MICHIGAN STATE UNIVERSITY

Project Plan

Twitter Trending Effects on Amazon Sellers

The Capstone Experience

Team Amazon

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From Students…
…to Professionals

Project Overview

- Retrieve Twitter tweets
- Process tweets
  - Parsed for brand/product
  - Scored
- Store tweets
  - Original text
  - Brand/product
  - Scores
- Visualize data
  - Graphs, charts, and tables

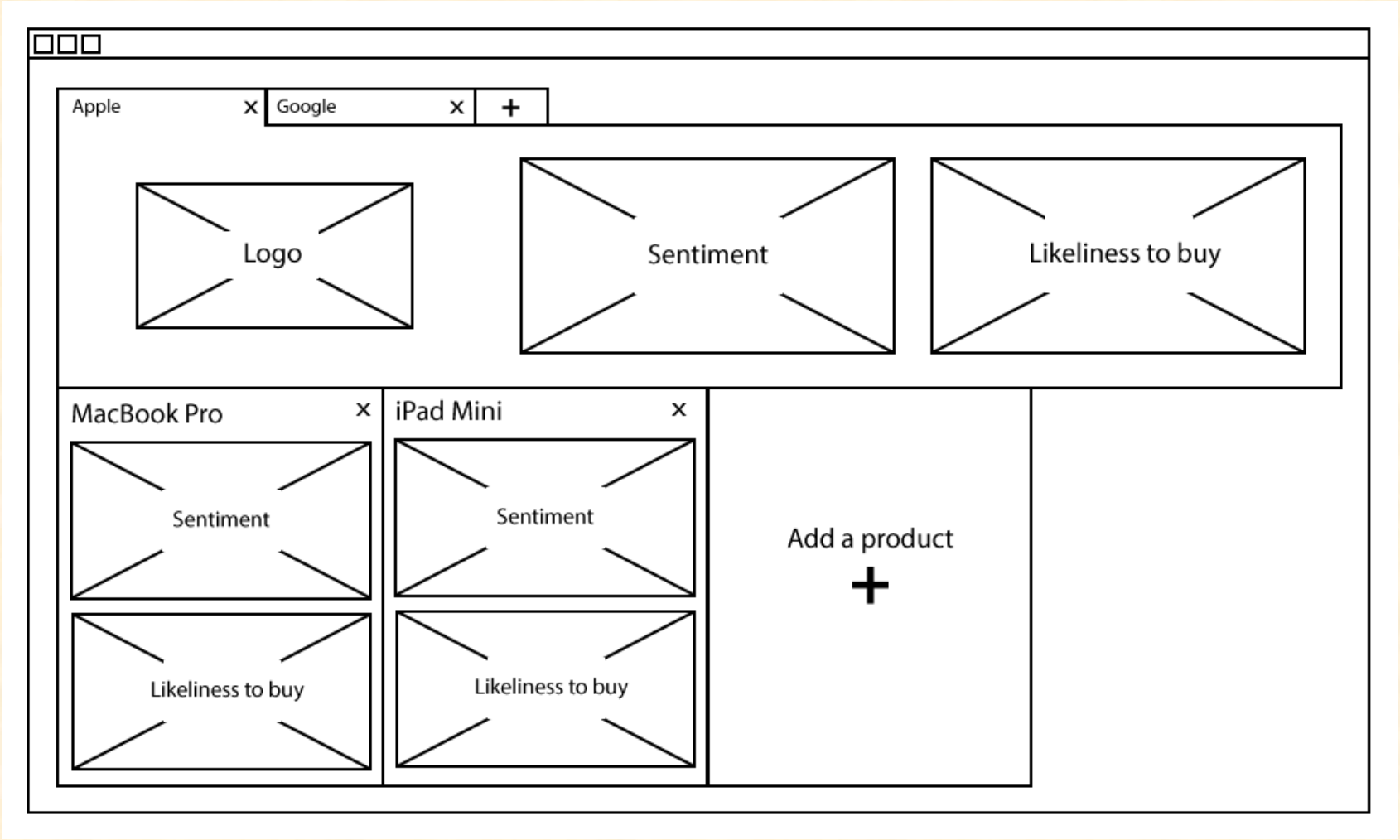
Functional Specifications

- Consume Twitter stream with Amazon Kinesis
- Score tweets using natural language processing techniques
  - Sentiment analysis
  - Purchase likeliness
- Store tweets with scores using Amazon Redshift
  - Web app draws from this stored data
- Provide mobile-friendly web app to display results
  - Multiple views: graphs, charts, and tables
  - Filtering data

