Jonny Li

ML/Software Engineer, Focus in Natural Language Processing
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Employment

Software Engineer, Speech Recognition - SoundHound AI @ Toronto, Canada
Oct 2021 - Present

- Lead development of RAPIDS + Spark-based distributed and GPU-accelerated training pipeline for large scale n-gram language models. Optimized build times and reduced technical debt of legacy Hadoop MapReduce codebase.
- Introduced Bayesian optimization-based hyperparameter tuning pipeline for statistical language models.
- Implemented and applied novel knowledge graph-based synthetic data generation technique for model training in low resource domains, such as restaurant food ordering.
- Key communicator between software engineering and machine learning teams. Major contributor for systems/code documentation, readable high quality code, and clear communication between/within teams.

SDE Intern, Search Engine - Amazon @ Vancouver, Canada (Remote)
Jun 2020 - Sep 2020

- Optimized search engine efficiency and reduced engineering debt by implementing a dependency graph analyzer in Python to safely remove redundant search engine configuration objects.

Software Intern, Full Stack Web - Mitsucari @ Tokyo, Japan
Sep 2018 - Aug 2019

- Full stack web development with Ruby on Rails, PostgreSQL, jQuery, Bootstrap, SASS, and Heroku.

Projects

Webspeak to English Translator @ github.com/jonnyli1125/piemanese-translator
Feb 2022 - Present

- Created statistical + neural hybrid machine translation model for translating webspeak to English using Python and Keras.
- Implemented from scratch a similarity learning-based neural model for recognizing similarly spelled words, memory efficient n-gram language model optimized for low latency, and beam search decoder.
- Implemented synthetic data generation methods for neural model training on low resource webspeak domain.
- Implemented Discord chat bot interface using Discord API, and deployed to cloud with Docker and Heroku.

Japanese Grammatical Error Correction @ github.com/jonnyli1125/gector-ja
Apr 2021 - Jun 2021

- Implemented state of the art BERT-based grammatical error correction model with 10% gain over previous best model.
- Reproduced 2020 Grammarly research paper in Tensorflow/Keras and Huggingface transformer modules.
- Implemented scalable, memory-efficient, synthetic data generation and training pipelines for large datasets that don't fit in memory, with Tensorflow and Google Cloud + Colab.
- Created interactive web app demo using Python/Flask and HTML/CSS/JavaScript.

NLP Chess AI @ github.com/jonnyli1125/chess-bert-mcts
Jun 2021

- Combined transformer models with Monte Carlo Tree Search algorithm to create custom chess AI.
- Implemented multi-threaded MCTS algorithm from scratch in Python, and BERT models for simulated policy and value networks with PyTorch and Huggingface.

Education

University of Toronto
Graduated Jun 2021

Honours Bachelor of Science, Computer Science and Linguistics
Courses: Machine Learning, AI, Computational Linguistics, NLP, Data Structures, Algorithms, Operating Systems
Activities:
- UTokyo Foreign Exchange (2018-2019): Studied Computer Science and Linguistics at University of Tokyo.
- UofT Neurotech Workshops Lead (2017-2018): Created tutorial workshops for programming basics (i.e. Python, Git, etc).
- UofT Japan Assocation Webmaster (2017-2018): Designed and managed club website with HTML/CSS/JavaScript.

Skills

Programming Languages: Python, Java, JavaScript

Technologies/Frameworks: Apache Spark, Hadoop MapReduce, Keras/Tensorflow, PyTorch, scikit-learn, SQL, Docker, Kubernetes, Heroku, Git

Other: NLP, Machine Learning, Distributed Computing