Project Plan Presentation
Amazon Review Confidence Tool

The Capstone Experience

Amazon
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Project Sponsor Overview

- Amazon.com was founded by Jeff Bezos in July 1994
- It is renowned for its influence in the electronic commerce industry.
- Part of the big five American Information Technology companies.
- The enterprise acts as a middleman between retailers and customers.
- Reassures product standards by developing a review framework.
Project Functional Specifications

• Leadership Principle of **Customer Obsession**
  ▪ Increase **Customer Trust** and **Loyalty**

• Predict if an Amazon Product Review is genuine for Sellers & Customers Alike

• Visualize Review-Authenticity
  ▪ Display Confidence Score
  ▪ Easy to Understand Graphical Display

• Highlight Low Quality Reviews
  ▪ Avoid Customer Confusion
  ▪ Preserve Seller Reputation
Project Design Specifications

• Accessible to both the **Buyer** and **Seller**
• Create a Web Application that presents review analysis of a specific product
• Browser Extension
  ▪ For Consumer Awareness
  ▪ Display summarized score without low-confidence reviews
  ▪ Quickly Analyze what Reviews are Impacted the most
  ▪ Can navigate to web app for full analysis
• Web App
  ▪ For Amazon Sellers
  ▪ Label confidence for each review
  ▪ Provide graph of confidence scores with ratings to understand performance
Screen Mockup: Home Page
Screen Mockup: Extension Overview

Adjusted Reviews
Go to our Webpage or View a Product on Amazon to View Ratings!

For more information and metrics, visit our web application here.

amazon
Screen Mockup: Browser Extension

Adjusted Reviews

Under Armour Men's Charged Assert 9 Running Shoe

<table>
<thead>
<tr>
<th>Rating</th>
<th>Review Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 star</td>
<td>76%</td>
<td></td>
</tr>
<tr>
<td>4 star</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>3 star</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>2 star</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>1 star</td>
<td>3%</td>
<td></td>
</tr>
</tbody>
</table>

Adjusted Rating

4.6 out of 5

26,124 original ratings
407 removed

For more information and metrics, visit our web application here.
Screen Mockup: Review Page
Project Technical Specifications

• Backend
  ▪ DynamoDB for New Training Data & Cached Predictions
    o New data moves into Amazon S3 Bucket (responsive retrieval)
  ▪ JSON Object Storage for Long-Term Training Data Storage

• Machine Learning
  ▪ Amazon SageMaker: 2-part system
    o Fake review generation model
      ❖ OpenAI's GPT-2 (pretrained)
    o Fake review detection model
      ❖ HuggingFace's RoBERTa (pretrained)
Project Technical Specifications Cont.

• App Layer
  ▪ Serverless Functions with AWS Lambda
    o Review Rating – calculations
    o Product Rating - aggregation
    o Seller Rating – aggregation
  ▪ Cache predictions through DynamoDB
  ▪ Connect to Frontend through API Gateway
    o REST APIs

• Frontend
  ▪ React.js for Web Framework
  ▪ Chrome Extension (Self-Hosted Web Add-Ons)
  ▪ Amplify Hosted Web App for Sellers
    o Cognito for User Authentication and State
      ❖ Linking Amazon Account
Project System Architecture
Project System Components

• Amazon Web Services
  ▪ Lambda
  ▪ DynamoDB
  ▪ S3 Buckets
  ▪ SageMaker
  ▪ API Gateway
  ▪ CloudFormation
  ▪ Cognito
  ▪ Amplify

• React JS

• Python
Project Risks

• Responsive Browser Extension
  ▪ How do we create a responsive extension for large review data?
  ▪ Mitigation: Redirect to Web App if Browser Extension is too slow, and cache analyzed data for quicker display

• Acquiring Labeled Review Data for Machine Learning
  ▪ How do we get well-labeled data for the ML model(s)?
  ▪ Mitigation: Request data from Amazon, and generate our own fake reviews

• Complex CloudFormation Stack
  ▪ How do we share AWS Infrastructure with the client?
  ▪ Mitigation: Study early on CloudFormation, and create a stack for the Alpha
Questions?