MICHIGAN STATE UNIVERSITY

Project Plan Presentation

AO Quick Capture

The Capstone Experience

Team Auto-Owners

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From Students…
…to Professionals

Project Sponsor Overview

- Regional insurer offering auto, home, life & business coverage
- Founded in 1916, based in Lansing, MI
- Fortune 500 company
- Sells policies through independent agents in 26 state

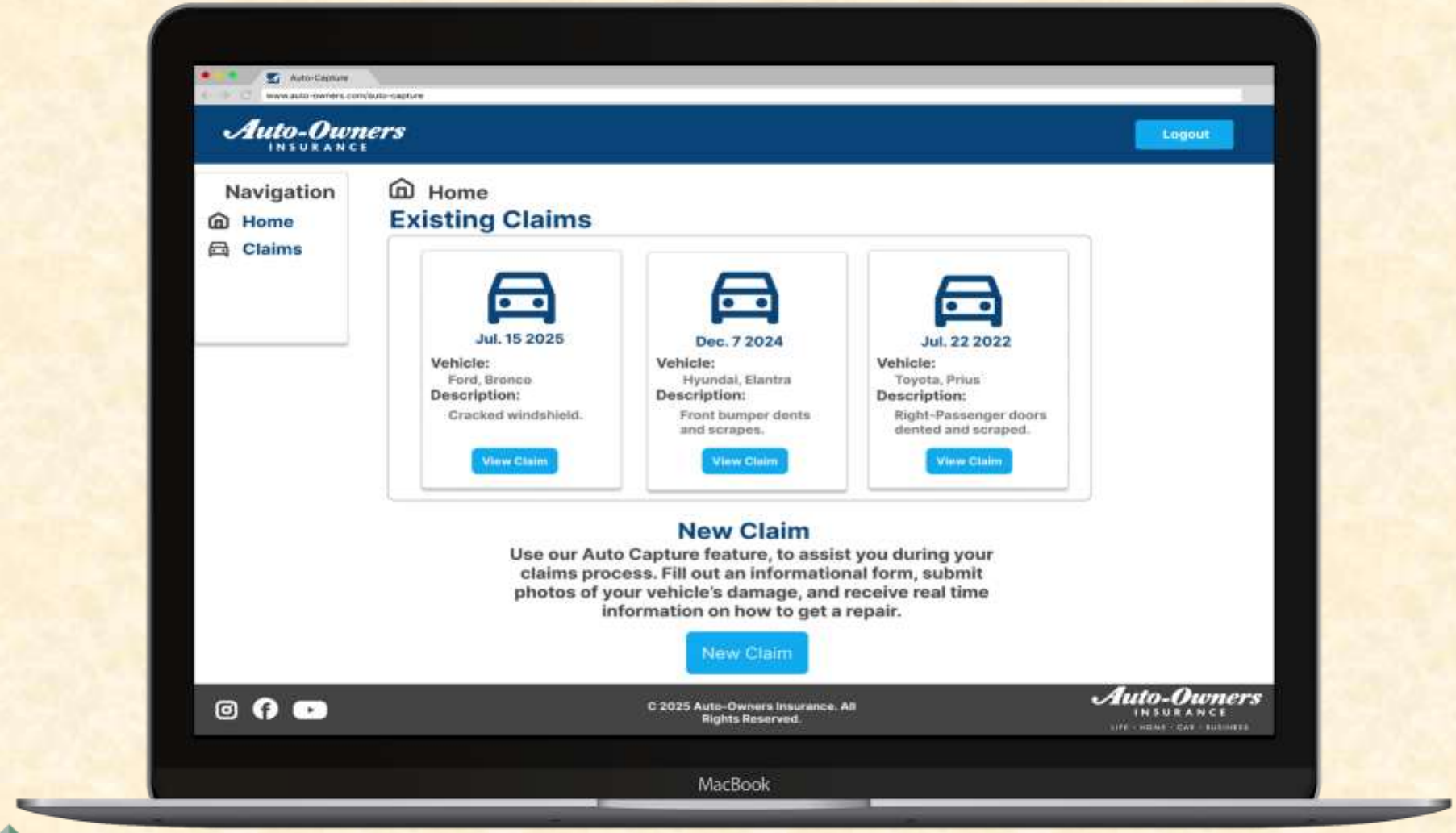
Project Functional Specifications

- Speed up the insurance claims process
- By providing instant repair recommendations and cost estimates
- Through a user-friendly web application

