From Generalist to Specialist

Fine-Tuning Models for Spam Detection

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Emerging Technologies North

HYPERCOLOR DIGITAL

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Agenda

- Notebook 1 - Fine Tuning
- Slides
- Notebook 2 - Prompt Engineering
- Notebook 3 - Performance Testing
- Exercise

Content Warning

https://archive.ics.uci.edu/dataset/228/sms+spam+collection

Dataset contains real text messages, some of which
contain potentially offensive language.

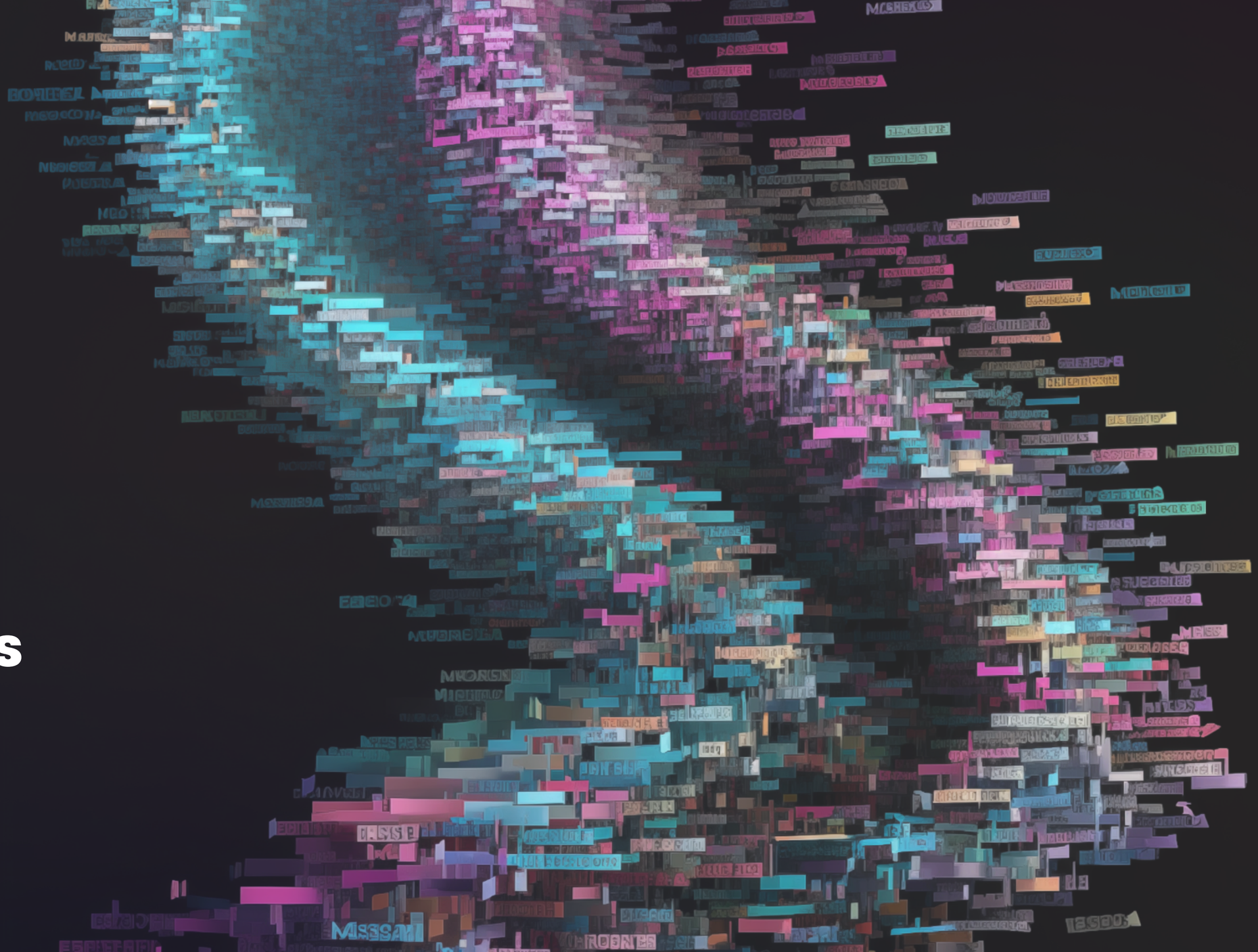
“Rated R”

Notebook 1 - Fine Tuning

https://github.com/hypercolor/applied-ai-fine-tuning/blob/main/notebooks/part-1-fine-tuning.ipynb

In this notebook we train fine-tuned models using the SMS spam dataset

What Is Spam?



Fine Tuning: “Showing”

Spam

- You can stop further club tones by replying \\STOP MIX\\\" See my-tone.com/enjoy. html for terms. Club tones cost GBP4.50/week. MFL
- Claim a 200 shopping spree, just call 08717895698 now! Have you won! MobStoreQuiz10ppm

Ham

- Free any day but i finish at 6 on mon n thurs...
- Lol! Nah wasn't too bad thanks. Its good to b home but its been quite a reality check. Hows ur day been? Did u do anything with website?

Prompt Engineering: “Telling”

You are a spam classifier. Your job is to examine the content of a message and determine if it is spam or ham. Spam is a message that is spam, harmful, abusive, an attempt to access private information, harrassment, or otherwise unwanted. Ham is any message that is not classified as spam. Response should be a single word: Spam or Ham.

When to Fine Tune?

Benefits

- Smaller Prompts
- Cost at Scale
- Handle Edge Cases w/Large Training Data

Drawbacks

- Cost of Obtaining Datasets
- Development Cycle
- Extensibility to New Datasets

Confusion Matrix

True Positive	False Positive
False Negative	**True Negative**

Recall = TP / (TP + FN)

Precision = TP / (TP + FP)

Accuracy = (TP + TN) / Total

Notebook 2 - Prompt Engineering

https://github.com/hypercolor/applied-ai-fine-tuning/blob/main/notebooks/part-2-prompt-engineering.ipynb

In this notebook, we build a simple prompt-driven spam classifier

Notebook 3 - Performance Testing

https://github.com/hypercolor/applied-ai-fine-tuning/blob/main/notebooks/part-3-performance-testing.ipynb

In this notebook, we compare the performance of prompt-driven and fine-tuned spam classifiers

Notebook 4 - Exercise

https://github.com/hypercolor/applied-ai-fine-tuning/blob/main/notebooks/part-4-exercise.ipynb

In this notebook, we explore extending the spam classifier model to more datasets