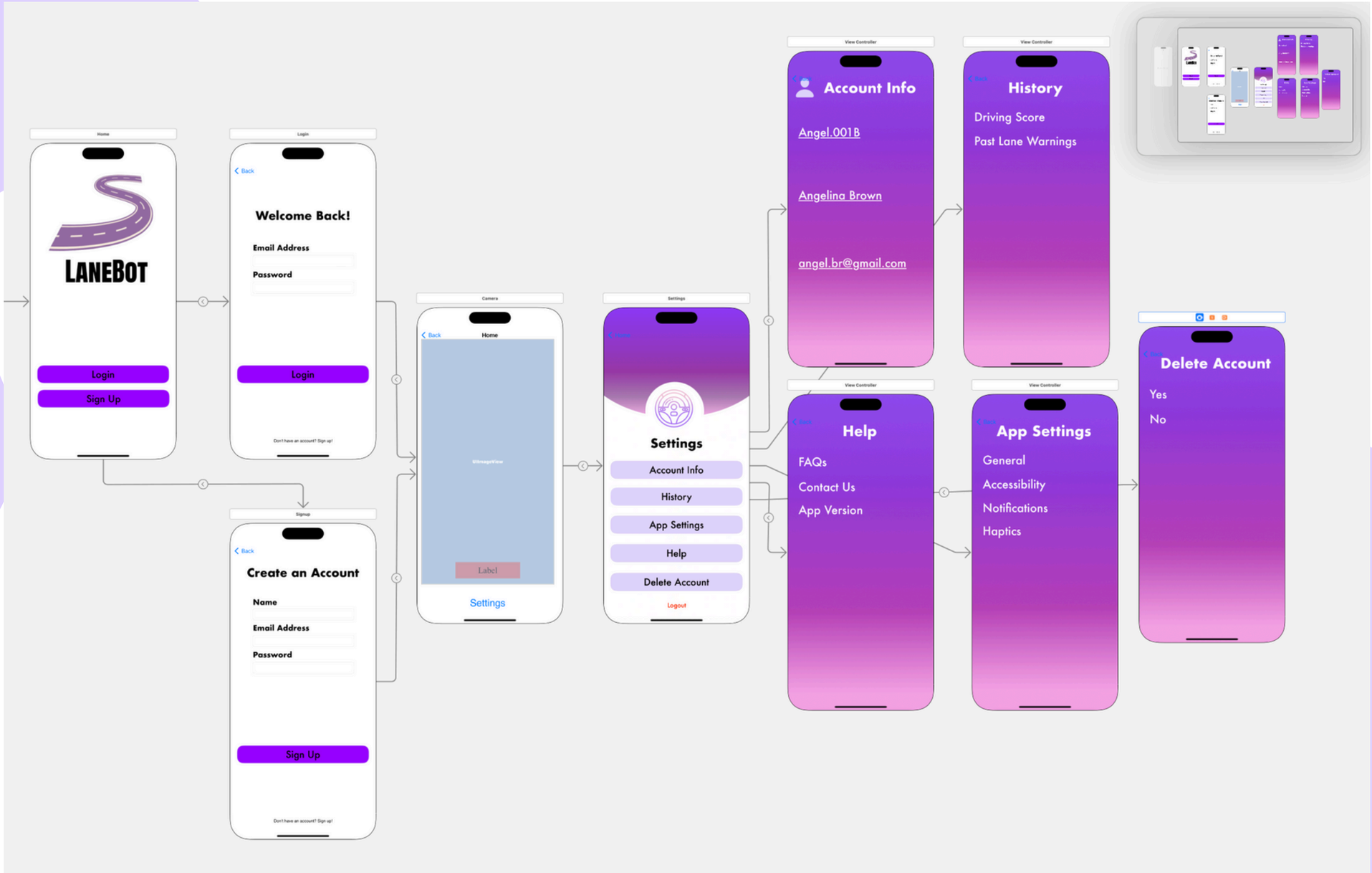
OUR UI - IN SWIFT



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