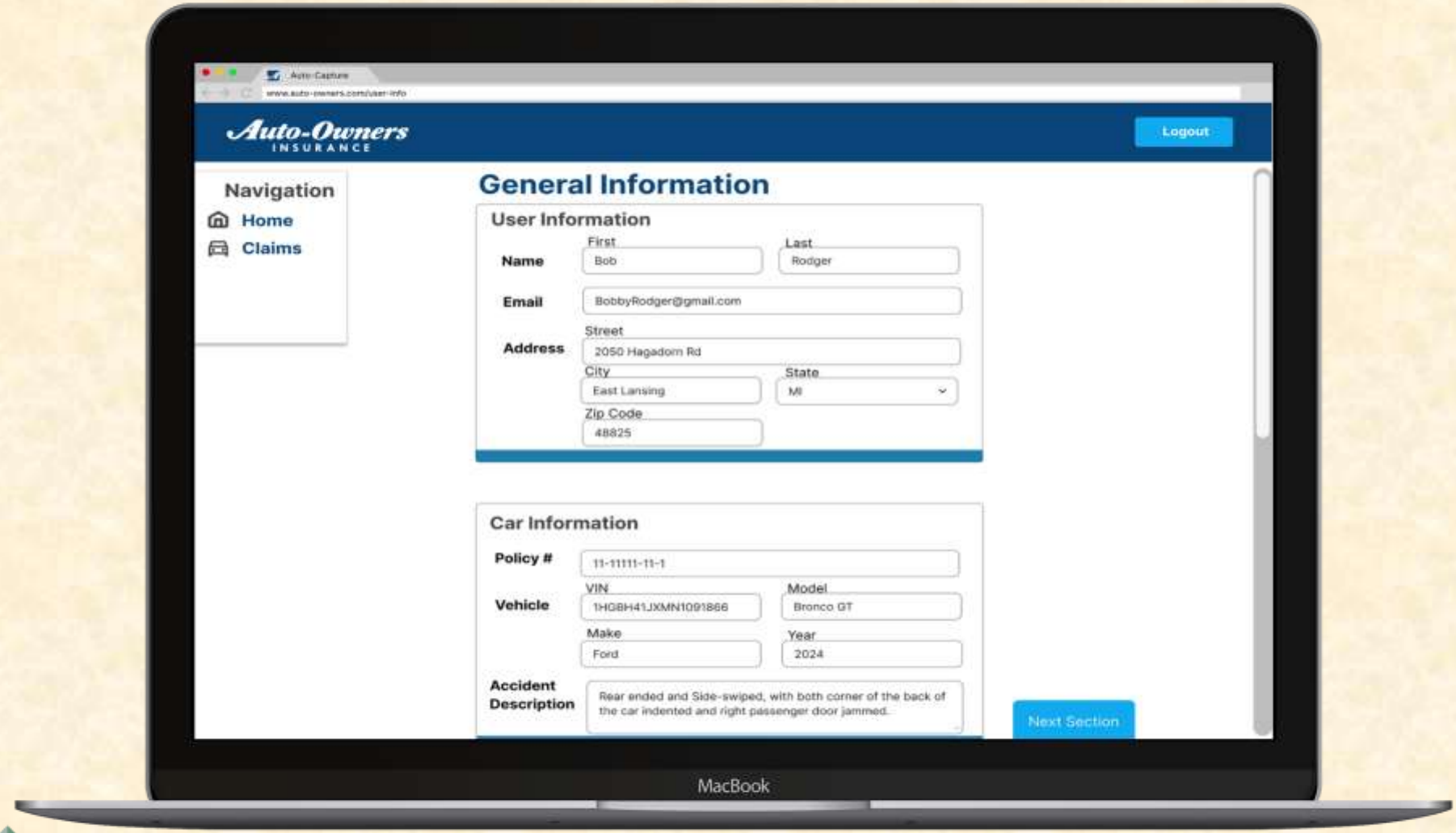
Project Design Specifications

- Web app for policyholders to file auto accident claims with form entry and photo uploads
- Homepage shows existing claims and option to start a new claim
- Streamlined process: info entry, photo upload, AI damage/cost analysis with repair shop suggestions
- Generates downloadable & printable PDF claim reports