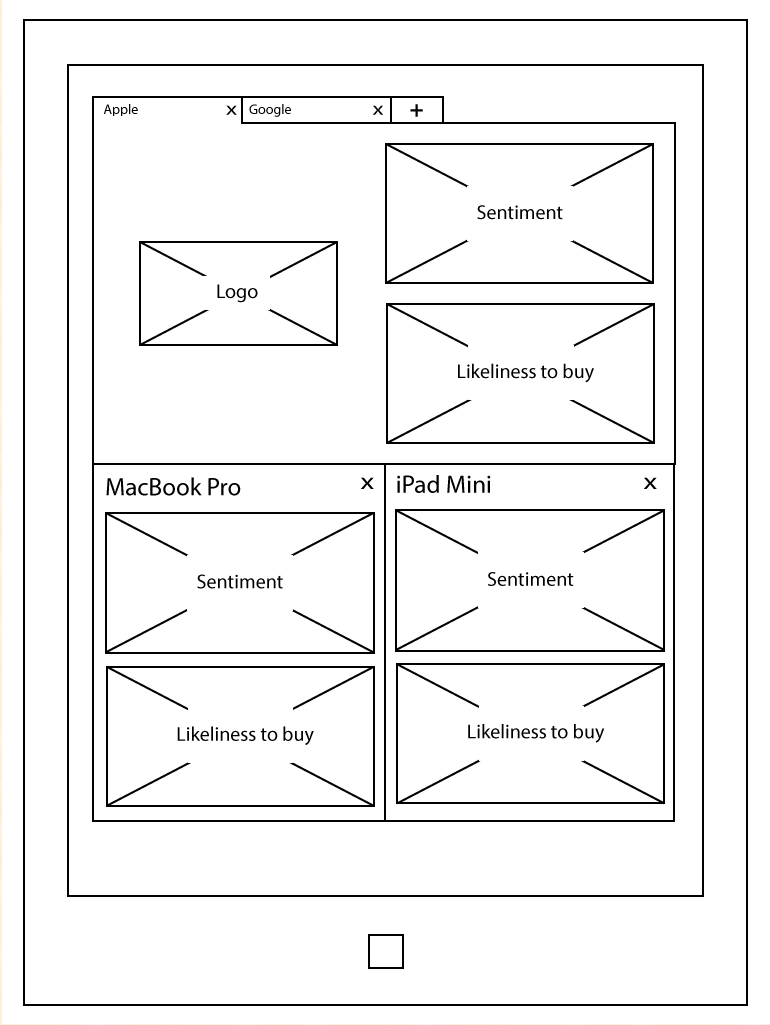
Design Specifications

- Users can filter data by brand/product and time
  - Analyze sentiment over time
- Users can layer multiple data sets on top of each other
  - Analyze sentiment vs. likeliness to purchase
- Web interface designed to be mobile-friendly
  - Desktop, tablet, and phone compatible