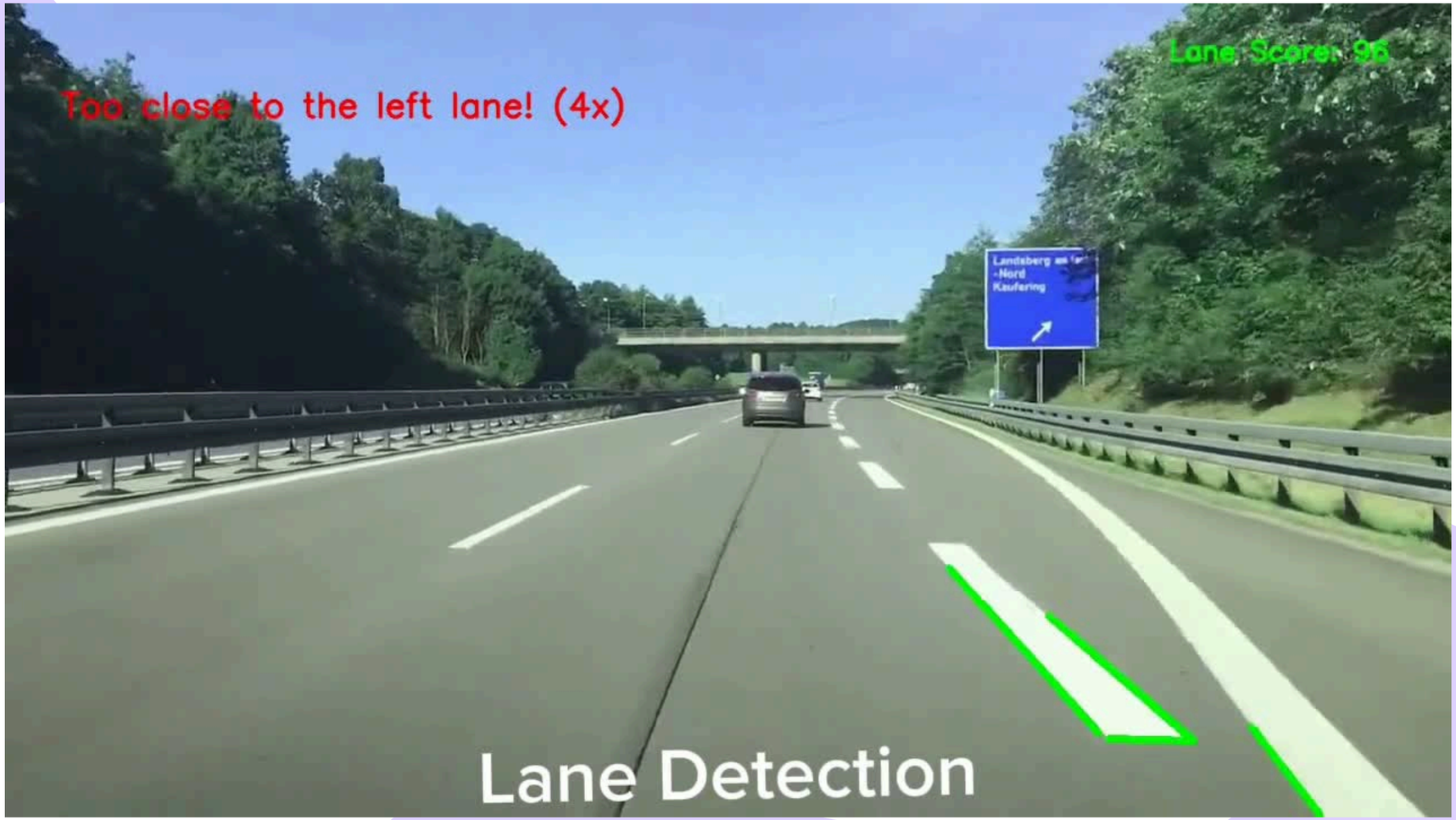
LANE & OBJECT DETECTION



