Henry (Hanxiang) Pan

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Skills

Languages	Python, JavaScript (Node.js), Java, MATLAB, SQL, Bash, Pug/Jade, HTML5/CSS, VBA
Frameworks/Libraries	PyTorch, Tensorflow, React, Express, GraphQL, Flask, Scikit-learn, Numpy, Pandas, Spring, SQLAlchemy, Puppeteer
Tools	Docker, ELK Stack, Nginx, Tomcat, MongoDB, PostgreSQL, MySQL, Jenkins, Gradle, Sonar, TeamCity, uDeploy

Work Experience

University of Pennsylvania
Philadelphia, USA | Remote
RESEARCH ASSISTANT (UNDER PROF. BARRY G. SILVERMAN'S STATESIM PROJECT)
May 2020 - Aug. 2020
- **Research:** Analyzed an monolithic application; identified inefficient data flow and researched technologies to implement the StateSim Service
- **Architecture:** Drafted an architecture proposal for the StateSim service that supports file sharing, user management and authentication
- **Implementation:** Developed the StateSim service business logic in Python; implemented a GraphQL API in Python Graphene; achieved a clearer division of application responsibilities and unified client-server communication into one avenue

ViewFin
Toronto, Canada | Remote
SOFTWARE ENGINEER
May 2019 - July. 2020
- **Architecture:** Designed the architecture for a cryptocurrency trading platform and implemented data processing, signal computation and strategy execution modules that supports running a swarm of generic multi-strategy agents in parallel across multiple exchanges
- **Dataflow:** Established a websocket communication pipeline both among internal components and with external services using Python
- **Infrastructure:** Developed a multithreaded backtesting tool in Python, continuous integration (CI) pipeline using Docker, log monitoring with ElasticSearch/Logstash/Kibana (ELK) and a dashboard for tracking live and backtesting trading performance using React and Node.js

Paymentus
Toronto, Canada
APPLICATION ENGINEER (TEAM LEAD)
Nov. 2017 - Aug. 2018
- **Framework:** Analyzed 100+ application feature flows for over 1000+ generic and custom billers with emphasis on complexity and reusability to identify areas for component testing; designed the first end-to-end (E2E) testing framework; implemented core libraries for developing data-driven tests in Node.js, Puppeteer and Jest; containerized the testing environment with Docker for the CI pipeline
- **Full-stack:** Implemented generic UI form components in React and API/microservices in Node.js for the biller self-onboarding feature
- **Leadership:** Managed and mentored a team of 7 test engineers and led their team scrum meetings; conducted 10+ phone/in-person interviews

Citigroup (Velocity Desktop Trading Application Team)
Toronto, Canada
SOFTWARE DEVELOPER / TECHNOLOGY ANALYST
Jun. 2016 - Nov. 2017
- **Architecture:** Investigated and implemented a distributed cache architectural change from a peer-to-peer (P2P) model to an efficient client-server model, which reduced component startup-time and latency by 9X and mitigated deadlocks
- **Back-end:** Developed and enhanced server-side search functionality for interest rate swaps (IRS), bonds and internal financial instruments in Java and Spring; migrated a legacy data source for 300+ IRS products and added support for 200+ non-benchmark IRS products by redesigning field mappings and by implementing reference data enhancements to support consistent order flow for downstream components

Bell Canada
Toronto, Canada
BUSINESS INTELLIGENCE ANALYST
Summer 2015
- **Predictive Analytics:** Reallocated technicians to different job types based on performance quartiles, which reduced monthly churn rate for the internet and home-phone channels by 29% and 17%, respectively
- **Modeling:** Discovered factors to reduce external noise and statistical bias through technician shadowing, and modeled workload distribution to determine "Same-day/Next-day" repair service cutoff-time that reduced 54 miss-commitments per day

Projects & Research

Abstractive Text Summarization: Researched the capability of sequence-to-sequence models for text summarization by implementing a baseline gated recurrent network model and a multi-headed attention transformer model; achieved 0.37 ROUGE-1 score with the best-tuned model

BrawlStars AI: Generated gameplay data manually and implemented object detection algorithms to identify player/ally/enemy positions and visual rewards for supervised learning; implemented a reinforcement learning (RL) environment and deep Q-learning agent in Python/Tensorflow

Benefits of Group Sparsity in Deep Learning: Researched and experimented with neural network regularization methods on three datasets, MNIST Handwritten Digits, Forest Covertype, Sensorless Drive Diagnosis, which reduced network size by 37% while improving accuracy by 1%

Education

University of Pennsylvania
Philadelphia, USA
MASTER OF SCIENCE IN ENGINEERING, COMPUTER AND INFORMATION SCIENCE (CIS)
Aug. 2019 - Dec. 2020
- **Relevant Courses:** Machine Learning, Reinforcement Learning, Deep Learning, Computer Vision, Distributed Systems, Algorithmic Game Theory

University of Western Ontario | Richard Ivey School of Business
London, Canada
BACHELOR OF SCIENCE, HONORS SPECIALIZATION IN COMPUTER SCIENCE AND MINOR IN ECONOMICS
Sept. 2014 - Apr. 2016
(DISCONTINUED) BACHELOR OF ARTS, HONORS BUSINESS ADMINISTRATION (HBA)
Sept. 2011 - Apr. 2014