**Title Slide**

* **Title:**
* **Subtitle:**
* **Presenter Name / Team Name / Date**

**Slide 1: Introduction**

* **Title:** Introduction to the Project
* **Content:**
  + Brief overview of the project goals
  + Mention of the importance of data quality and model performance
  + The progression: from data scraping → exploratory data analysis (EDA) → modeling → findings

**Slide 2: Initial Data Scraping**

* **Title:** Data Scraping: The First Attempt
* **Content:**
  + Explain how the initial scraping was conducted
  + Include:
    - Number of records scraped initially
    - Tools/technologies used for scraping (e.g., Python libraries such as BeautifulSoup, Scrapy)
  + Why we decided to increase the amount of scraped data later on (mention early insights or challenges)

**Slide 3: Expanded Data Scraping**

* **Title:** Scaling Up: Scraping More Data
* **Content:**
  + Highlight how we scaled up data collection
  + Include:
    - New volume of records scraped
    - What led to the decision to scrape more data (findings from initial analysis)
  + Brief mention of the challenges and improvements made in this second round of scraping

**Slide 4: What Our Dataset Includes**

* **Title:** Understanding the Dataset
* **Content:**
  + Show key features/columns of the dataset
  + Brief explanation of what each column represents (use simple bullet points or a table)

**Slide 5-7: Exploratory Data Analysis (EDA)**

* **Title (for each slide):** Exploratory Data Analysis
* **Content:**
  + These slides will showcase different aspects of the EDA. Consider breaking it down as follows:
    1. **General Overview (Slide 5):**
       - Summary statistics (mean, median, standard deviation, missing data)
       - Data distribution of key features (bar charts, histograms, etc.)
    2. **Visual Insights (Slide 6):**
       - Include visuals such as word clouds for textual data, box plots, or other graphical representations
    3. **Relationships Between Features (Slide 7):**
       - Correlation heatmaps, pair plots, or similar visualizations that show feature relationships

**Slide 8: Modeling Strategy**

* **Title:** Modeling Strategy and Architecture
* **Content:**
  + Introduction to the modeling approach
  + Mention the different models tried (e.g., Logistic Regression, Random Forest, Neural Networks)
  + Focus on the comparison of results:
    1. How performance varied with different architectures
    2. Why the focus shifted to hyperparameter tuning for the best three models

**Slide 9: Hyperparameter Tuning**

* **Title:** Hyperparameter Tuning for Best Models
* **Content:**
  + Describe the process of hyperparameter tuning:
    - Techniques used (e.g., Grid Search, Random Search)
    - Key hyperparameters optimized for the three best-performing models
  + Mention that despite tuning, the performance did not meet expectations
  + Decision to pursue better data (leading into the next section)

**Slide 10: Strategy Shift: Scraping More Data**

* **Title:** Gathering More Data for Improved Results
* **Content:**
  + Explain the decision to gather more data due to limited performance from initial models
  + Overview of new data scraping:
    - How much data was added
    - Additional data features if relevant
  + Mention challenges or improvements in scraping (data cleaning, handling large datasets, etc.)

**Slide 11: Training on New Dataset**

* **Title:** Training Models on the New Dataset
* **Content:**
  + Description of how the models were retrained with the newly scraped, larger dataset
  + Include details about:
    - Initial observations on class imbalances
    - How class weights or synthetic data (e.g., SMOTE) were used to balance the dataset
    - Mention if data augmentation or other preprocessing steps were applied

**Slide 12: Dataset Imbalance: Effects on Performance**

* **Title:** Imbalance vs. Balanced Dataset Performance
* **Content:**
  + Compare model performance:
    - With imbalanced data: some labels perform well, but others poorly
    - With balanced data: more generalized predictions but drop in overall accuracy
  + Visuals: Comparison charts (e.g., bar charts showing label-wise accuracy)
  + Discuss which approach yielded more significant insights based on your goals

**Slide 13: Hyperparameter Tuning Plateau**

* **Title:** Hyperparameter Tuning Reaches Plateau
* **Content:**
  + Observations on how hyperparameter tuning improved models but eventually reached diminishing returns
  + Show a performance curve indicating where tuning helped but where improvements plateaued
  + Reinforce the decision to focus on data quality over endless tuning

**Slide 14: Key Findings**

* **Title:** Interesting Findings and Key Insights
* **Content:**
  + Summarize the most significant findings:
    - Improved performance with the new dataset, but specific challenges with label imbalance
    - Trade-offs between accuracy and generalization
    - Mention any unique or unexpected findings in model behavior
  + Consider including a visual to represent the most interesting finding (e.g., accuracy vs. label balance trade-off)

**Slide 15: Conclusion and Next Steps**

* **Title:** Conclusion and Future Directions
* **Content:**
  + Summarize the overall learnings from data scraping, EDA, and modeling
  + Discuss what future work might involve:
    - Collecting even more data
    - Trying more advanced modeling techniques
    - Working on specific label imbalances, data preprocessing techniques, etc.
  + Briefly mention any potential real-world applications of these findings

**Final Slide: Q&A**

* **Title:** Questions and Discussion
* **Content:**
  + Open the floor for questions or further discussion.

Content overview:

We start with showing how the data is being scraped, initially we scraped a certain number, then eventually we decided to scrape a lot more based on the finding. The presentation talks a bit about how the scraping is done and what the dataset is about. The next part is performing EDA on the dataset, before we begin any data analysis, we want to understand the data a lot more, the next few slides should showcase plots and charts, word cllouds about what the data is showing us. This should span a few slides. After this, we go into the modeling strategy. Dataset: the first set we used 1) we train on multiple models to see how the results change with different architecture 2) we choose 3 best performing ones to do some hyperparameter tuning 3) we decided that the results were not ideal, and that modeling is maxed out, so we starting to work on the strategy to get better data, so we scraped more eventually. The slides then move to the next part which is interesting findings. Dataset: massively scraped new dataset. 1) Upon training on a new dataset, we noticed that with the imbalance dataset, the results perform poorly for some labels but very well for others, the average score is better overall, this is done with class weights, and even synthetic data. However, when we decide to drop some data to even out the dataset, the predictions of the labels are more generalized although overall accuracy dropped. To share on which is more significant for us. 2) Hyperparameter improves the model, but it tends to reach a pleateau 3) and other special findings we can think about