

SENG 401 – Final Project - Requirements Document

Functional

FR1: User Registration and Authentication

- Users shall be able to create new accounts using email and password
- Users shall be able to log in to existing accounts
- Users shall be able to log out of their accounts
- System shall provide a guest mode for users who don't want to register

FR2: URL-Based Car Listing Analysis

- Users shall be able to input a URL from a supported car listing website
- System shall scrape and extract relevant car details from the provided URL
- System shall process the extracted information using AI to generate price estimates
- System shall display the estimated price and relevant car details to the user

FR3: Manual Car Data Entry

- Users shall be able to manually input car details including make, model, year, mileage, condition
- Users shall be able to optionally input additional information such as transmission type, drivetrain, VIN, and features
- System shall process manually entered information using AI to generate price estimates
- System shall display the estimated price and relevant car details to the user

FR4: Estimate History and Storage

- System shall save car price estimates for registered users
- Users shall be able to view their previously generated price estimates
- System shall provide basic information about each saved estimate including vehicle details and estimated price
- System shall not save estimate history for guest users

FR5: Responsive User Interface

- System interface shall adapt responsively to different screen sizes (desktop and mobile)
- System shall provide a consistent user experience across different devices
- System shall provide intuitive navigation between different sections of the application

FR6: Price Estimate Confidence Rating

- System shall display a confidence rating (high/medium) for each price estimate
- System shall indicate whether the estimate is based on scraped data or manual entry

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FR7: Dashboard Interface

- System shall provide a dashboard interface for registered users
- Dashboard shall display recent estimates and quick access to generate new estimates
- Dashboard shall provide clear distinction between URL-based and manual entry methods

FR8: Form Validation

- System shall validate user inputs in all forms (registration, login, car details)
- System shall provide clear error messages for invalid inputs
- System shall enforce password security requirements during registration

FR9: AI-Powered Data Processing

- System shall use DeepSeek AI to analyze car data and generate price estimates
- System shall process structured data from both URL scraping and manual entry
- System shall extract meaningful information even from partial car details

FR10: Backend and Frontend Connectivity

- System shall have a reliable connection between backend and frontend

Non-Functional

NFR1: Performance

- The system shall provide price estimates within 60 seconds of submission for 95% of requests
- The user interface shall load within 3 seconds on average internet connections

NFR2: Security

- User passwords shall be securely hashed before storage
- User authentication shall use JWT tokens with appropriate expiration
- Personal user data shall be protected with industry-standard security measures
- The system shall implement appropriate CORS policies to prevent unauthorized access

NFR3: Reliability

- The system shall be available 99.5% of the time, excluding scheduled maintenance
- The system shall handle errors gracefully and provide meaningful error messages to users

NFR4: Usability

- The system shall provide an intuitive interface usable without specific training¹

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- The system shall maintain consistent design patterns throughout the application

NFR5: Scalability

- The system architecture shall support horizontal scaling to handle increased load
- The database schema shall support efficient scaling as the user base grows
- The system shall implement appropriate caching mechanisms to improve performance under load

Use Stories

As a potential buyer I want to login so that I can return to my previous inquiries.

As a potential buyer I want to be able to provide a link and receive an estimate that gives a price rating so that I can continue my search for a car.

As a user I want an easy to use website/webapp that I can understand so that I can have minimal troubles getting an estimate.

As a user I want to be able to continue as a guest so that I can quickly get an estimate on a query and have the option to have it not be saved.

As a user I want to be able to receive any recall information about the vehicle so that I can receive information that may impact the purchase or sale of the vehicle.

As a user I want to be able to filter through my previous queries and be able to favourite them so that I can easily call back to a certain query.

As a user I want to be able to use the website/webapp on different platforms so that I can continue using the functionality, whether it is as a guest or a user, seamlessly.

As a user I want to be able to receive an estimate without inputting a link so that I can receive results from websites that aren't supported by url.

As a user I want assurance that my personal data and queries remain secure and private so that I can use the service confidently.

As a developer I want to be able to easily access the database so that any work done on the app remains stable.

Use Cases

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