Auto Car Classifier
Outline of Requirements and Design Documentation

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1 Introduction

The main purpose of this document is to specify the requirements and capabilities of the AI Auto Car Classifier. This document will provide the domain model, user characteristics which contains the intended users of the system and their use of the system, functional requirements which contains the use cases that needs to be satisfied by our system, quality requirements which specifies each of the quality requirements relevant to our system and trace-ability matrix which contains a matrix with functional and quality requirements as rows and the subsystems as columns.

2 Domain Model

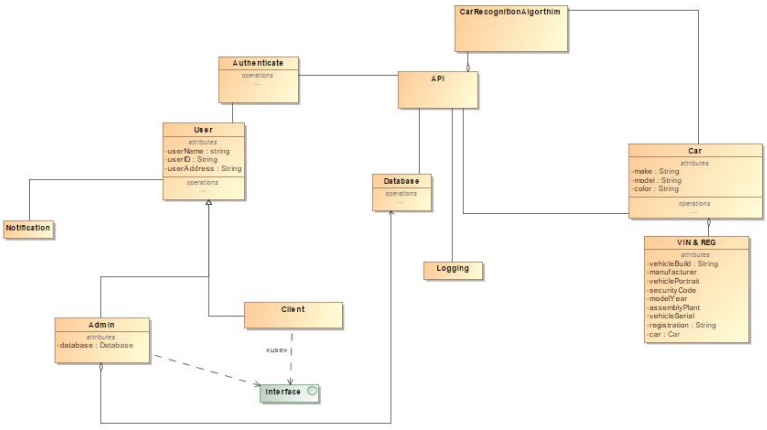

Figure 1: Domain Model

3 User Characteristics

The intended users of are car dealership consultants that keep an inventory of all the cars in their organization. The system can can however be used by any individual looking to classify an unknown vehicle.

There are two types of users in the system. The first is the Administrator, who will keep track of the systems behaviour and logged events, while also investigating reasons behind some incorrectly classified vehicles. The second type of user is the general user, who will be the main user of the system. This user will be able to classify vehicles according to color, make, model, year and and other distinguishable car characteristics.

4 Functional Requirements

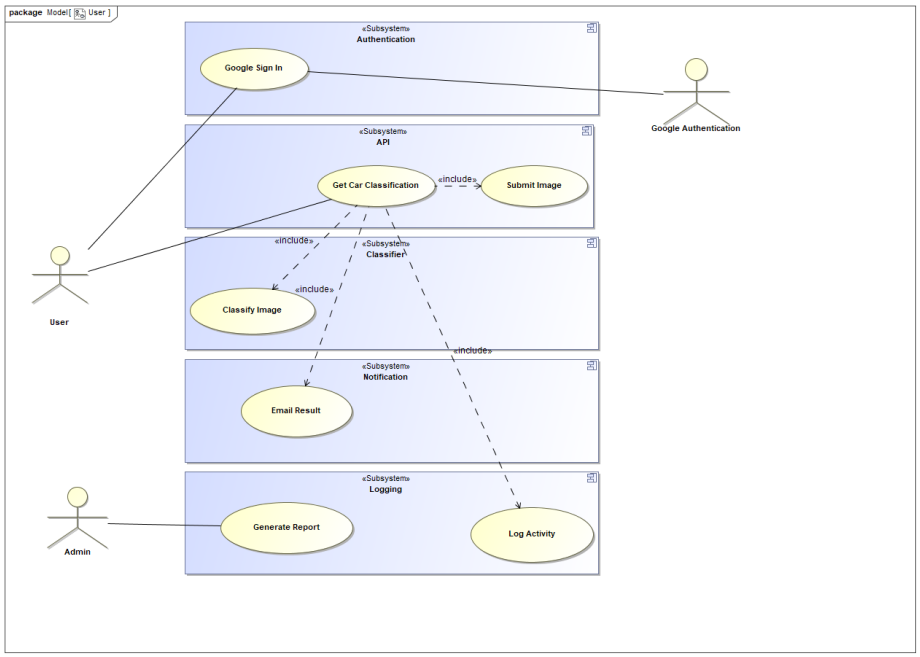

Figure 2: Use Case Diagram

4.1 Classification

R1 The system must be able to capture an image.

The system must be able to accept a picture from the front, standard boom-gate height.

R2 The system must be able to identify a vehicle.

R3 The system must be able to identify a vehicle's color.

R4 The system must be able to identify a vehicle's manufacturer based on the vehicle badge

R5 The system must be able to identify a vehicle's make, model and year.

4.2 Notification

R6 The system must log all incidents and classifify them according to severity

R7 The system must notify the user if the server has queued your request due to the traffic rate.

R8 The system must notify the user through email when results gathered by the classifier take longer to process.

4.3 Authentication

R9 The system must allow users to register using their Google accounts.

4.4 Constraints

R10 The system must use a database which is optimal for more frequent reads than writes

R11 The system must be a web based UI which functions on all modern day browsers

5 Quality Requirements

5.0.1 Performance

R12 The system must efficiently make use of bandwidth to ensure performance on slow connections to the server.

R13 The system must queue the users if more than 10 pictures are being classified.

R14 The system must limit the photo size upto 2MB in order to ensure efficiency.

5.0.2 Reliability

R15 The system must be continuously tested and upgraded to improve the accuracy of the predicting

R16 The system must backup all logs.

5.0.3 Security

R17 The system must use Google sign-in as a means of a secure authentication.

R18 The system must protect the contents of the website and application from DDos.

R19 The system must use HTTP for requests.

R20 The must have no ways of entering an unwanted state due to unintended operations.

5.0.4 Monitorability

R21 The system must be remotely monitorable.

R22 The system must report its status and usage to Admin Users

R23 The system must report errors or problems

R24 The system must log all successful and failed transaction of a user

5.0.5 Cost

R25 The system must use existing technologies and libraries to keep costs to a minimum

R26 The system must use existing hardware available to user

5.0.6 Usability

R27 The system must be responsive

R28 The system must show the user how busy the server is

5.0.7 Maintainability

R29 The system must be maintained by admin users only

R30 The system must notify the admin on whether classification failed.

R31 The system must be modularized in order for classification sub-system can be trained to latest vehicles launched.

5.0.8 Flexibility

R32 The system must be cross platform and available to all browsers.

6 Traceability Matrix

	Classification	Authentication	Notification
R1	X		
R2	X		
R3	X		
R4	X	X	
R5	X	X	
R6			X
R7			X
R8			X
R9			X
R10			X
R11			X
R12		X	
R13		X	
R14		X	
R15		X	
R16		X	
R17		X	
R18		X	
R19		X	
R20		X	
R21	X		
R22	X		
R23	X		
R24		X	
R25		X	
R26	X		
R27	X		
R28	X		
R29	X		
R30	X		
R31	X		
R32	X		
R33	X		
R34	X		