Project Plan Presentation
Dashboard for Data Visualization

The Capstone Experience

Team Magna

Joey Meng
Suraj Karthikeyan
Jannik Eisenlohr
Augie French
Rondy Gonzalez
Ria Mokashi

Department of Computer Science and Engineering
Michigan State University
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Project Sponsor Overview

• Magna International is a worldwide leader in automobile parts supplying.
• Magna International employs over 170,000 people with 345 manufacturing facilities and 90 R&D centers in over 28 countries.
• Magna USA is headquartered in Troy, Michigan. Magna is a Fortune 500 company with over 30 billion dollars in revenue in 2022.
Project Functional Specifications

• Auto part manufacturers such as Magna International manage massive amounts of data.
• Now that Magna is moving into the autonomous robotics sphere, they will have to deal with all the new data they are creating.
• Our Project is meant to create a streamlined dashboard that allows Magna employees to easily access, filter, and organize large amounts of data.
Project Design Specifications

• An interface that displays real time data for the autonomous delivery bots.
• Analyze the fleet status and performance of the delivery bots.
• Display quantitative information for each delivery that happens in a day.
• Ability to select and view each different bot's data.
• End to end testing of Magna’s internal LMDD website.
Screen Mockups: Delivery Status
Screen Mockups: Robots Status
Screen Mockups: Errors
Screen Mockup: Testing Suite

```python
jannik@quicksilver - % run test

ERROR: test_update_data (magna.tests.SeleniumTestCase)
Traceback (most recent call last):
  File "~/Users/admin/magna/tests.py", line 360, in test_update_data
    self.login()
  File "~/Users/admin/magna/tests.py", line 141, in login
    self.selenium.find_element_by_link_text('Login').click()
AttributeError: 'WebDriver' object has no attribute 'find_element_by_link_text'

ERROR: test_distance_traveled (magna.tests.SeleniumTestCase)
Traceback (most recent call last):
  File "~/Users/admin/magna/tests.py", line 242, in test_distance_traveled
    self.login()
  File "~/Users/admin/magna/tests.py", line 141, in login
    self.selenium.find_element_by_link_text('Login').click()
AttributeError: 'WebDriver' object has no attribute 'find_element_by_link_text'

ERROR: test_emergency_scenario (magna.tests.SeleniumTestCase)
Traceback (most recent call last):
  File "~/Users/admin/magna/tests.py", line 435, in test_emergency_scenario
    self.login()
  File "~/Users/admin/magna/tests.py", line 141, in login
    self.selenium.find_element_by_link_text('Login').click()
AttributeError: 'WebDriver' object has no attribute 'find_element_by_link_text'

ERROR: test_properties_and_units (magna.tests.SeleniumTestCase)
Traceback (most recent call last):
  File "~/Users/admin/magna/tests.py", line 164, in test_properties_and_units
    self.login()
  File "~/Users/admin/magna/tests.py", line 141, in login
    self.selenium.find_element_by_link_text('Login').click()
AttributeError: 'WebDriver' object has no attribute 'find_element_by_link_text'

ERROR: test_hot_selection (magna.tests.SeleniumTestCase)
Traceback (most recent call last):
  File "~/Users/admin/magna/tests.py", line 198, in test_hot_selection
    self.login()
  File "~/Users/admin/magna/tests.py", line 141, in login
    self.selenium.find_element_by_link_text('Login').click()
AttributeError: 'WebDriver' object has no attribute 'find_element_by_link_text'

Ran 52 tests in 32.864s
FAILED (errors=6)
Preserving test database for alias 'default'...
```

jannik@quicksilver - %
Project Technical Specifications

• Backend
  • Connect existing data stored in AWS S3 to DynamoDB using Lambda, then DynamoDB to Amazon QuickSight
  • End to end LMDD website functionality testing

• Frontend
  • Create visualizations in QuickSight using provided data
  • Integrate QuickSight into internal LMDD website
Project System Architecture

AWS Cloud

Data Storage
S3 Bucket

Lambda

DynamoDB

Data Visualization
QuickSight

Internal LMDD Website

Front End

Vue.js

MAGNA
Project System Components

Software Platforms / Technologies

- Amazon S3
- Lambda
- DynamoDB
- QuickSight
- LMDD
- Selenium
Project Risks

• Visualizing a large amount of data effectively
  • Description: Magna has over 9 different variables they want to track.
  • Mitigation: Ongoing communication with Magna.

• Integration of various distinct platforms
  • Description: We need to integrate several different platforms together in this project.
  • Mitigation: We plan to create an efficient backend that links the platforms together.

• Amazon S3 may not connect directly to QuickSight
  • Description: The project requires synchronizing S3 dynamically with QuickSight.
  • Mitigation: DynamoDB can be substituted instead.

• Data Formatting
  • Description: The format that Magna uses to stream data to our backend may be difficult to work with.
  • Mitigation: Receive format of the data from Magna.
Questions?