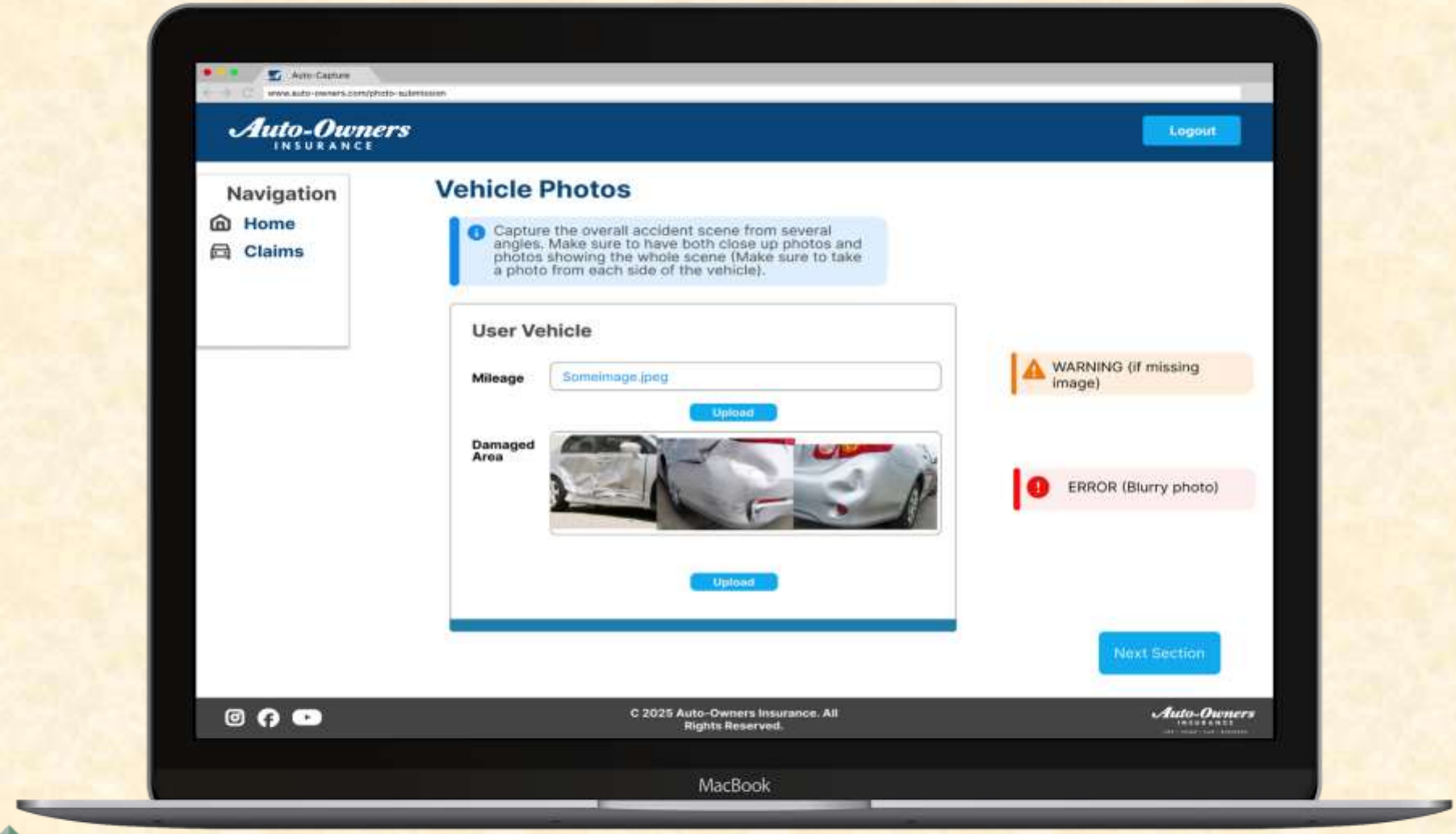
Screen Mockup: Home Page



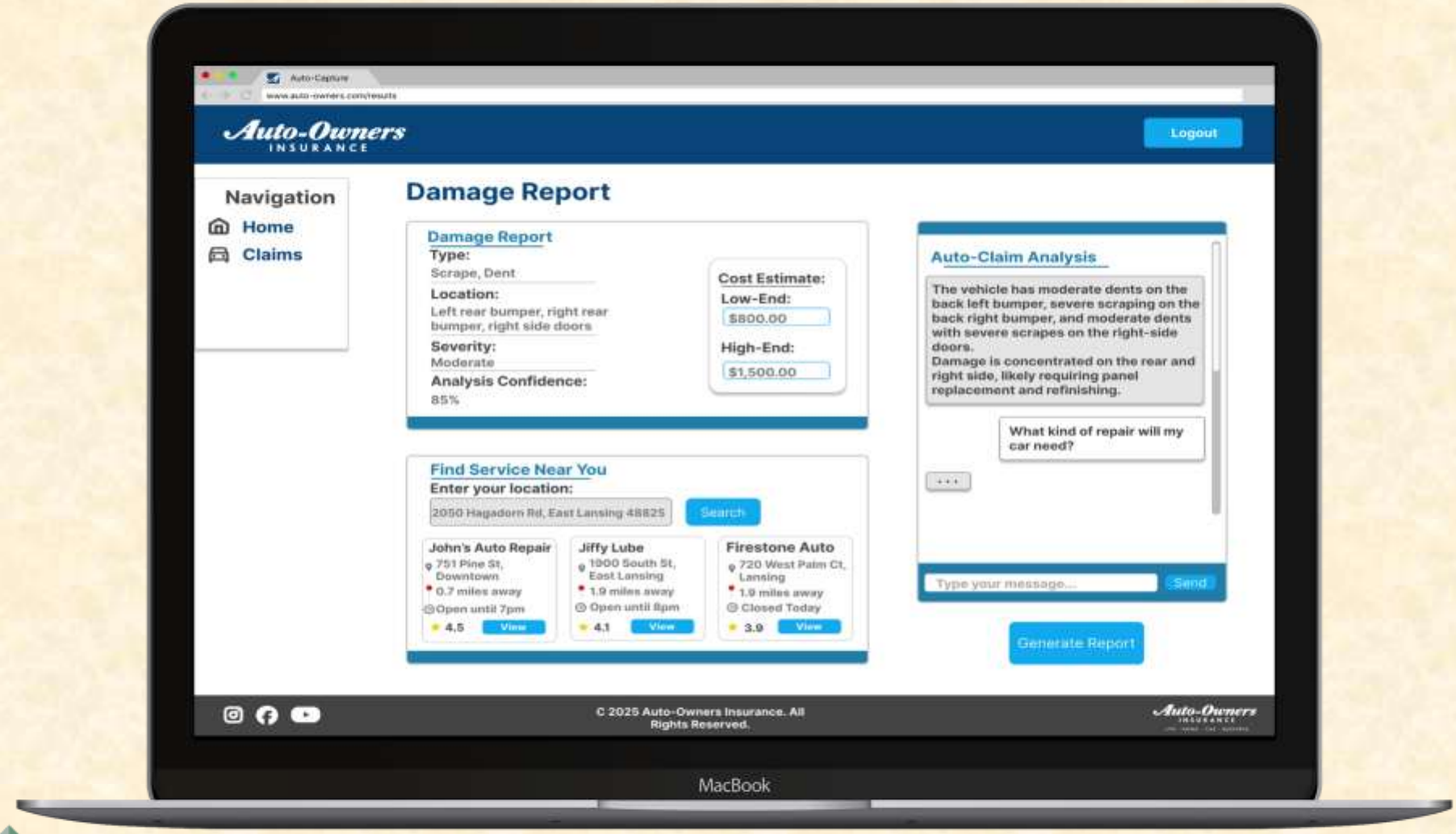
Screen Mockup: Section 1



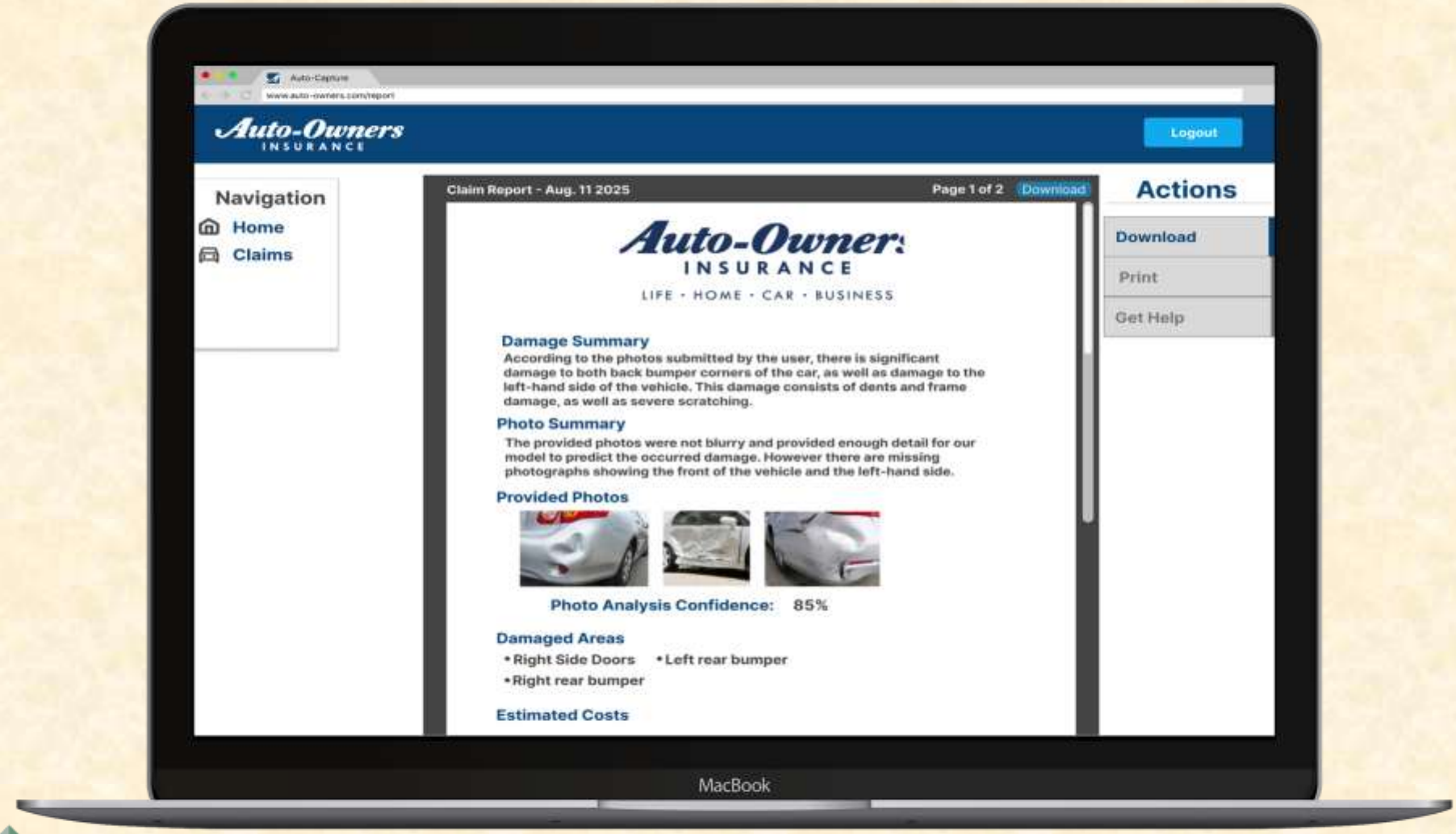
Screen Mockup: Section 2



Screen Mockup: Section 3



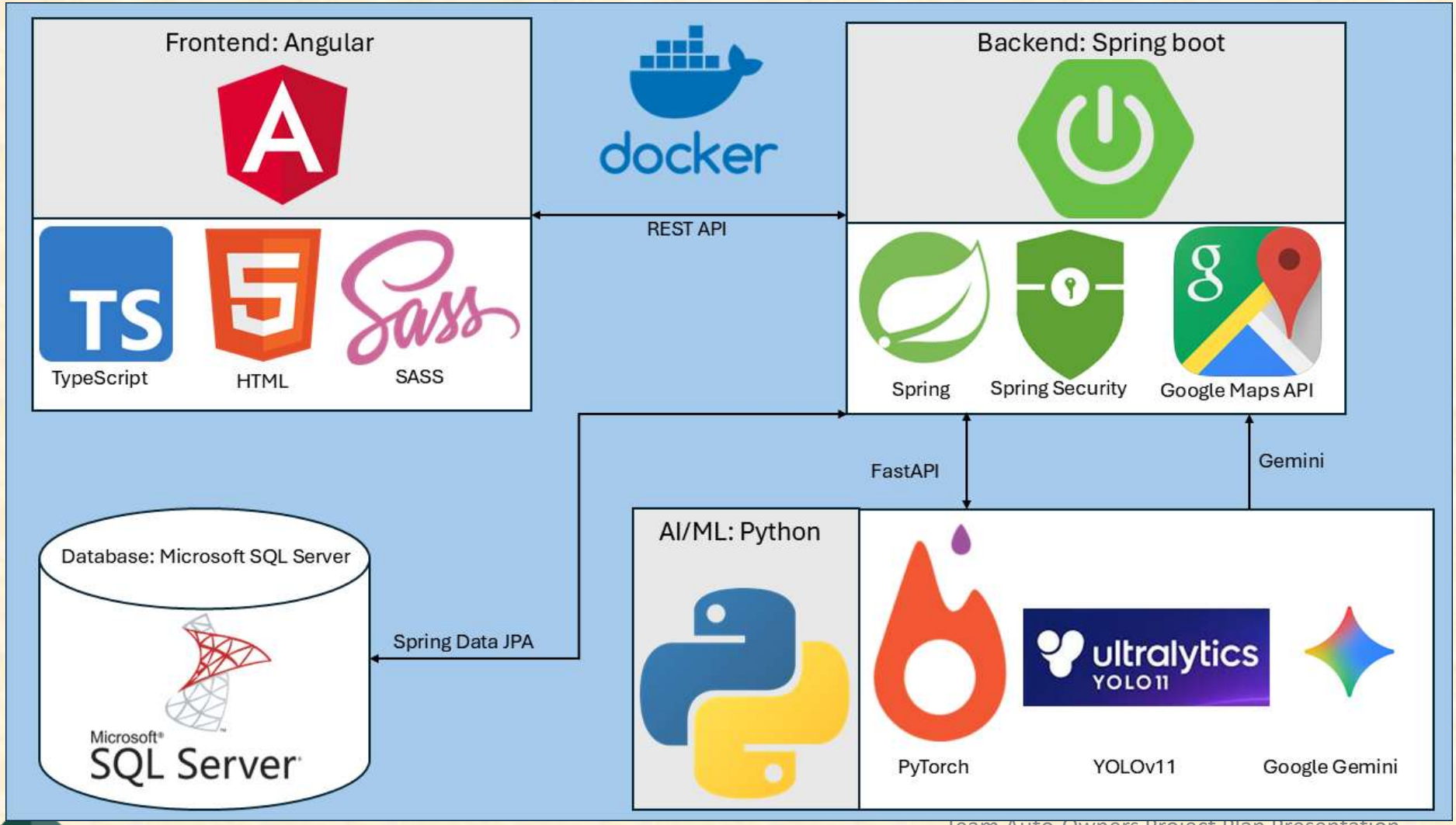
Screen Mockup: Section 4



Project Technical Specifications

- Frontend: Angular 18 (TypeScript, HTML, SASS)
- Backend: Spring boot 3 (Java) with Spring security
