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Brian Naklycky

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Education

University of Texas at Austin Master's in Computer Science | GPA 3.5/4.0 *Specialization: Machine Learning* Jan 2023 — Dec 2024
University of South Florida Bachelor's in Computer Science | GPA: 3.5/4.0 Aug 2019 — Dec 2022

Skills

Languages Fluent: Python, C++, C, SQL | Intermediate: Java, MATLAB
Frameworks & Libraries PyTorch, Numpy, Pandas, Linux, SnowSQL,AWS, C++ STL, Sklearn, Matplotlib, Tensorflow, PostgreSQL, Git

Work Experience

Graduate Teaching Assistant **Aug 2024 — Dec 2024**
University of Texas at Austin *Austin, TX*
- TA for Natural Language Processing (online) graduate course
- This course covers models from the genesis of NLP to modern architectures
- Responsible for holding office hours and grading student work
- Experience with Sentiment Analysis, Neural Networks, Word Embeddings, Transformers, LLM factuality, and Dataset Artifacts

Data Engineer Intern **May 2024 — Aug 2024**
Toyota Financial Services *Plano, TX*
- Reduced the time it takes to develop and deploy new data pipelines from thousands of hours to minutes
- Created a script in Python to generate new pipelines while cleaning metadata
- Tested this script on over 1300 individual tables, ingestion, and consumption pipelines
- Wrote queries to generate specific lists of table names to be transferred
- Presented my project to various management teams
- Leveraged Python, Snowflake, SQL, Github, Jenkins, & AWS

Undergraduate Research Assistant **Nov 2021 — Aug 2022**
University of South Florida College of Computer Science & Engineering *Tampa, FL*
- Conducted research on classical and quantum networking to help secure vulnerabilities in healthcare network infrastructures
- Read, summarized, and cultivated relevant papers to master state-of-the-art quantum computing networking techniques.
- Created classical and quantum network simulations using NS3 and SeQuEnCe network simulators
- Experimented with TCP/IP and UDP/IP and compared performance to using a quantum acknowledgment channel
- Measured performance by tracking the time it took to transmit 10,000 packets on a simulated busy network
- Collected and Analyze data from our experiments and communicated them with my advisor.

Projects

Transformer Bootstrapped Up Scaling **August 2024 — Present**
Independent Project *Austin, TX*
- Created and tested a theoretical way to train LLMs faster by expanding smaller models to larger ones
- Tested the model against a standard training schedule
- Conducted statistical analysis on the results, comparing the performance of models with and without transfer learning.
- Observed significant improvement in model accuracy when using transfer learning for larger models (+5.24% improvement)
- Tools used: Python, Jupyter Notebooks, Pytorch, Numpy, Scipy

NLP Improvement Paper **November 2023 — December 2023**
University of Texas at Austin *Austin, TX*
- Led the creation of an academic replication paper focused on enhancing and scrutinizing the performance of a cutting-edge model
- Conducted meticulous data analysis on the SNLI dataset, identifying challenging instances for the model
- Analyzed and found dataset artifacts in the data set and corrected for them in model training
- Outperformed the results reported in the original paper being replicated
- Executed the project proficiently with key technologies, including Python, Jupyter Notebooks, Huggingface, and PyTorch

Philosophical Similarity Embedding Analysis **July 2023 — Aug 2023**
Independent Project *Austin, TX*
- Collected, cleaned, and analyzed classic philosophical texts using GPT-2
- Used embeddings learned from GPT-2 to embed an entire text into a single vector
- Used the vector to compare similarities between other texts in order to find a lineage of similarities between philosophies
- Created using Python Jupyter notebook, pytorch, numpy, pandas, and matplotlib, available on github as NLP-analysis