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 model 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