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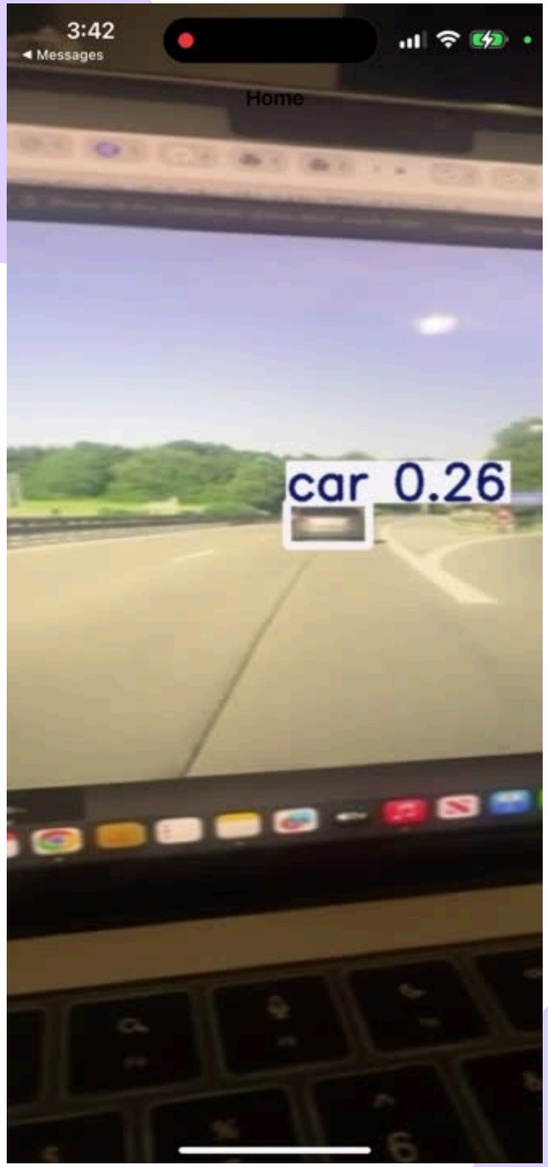
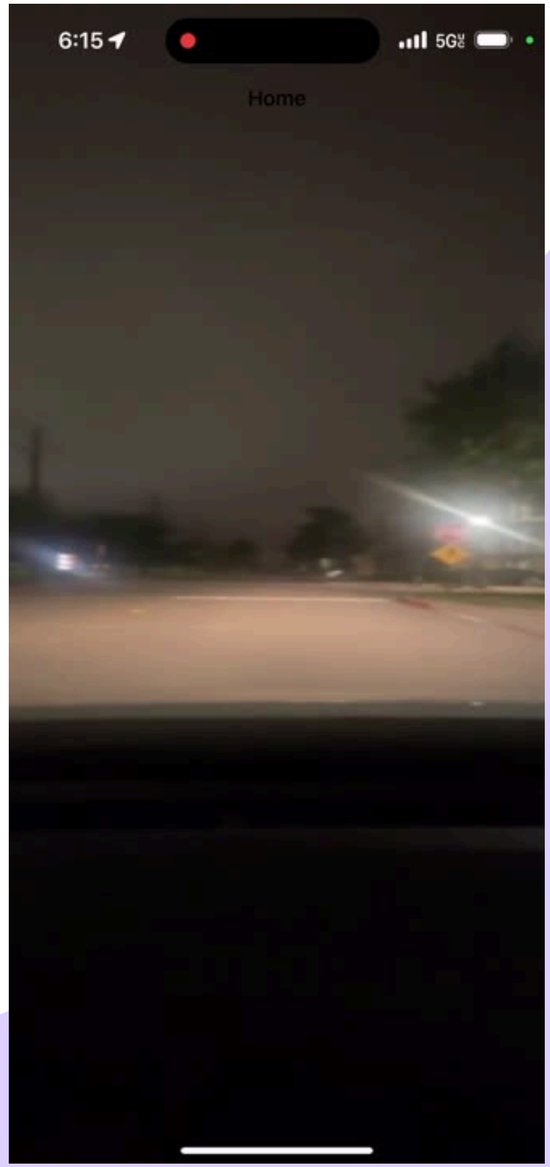
LANE & OBJECT DETECTION





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TECH STACK

BACK-END

- Developed using Python
- lane detection using OpenCv
- object detection using YOLOv8
- real time detection via camera in the app
- integration of AI models
- Conducted real world testing to ensure accurate performance under various driving conditions

FRONT-END

- We designed a clean and intuitive user interface on figma
- Designed real time detection to ehance driver awareness
- Focused on user-friendly experience to make the experience simply, faster and efficient using Swift on Xcode

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04. LIBRARIES UTILIZED

By leveraging OpenCV for image processing and YOLOv8 for object detection, we enabled real-time lane and obstacle recognition directly from a mobile camera feed

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CHALLENGES

- **Swift Integration:** Implementing real time AI detection systems with Swift ensuring compatability with Python models were challenging.
- **UI design**: Creating a functional, visually appealing interface in Figma that effectively displayed real-time data required multiple iterations.
- **Testing & Simulation:** Testing LaneBot in real-world conditions and refining algorithms for accuracy involved rigorous debugging.
- **Feature Prioritization**: Balancing ambitious features with practical implementation within a limited timeframe was crucial.

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04. THE FUTURE OF LANEBOT

Fixing Challenges

- Improving lane detection accuracy for all road conditions
- Implementing predictive analysis to anticipate lane drift and risky maneuvers,
- Creating personalized recommendations for safer driving.

Enhanced Functionality

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04. THE FUTURE OF LANEBOT

Features we want to Implement:

- **Driving History Analysis**: Review past trips, track improvements, and get insights on dangerous moments.
- **Predictive Safety Alerts**: Warnings based on common patterns or risky areas identified from previous drives.
- **Future Routes**: Suggesting safer or more scenic paths using previous trip data and real-time traffic analysis.
- **Enhanced UI**: More polished dashboard with real-time visualizations and improved feedback system.

THANK YOU!

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