Soon Chee Loong

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Education

University of Toronto — Toronto, ON

- *Master of Applied Science in Mechanical and Industrial Engineering* — *September 2017 - August 2019*
- *Bachelor of Applied Science in Electrical and Computer Engineering* — *September 2012 - April 2017*

Research Experience

Data-Driven Decision Making Laboratory, *Professor Scott Sanner* — Toronto, ON

Graduate Research Student, Recommender Systems - **Python** — *September 2017 - August 2019*

- Deep Graph Recommender Systems
- Implemented benchmarks on recommender system that runs on large scale datasets such as Netflix-100m.
- Proposed and implemented a model that outperforms existing models on the long-tail items.
- Proposed and implemented evaluation strategies for metric spaces.

Deep Learning NLP Capstone Research Project, *Professors (Raquel Urtasun, Sanja Fidler)* — Toronto, ON

Undergraduate Research Intern, Natural Language Processing - **Python** — *September 2016 - April 2017*

- Working on integrating End to End Memory Networks for the MovieQA Challenge, which aims to evaluate automatic story comprehension from movie plots.
- Implemented End to End Memory Networks with temporal encoding and achieve 99% accuracy on the bAbI tasks.
- Integrated Word2Vec and TFIDF, increasing accuracy to 53.0%. Received 98% final grade from Prof. Raquel Urtasun.
- Implemented Term-Frequency Inverse Document Frequency algorithm to achieve 47.5% accuracy on the MovieQA benchmark. Utilized dynamic programming that allows code to run within 4 minutes, an improvement from the original authors code which runs more than an hour.

Toronto Intelligent Decision Engineering Laboratory, *Professor Christopher Beck* — Toronto, ON

Undergraduate Research Intern, Constraint Satisfaction Problems - **C++** — *May 2014 - August 2014*

- Performed critical appraisals of recommended Artificial Intelligence (AI) literature, implementing algorithms to further understanding of concepts; presented findings to professor and PhD students
- Detected algorithmic discrepancy while proofing and developed solution to resolve issue; credited as the first author on the resulting paper created to address discrepancy.
- Implemented propagation algorithms to increase efficiency of Constraint Satisfaction Problems, a branch of AI.
- Identified slow segments of existing code and created new programming to increase efficiency and effectiveness.

Teaching Experience

University of Toronto — Toronto, ON

Teaching Assistant, CSC418: Computer Graphics - **C++** — *January 2019 - April 2019*
Teaching Assistant, CSC258: Computer Organization - **Verilog** — *September 2018 - December 2018*
Teaching Assistant, CSC263: Data Structures and Analysis - **Math** — *May 2018 - August 2018*
Teaching Assistant, CSC207: Fundamentals of Object Oriented Programming - **Java** — *September 2017 - April 2018*
Teaching Assistant, MIE250: Software Design - **Java** — *September 2017 - December 2017*

Work Experience

Google — New York, NY

Software Engineering Intern, Concurrency - **C++** — *May 2016 - August 2016*

- Designed and implemented components that generate and receives RPC calls to and from clients in parallel via closures executed using thread pools for scalability.
- Implemented storage of event codes in a distributed database and attempt numbers for each RPC call in a distributed hash map with locks for fault tolerance.
- Implemented real-time systems that generate time alerts based on earliest execution time, deadlines, and lease time of RPC calls using a Select Server.
- Implemented communication between components using message passing via thread channels.

Salesforce — Vancouver, BC

Software Engineering Intern, Distributed Systems - **Java** — *February 2016 - April 2016*

- Created a declarative tool that is being used in production to generate kafka topic configurations based on given configurations, allowing automated work to push and update kafka topics in production to replace previous approach that requires manual work.
- Employed test driven development practices to work with large code bases, producing high quality testable code that is currently being used in production.
- First place out of 20 teams, Internal Salesforce DVA Hackathon: Won $500 Amazon Cash. Automated re-distribution of partitions and topic names within Kafka using a declarative programming model.

Intel — San Jose, CA

Software Engineering Intern, Web Programming - **Python** — *May 2015 - August 2015*

- Automated the production of automated test reports on Alteras webpage; handling everything from backend databases to frontend user experience; enabled engineers to track their code performance visually on a daily basis.
- Used regular expression to collect information for test reports from large amount of text logs.

Awards

- **$500**: Top 5 out of 120 TAs, MIE Teaching Assistant Award (*2017-2018*)
- **$30k**: living expenses and tuition fees for graduate school at the University of Toronto (*2017-2019*)
- **$234k**: recipient of the Public Service Department of Country Full Scholarship, awarded annually to the top 1% of 10,000+ applicants (*2012-2017*)
- **$500 Amazon Cash**: 1st Place out of 20 teams, Salesforce DVA Hackathon (*2016*)
- **$250 Amazon Cash**: 2nd place out of 20 teams, Piazza Hackathon, Palo Alto (*2015*)
- **Samsung Galaxy S6, Samsung Gear VR**: 1st place out of 10 teams, Virtual Reality Hackathon. San Francisco (*2015*)

Publications

- Noise Contrastive Estimation for One-Class Collaborative Filtering. Wu, G.; Volkovs, M.; **Soon, C. L.**; Sanner, S.; and Rai, H. In Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR-19), Paris, France, 2019
- **Loong, S.C.**, Ku, WY. & Beck, J.C. Constraints (2016) 21: 646. doi:10.1007/s10601-016-9238-x

Annual Grade Point Average

- AGPA: 3.70 (Fall 2016 Winter 2017), 4th Year Computer Engineering Deans Honours List
- AGPA: 3.79 (Fall 2014 Winter 2015), 3rd Year Computer Engineering Deans Honours List
- AGPA: 3.73 (Fall 2013 Winter 2014), 2nd Year Computer Engineering Deans Honours List

Graduate Level Courses

- GPA: 4.0
- ECE521: Inference Algorithms A+
- CSC2515: Machine Learning and Data Mining A+
- CSC2541: Scalable and Flexible Models of Uncertainty A+
- MIE1516: Structured Inference and Learning A+
- MIE1621: Non-Linear Optimization A

Undergraduate Level Courses

- Artificial Intelligence
  - ECE496: Deep Learning NLP (supervised) by Professor Raquel Urtasun 98%
  - CSC384: Artificial Intelligence 91%
  - CSC418: Computer Graphics 86%
  - CSC320: Computer Vision 90%
- Mathematics
  - ECE302: Probability and Applications 88%
  - MAT224: Linear Algebra II 83%
- Control Systems
  - ECE311: Frequency Based Control Design 87%
  - ECE410: Modern Control Systems 86%
  - ECE411: Real time Digital Control Systems 85%

Skills

- **Languages**: C++, Java, Python, Verilog, Bash, SQL, XML, Assembly, MEAN Stack, Django
- **Software Tools**: PyTorch, Tensorflow, Keras, NLTK, LibRec, Kafka, Git, Docker, Valgrind, Maven, Makefile, LaTeX

Hobbies: Basketball

- Engsci Basketball Team, 2012-2014
  - **1 of 10 players selected out of 65 players**, Engineering Science Basketball Tryouts (*2012-2014*)
  - **1st Place out of 8 teams**, U of T's Basketball Engineering League (*2012-2013*)
  - **1st Place out of 8 teams**, U of T's Basketball Engineering League (*2013-2014*)
  - **2nd Place out of 20 teams**, U of T's Basketball Open Division (*2013-2014*)
- School of Graduate Studies Basketball Team, 2017-2018
  - **3rd/4th Place out of 20 teams**, U of T Basketball Second Division (*2017-2018*)