Neel Gupta

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Education

University of Southern California **Los Angeles, CA**
B.S. Computer Science, Minor: Mathematics, GPA: 3.63/4 *August 2021 - May 2025*
Programming Coursework: Data Structures, Algorithms & Theory of Computing, Computer Systems
Math Coursework: Applied Probability, Seminar in Problem Solving, Math of Physics & Engineering II
Honors and Societies: Viterbi Dean's List, ACM, IEEE, Alpha Lambda Delta

Work Experience

Undergraduate Research Assistant **Marina del Rey, CA**
USC Information Sciences Institute - STEEL: Security Research Lab *May 2022 - Present*

- Sampled, analyzed, and validated dataset of approxiately 24.6K scraped YouTube video advertisements and hyperlinks for their appropriateness to young children, finding that 26.9% out of our sample include at least one ad that is inappropriate for young children with an aggregate accuracy of 97%.
- Wrote bash scripts to automate F1 score calculation for sets of anomalous network traffic data. Helped fine tune parameters for anomaly detection algorithm based on principal component analysis of multidimensional time-series data in NumPy, thus increasing the number of true positives by ˜15% when the signal-to-noise ratio of a network anomaly is 5 or higher.
- Make python scripts that recognize and count natural entities in over 500K emails from Enron corpus to find intersecting cases of sentences, phrases, and words that could appear in spam or phishing emails. Annotate ˜2.5K emails for spam and phishing content. Develop code to evaluate team's inter-annotator agreement score across emails to accurately train an NLP model to detect spam.

Projects

Natural Entity Recognizer and Sentiment Analyzer Link to Repo

Using NumPy and Spacy, developed code to parse, analyze, and count natural entities in public Enron Corpus email data set. Ran sentiment analysis to find emails with low subjectivity to understand .

C++ Reverse Polish Notation Calculator Link to Demo

Implemented a Reverse Polish Notation calculator in C++ using the command line. Wrote extensive unit tests to ensure correct and faster functionality for exponentiation and modulus. Using object-orientated design paradigm, developed software that encapsulates vector arithmetic from calculator functionality.

Publications

Skills

Programming/Scripting Languages:	C++, Python, Java, MATLAB
Tools and Frameworks:	PyTorch, Jupyter Notebook, Pandas, LaTeX, TensorFlow, Git, Docker, AWS