- Database: Microsoft SQL Server with Spring Data JPA
- Deployment: Docker
- AI/ML: Python with YOLOv11, EfficientNet, and Gemini API

Project System Architecture



Project System Components

- Hardware Platforms
  - Lab iMac's running Docker
- Software Platforms / Technologies
  - Angular 18
  - Spring boot 3 (Java 17+), REST API's, Spring Security
  - Microsoft SQL Server with Spring Data JPA
  - Python with YOLOv11 & EfficientNet with Gemeni API
  - Docker

Project Risks

- AI estimate misuse/accuracy
  - Unvalidated estimates may be over-trusted, harming credibility
  - “Informational only” acknowledgement, confidence thresholds with fallback, provide range of values
- Performance/reliability
  - Large uploads + hybrid ML (local + Gemini) can cause timeouts or latency
  - Limit to 6 images, <= 5 MB each with client compression. Optimization at each layer of the system
- Lack of reliable training data
  - Lack of training data could lead to inaccurate predictions from our ML model. No data provided to us by sponsors
  - Find data with proper labeling or, if necessary, create the dataset ourselves
- Personal data exposure
  - Collecting names, addresses, VINs, and policy numbers could lead to privacy issues if mishandled
  - Limit data collection to only what is required, blur sensitive details in images, avoid storing long-term

Questions?