ALSET IoT HTL Team 13: Peyrovian Posse

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Goals

- Develop a robust Mission Critical Real-Time system for a self driving car with a focus on reliability and safety built on cutting edge IoT Architecture
- Take use of an effective software development model that allows for improvement with iterative releases
- Ensure the product is modular and upgradable via Technician interface

Use

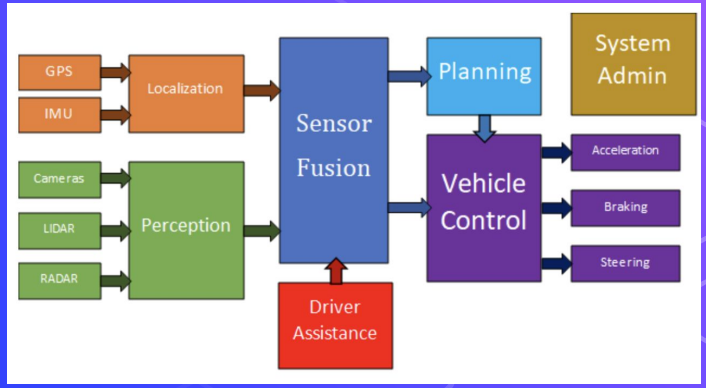
- The features of this Mission Critical Real-Time system make it a great candidate for implementation in everyday vehicles
- Safety features such as:
  - Automatic Braking
  - Driver Assisted Steering Correction
  - Emergency Pullover
  - Emergency Vehicle Detection and Response
  - Crash Detection
  - Self-Driving to Assisted-Driving
- Easily expandable so more safety features can be added in future software updates

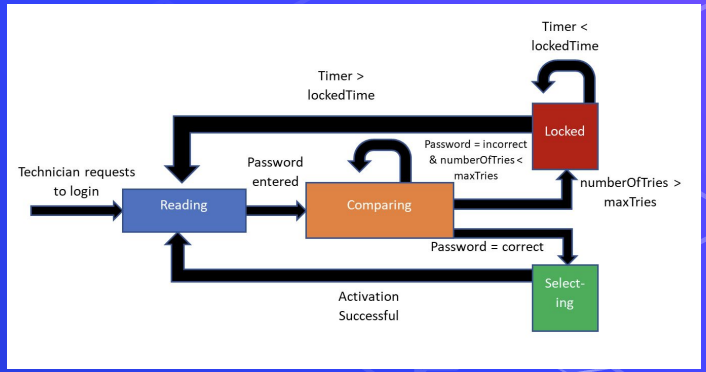
Value

- The expansive features of this system allow for a reduction in accident rates and therefore a decrease in injuries as well as maintenance and insurance costs
- This IoT-integrated system could be implemented into every car on the road, since electric, automated cars are the future
- Due to rapid transition to self-driving cars alongside government backing and subsidization, manufacturing is relatively cheap and profit margins are high

Design

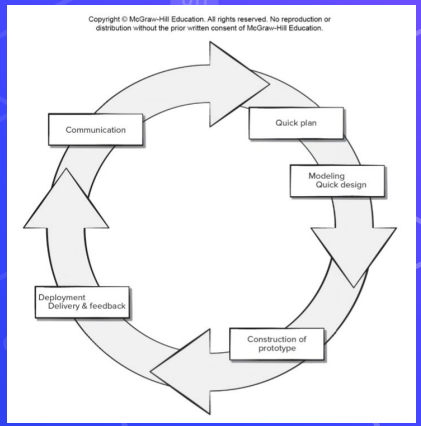
- The core functionality for IoT HTL will use a Data Flow architecture
- The Technician Login will use a finite state machine architecture
- The Console will use a Model View Controller architecture





Software Development Process

- Our chosen development process was the Prototyping Process Model
  - This model is characterized by repeatedly creating prototypes and obtaining feedback
- By constantly obtaining feedback, we could fine tune our product to be what is desired
- Constant testing also ensures a safe product
- Requirement changes, which occurred, did not stifle the product development process



Challenges

- Developing test cases that adequately and thoroughly covered all safety features
- Team coordination and separation of tasks
- Deciding on an appropriate architecture for each subsystem of the car
- Having experienced these challenges, we will be able to overcome them in a quicker and more cost effective manner moving forward

Excellences

- Consistently sought stakeholder feedback during development to ensure the product aligned with expectations
- Successful deployment in test scenarios, showing tangible safety improvements
- Selected architectures that are suitable and modular for each subsystem of the car

Demo Capabilities

Now, we will show you the functionality of our code, and how it values safety as its number one priority.

Thank You

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