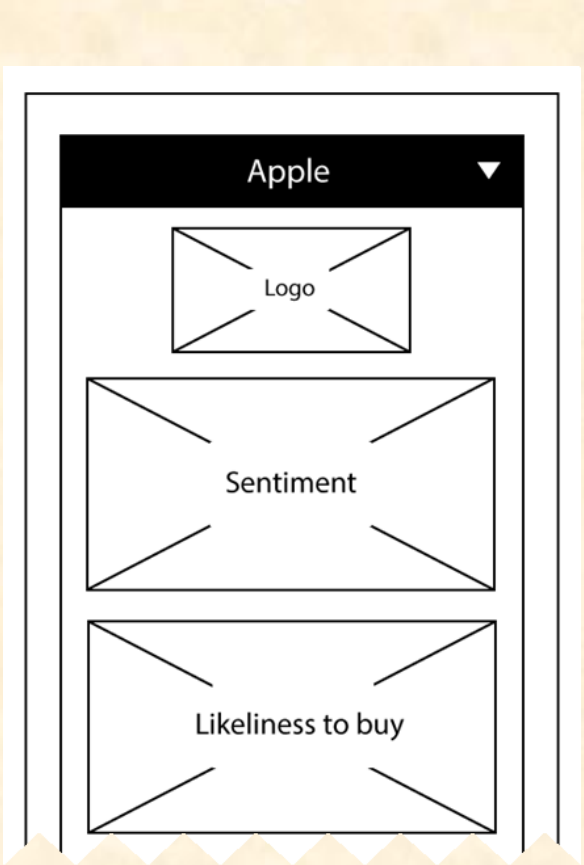
Screen Mockup: Desktop Interface

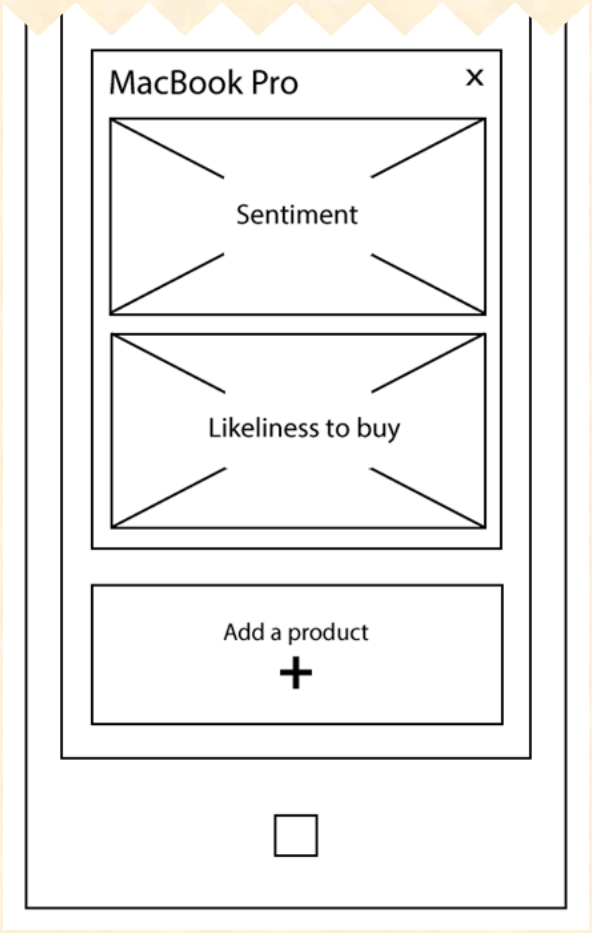


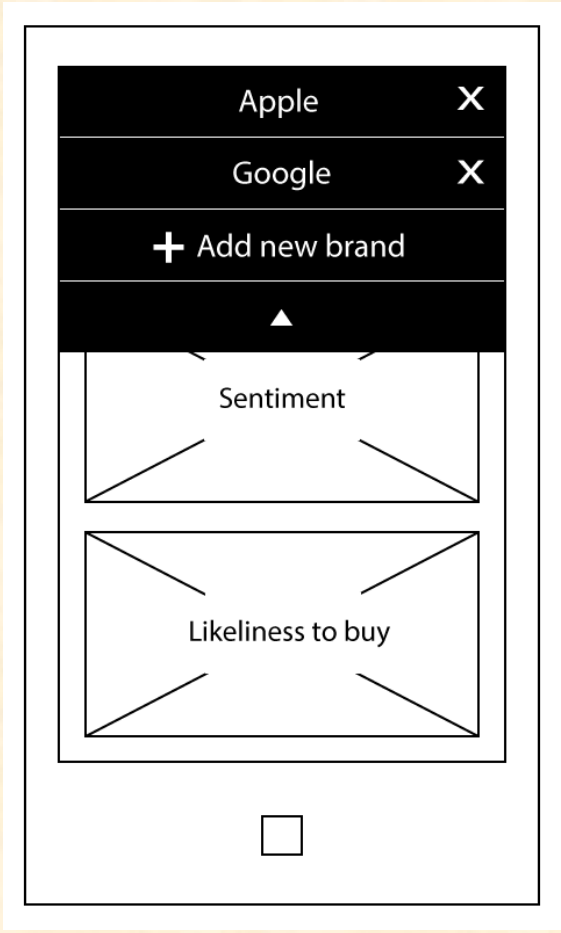
Screen Mockup: Tablet Interface



Screen Mockup: Phone Interface



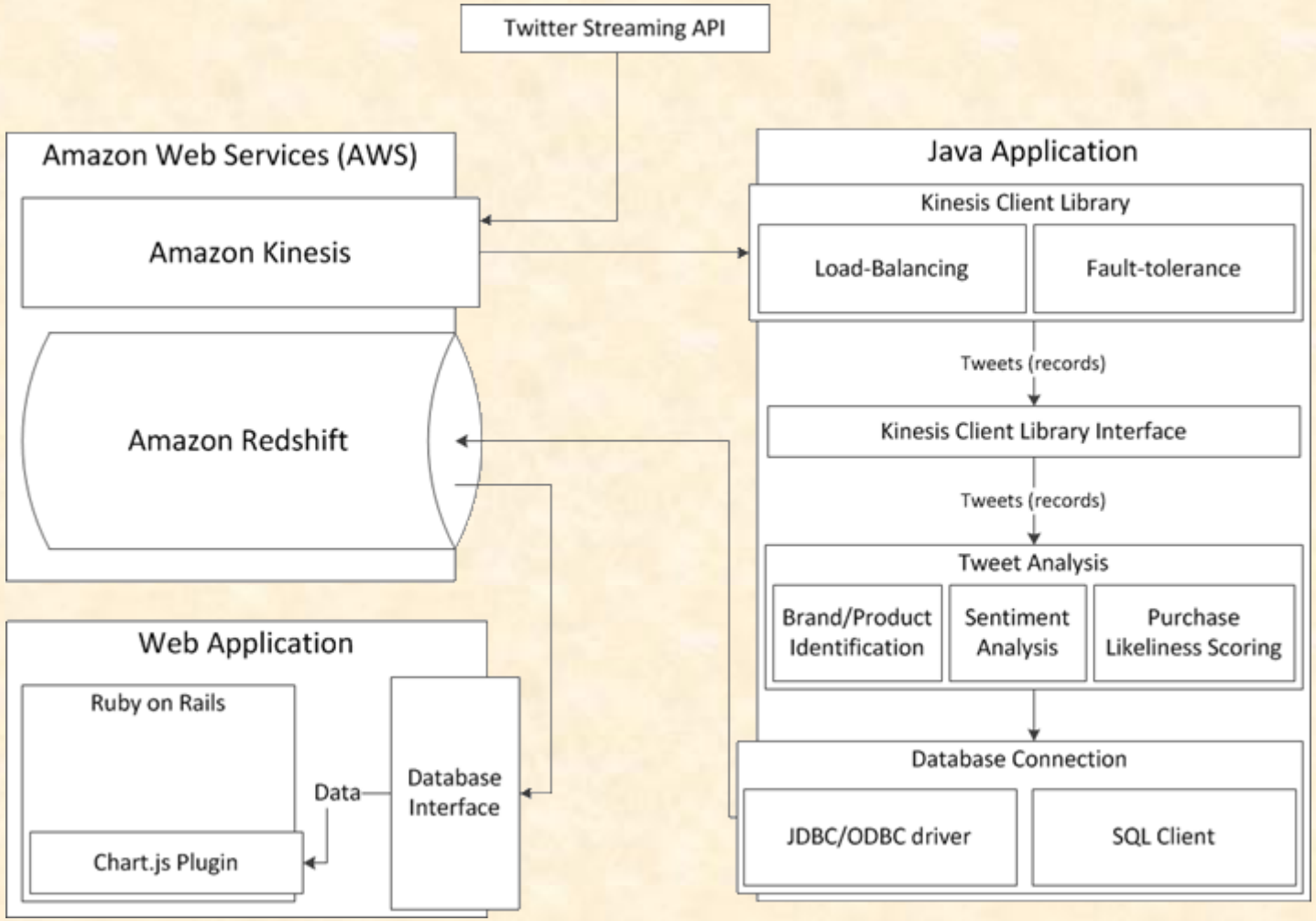




Technical Specifications

- Twitter “Firehose” API to get all tweets
  - Amazon Kinesis to stream to Java application
- Java SDK 1.7 and AWS SDK 1.8.10.1
  - Amazon Kinesis Client Library and Amazon Kinesis Connector Library
- Amazon Redshift
  - Based on PostgreSQL 8.0.2
  - Columnar storage
- Natural language processing
  - Sentiment analysis
    - Score -5 to 5
  - Purchase likeliness
    - Score 0 to 1

System Architecture



System Components

- Hardware Platforms
  - Amazon Web Services (AWS)
    - Amazon Kinesis
    - Amazon Redshift
    - Amazon Elastic Compute Cloud (EC2)
      - Linux
- Software Platforms / Technologies
  - Java SDK 1.7
  - Eclipse IDE
  - AWS SDK 1.8.10.1
  - Kinesis Client Library and Kinesis Connector Library

Testing

- Unit testing
  - Tweet parsing and analysis
  - JUnit
- Test harness
  - Sentiment analysis actual vs. expected results
- Web application workflows and UI
  - Use case tests
  - Feedback from Amazon sellers

Risks

- Amazon Web Services (AWS)
  - No experience with the related APIs
  - Use Kinesis Client Library and Kinesis Connector Library
- Natural Language Processing (NLP)
  - No experience with techniques such as sentiment analysis or machine learning
  - Scholarly articles and open source libraries available
- Twitter “Firehose” API
  - Need approval from Twitter to use, which might be harder to obtain than originally thought
  - Can use other Twitter APIs if it can’t be obtained
- Visualizing Data
  - Difficult to know what is useful to Amazon sellers
  - Plans to present prototypes to Amazon sellers early