

Nelson F. Liu

EDUCATION

University of Washington, Seattle, Washington
B.S, Computer Science, B.A., Linguistics. Cumulative GPA: 3.85
Expected graduation date: June 2019

PUBLICATIONS

AllenNLP: A Deep Semantic Natural Language Processing Platform.
Matt Gardner, Joel Grus, Mark Neumann, Oyvind Tafjord, Pradeep Dasigi, **Nelson F. Liu**,
Matthew Peters, Michael Schmitz, and Luke Zettlemoyer. To appear in *Proceedings of the ACL
Workshop for Natural Language Processing Open Source Software (NLP-OSS 2018)*. July 2018.

Discovering Phonesthemes with Sparse Regularization.
Nelson F. Liu, Gina-Anne Levow, and Noah A. Smith. To appear in *Proceedings of the NAACL
Workshop on Subword and Character Level Models in NLP (SCLem 2018)*. June 2018.

ELISA System Description for LoReHLT 2017.
Leon Cheung, Thamme Gowda, Ulf Hermjakob, **Nelson Liu**, Jonathan May, Alexandra Mayn,
Nima Pourdamghani, Michael Pust, Kevin Knight, 32 others (names ordered alphabetically and by
affiliation). In *Proceedings of the NIST LoReHLT 2017 Workshop*. September 2017.

Crowdsourcing Multiple Choice Science Questions.
Johannes Welbl, **Nelson F. Liu**, and Matt Gardner. In *Proceedings of the EMNLP Workshop on
Noisy User-generated Text (WNUT 2017)*. September 2017.

RESEARCH EXPERIENCE

University of Washington Computer Science and Engineering Seattle, Washington
Noah's ARK Group Undergraduate Researcher **September 2015 - present**
Working on various natural language processing and machine learning research problems.

- Investigating the capacity and trainability of recurrent neural networks (with Roy Schwartz, Omer Levy, Chenhao Tan, and Noah A. Smith).
- Built models for the automatic discovery of non-arbitrary form-meaning associations in language (with Gina-Anne Levow and Noah A. Smith).
- Built a model to predict Supreme Court case outcomes from the text of amicus briefs and other court documents (with Yanchuan Sim and Noah A. Smith).
- Adviser: Professor Noah A. Smith

USC Information Sciences Institute Marina del Rey, California
Natural Language Group Research Intern **June 2017 - September 2017**
Worked on language-independent translation and alignment of rare and out-of-vocabulary words, particularly with neural sequence to sequence models.

- Advisers: Professor Kevin Knight and Professor Jonathan May

Allen Institute for Artificial Intelligence (AI2) Seattle, Washington
Research Intern **January - March 2017**
Worked on deep learning for science exam question answer as part of Project Aristo. Experimented with transfer learning across domains for reading comprehension.

- Awarded an "AI3 award" for "outstanding contributions to `deep_qa` (internal predecessor to `AllenNLP`), research productivity, and more".
- Mentor: Dr. Matt Gardner

FELLOWSHIPS, AWARDS & HONORS

Barry M. Goldwater Scholarship, 2018
Phi Beta Kappa, 2017
Washington Research Foundation Fellowship, 2017
UW HPCC Cloud Credit Grant Award, 2017
Mary Gates Research Scholarship, 2016
SciPy Scholarship, 2016

TEACHING
EXPERIENCE

Natural Language Processing Capstone (CSE 481N)

Teaching Assistant

March - June 2018

Advised teams of senior undergraduates and masters students on the design and implementation of original NLP projects.

- Instructor: Professor Yejin Choi

Natural Language Processing (CSE 447/ CSE M 547)

Teaching Assistant

January - March 2018

Assisted with course planning and development, led a weekly discussion section, and held weekly office hours. Developed and administered a new PyTorch-based SQuAD reading comprehension homework assignment.

- Instructor: Professor Yejin Choi

PROFESSIONAL
EXPERIENCE

scikit-learn

Google Summer of Code Developer

May - August 2016

Contributed to the popular Python machine learning library scikit-learn. Implementing various enhancements to decision tree module, most notably adding a adding new impurity splitting criterion and tree pre-pruning.

LEADERSHIP

Machines Who Learn

President

2016 - Present

Officer

2015 - 2016

- Organizing and leading a machine learning and data science student organization at the University of Washington.
- Organizing a reading group focused on machine learning and AI (e.g. NLP, Vision, Robotics).
- Helping other students gain real-world experience by collaboratively working on machine learning competitions and other data science/machine learning-related projects.

University of Washington Undergraduate Research Leader

2017 - Present

- Helping undergraduates get involved in undergraduate research, and encouraging them to do so.
- Leading workshops, speaking to classes, participating in panels, and designing outreach events to help current and prospective students learn more about undergraduate research.

SELECTED
PERSONAL / OPEN
SOURCE PROJECTS

paraphrase-id-tensorflow

Creator (200+ Github stars)

Implemented three paraphrase identification models from the literature in TensorFlow. Adhered to TensorFlow best practices, and the codebase is extensively documented with thorough unit tests (98% coverage + CI).

- Baseline Manhattan BiLSTM (Mueller et. al 2016)
- Siamese BiLSTM with Matching Layer (Liu et. al 2016)
- Bilateral Multi-Perspective Matching model (Wang et. al 2017)

deep_qa (AI2-internal predecessor to AllenNLP)

Contributor (200+ Github stars)

A software library for deep learning for NLP written on top of Keras and Tensorflow. Focused on enabling a workflow for quickly experimenting with and developing models for question answering and reading comprehension tasks.

scikit-learn

Contributor (27k+ Github stars)

Popular machine learning toolkit for Python. I contribute Python and Cython patches to the project, answer questions on the project mailing list and issue tracker, and review contributions from other developers.