Alisa Liu

phone: (425) 233-9531 | email: alisa@u.northwestern.edu | web: alisawuffles.github.io

EDUCATION

Sep 2018 – Jun 2020 (expected) **Northwestern University**
Weinberg College of Arts & Sciences, Computer Science Major, Math Major
Cumulative GPA: 4.0

Sep 2016 – May 2018 **University of British Columbia** *(transferred)*
Faculty of Science, Computer Science Honors, Math Major
Cumulative GPA: 90.6 (A+)

Selected coursework: Statistical Language Modeling, Statistical Machine Learning, Design & Analysis of Algorithms, Computational Creativity, Machine Perception of Music & Audio, Introduction to Machine Learning, Applied Linear Algebra, Real Analysis, Probability & Stochastic Processes I-III, Introduction to Number Theory

Future coursework: Advanced Topics in Deep Learning, Graduate Algorithms, Artificial Intelligence, Introduction to Optimization, Graph Theory

HONORS & AWARDS

2019 Nominated for the CRA Outstanding Undergraduate Researcher Award
2019 Northwestern Grace Hopper Conference Scholarship
2018 – 2019 (all quarters) Northwestern Weinberg Dean's List
2016 – 2018 (all semesters) UBC Science Scholar (90%+ academic average with full course load)
2018 UBC Faculty of Science International Student Scholarship ($10,000)
2017 UBC Trek Excellence Scholarship ($4,000)
2017 UBC Dean of Science Scholarship ($500)
2016 UBC Outstanding International Student Award ($6,000)

EXPERIENCE

Sep 2018 – present **Northwestern University**, *Research Assistant*

Adviser: Dr. Doug Downey (WebSAIL group)

1. Developing a neural language model that generates definitions and paraphrases of noun compounds (e.g. "caramel popcorn"). We developed heuristic rules to scrape labeled noun compounds from online encyclopedias to create a novel dataset of 400,000 noun compounds, and trained a sequence-to-sequence transformer model on this dataset. We are currently incorporating human-authored definitions for unlabeled noun compounds to evaluate the impact of active learning on generation tasks.
2. Produced an adversarially generated commonsense question-answer dataset, using a novel question acquisition procedure where workers author questions designed to target weaknesses of state-of-the-art neural QA systems. We evaluated the QA systems on the dataset and explored various failure modes on the dataset [2].
3. Evaluated the settings under which a multi-sense definition modeling system succeeded and failed by investigating whether certain attributes of words and atoms were predictive of model performance [3].

Apr 2019 – present **Northwestern University**, *Research Assistant*

Advisers: Dr. Bryan Pardo, Dr. Prem Seetharaman (interactive audio lab)

1. Evaluating the impact of augmenting training data for music generation systems with high-quality generated output. We are applying this method to a neural Bach chorale generator by developing a hand-crafted score function for Bach chorales, based on music knowledge.
2. Built an ensemble model for audio source separation that can handle mixtures whose source domain is unknown, using a confidence measure to mediate among domain-specific models based on deep clustering. We derived a confidence measure based on the clusterability of the embedding space which approximates the separation quality without ground-truth comparison. [1]

May – Aug 2018 **Amazon**, *Data Engineer Intern*

Manager: Dr. Xingang Guo (LastMile IoT)

1. Developed and implemented a methodology to employ bluetooth beacons to collect operational metrics at Amazon delivery stations. Produced and monitored daily coverage reports that were crucial to monitoring the growth of the project. Investigated anomalous coverage statistics and metrics.

May 2017 – Apr 2018 **Fred Hutchinson Cancer Research Center**, *Research Intern*

PI: Dr. Ying Chen

1. Used SAS to perform data cleaning, analysis, and reporting for a project involving antiretroviral therapy (ART) for men at-risk of HIV.

PUBLICATIONS

1. **Alisa Liu**, Prem Seetharaman, and Bryan Pardo. "Model Selection for Deep Audio Source Separation via Clustering Analysis." *Submitted to the International Conference on Audio, Speech, and Signal Processing (ICASSP)*, 2020.
2. Michael Chen, Mike D'arcy, **Alisa Liu**, Jared Fernandez, and Doug Downey. "CODAH: An Adversarially Authored Question-Answer Dataset for Common Sense". *In the Proceedings of the 3rd Workshop on Evaluating Vector Space Representations for NLP (RepEval) in conjunction with NAACL*, 2019.
3. Ruimin Zhu, Thanapon Noraset, **Alisa Liu**, Wenxing Jiang, and Doug Downey. "Multi-Sense Definition Modeling using Word Sense Decompositions." *Manuscript*, 2019.
4. Dexter Everett, **Alisa Liu**, and Jenny Pan. "Comparison of Discourse Surrounding CRISPR/Cas9 in the Media and Peer-Reviewed Literature." *Canadian Journal of Undergraduate Research*, 2018.

TEACHING EXPERIENCE

Fall 2019 **CS 336: Design & Analysis of Algorithms**, *peer mentor*

with Prof. Jason Hartline (Northwestern)

Spring 2019 **EECS 349: Machine Learning**, *peer mentor*

with Prof. Bryan Pardo (Northwestern)

Winter 2019 **EECS 396/496: Statistical Machine Learning**, *course developer*

with Prof. Han Liu (Northwestern)

Winter 2018 **CPSC 121: Models of Computation**, *undergraduate TA*

with Prof. Alice Gao, Steve Wolfman, Ryan Vogt (UBC)

LEADERSHIP

May 2019 – present **.dev**, *workshop lead & social chair* (Northwestern)

Organizing educational workshops, including teaching ML workshops, and planning social events to foster community and inclusivity in the CS community.

Oct 2019 – present **Women in Computing (WiC)**, *mentorship program* (Northwestern)

Part of the mentorship program as a mentor to underclassman girls in computer science.

Sep 2016 – Apr 2018 **Code the Change**, *head of outreach & developer* (UBC)

Team lead on a mobile app project to pair students walking alone on campus at night. Communicated with non-profit organizations to propose projects and offer services to meet their software needs.

Sep 2017 – Apr 2018 ***The Ubyssey***, *contributor* (UBC)

Wrote for the student newspaper, ranging from book reviews to news on student services.

Sep 2016 – Apr 2017 **Interlake High School debate**, *debate coach*

Coached three varsity debaters competing at the national level.

SKILLS

Programming Languages: Python, Java, Matlab, C++, MySQL, SAS

Packages/Frameworks: PyTorch, Tensorflow, scikit-learn, NumPy, nussl, Git, LaTeX

Languages: English (native), Chinese (native), Spanish (intermediate)

ORGANIZATIONAL MEMBERSHIPS

Association of Computational Linguistics (ACL)

Mathematical Association of America (MAA)

Association for Women in Mathematics (AWM)