

## Nelson F. Liu

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- RESEARCH INTERESTS Natural Language Processing, Machine Learning, Statistical Inference, Deep Learning
- EDUCATION **University of Washington**, Seattle, Washington  
B.S, Computer Science, B.S., Statistics, B.A., Linguistics. Cumulative GPA: 3.84  
Expected graduation date: June 2019
- PUBLICATIONS Matt Gardner, Joel Grus, Mark Neumann, Oyvind Tafjord, Pradeep Dasigi, **Nelson Liu**, Matthew Peters, Michael Schmitz, Luke Zettlemoyer. “AllenNLP: A Deep Semantic Natural Language Processing Platform”. Preprint, September 2017.
- Johannes Welbl, **Nelson F. Liu**, Matt Gardner. “Crowdsourcing Multiple Choice Science Questions”. *Proceedings of the EMNLP Workshop on Noisy User-generated Text (WNUT 2017)*, Copenhagen, Denmark, 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.
- Advisor: 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.
- Advisors: Professor Kevin Knight and Professor Jonathan May
- Allen Institute for Artificial Intelligence (AI2)** Seattle, Washington  
*Research Intern* **January - March 2017**  
Worked on deep learning methods for reading comprehension as part of Project Aristo.
- **Awarded an “AI3 award” for outstanding contributions to deep-qa, research productivity, and more.**
  - Mentor: Dr. Matt Gardner
- University of Washington eScience Institute** Seattle, Washington  
*Undergraduate Researcher* **September - December 2016**  
Contributed to pomegranate, a library for probabilistic programming and probabilistic graphical modelling in Python.
- Mentor: Jacob Schreiber
- University of Washington Computer Science and Engineering** Seattle, Washington  
*Networks Lab Undergraduate Researcher* **June - August 2015**  
Worked on wireless backscatter of ambient signals for powering embedded devices.
- Advisor: Professor Shyam Gollakota
- Massachusetts Institute of Technology CSAIL** Cambridge, Massachusetts  
*Research Intern* **June 2013 - September 2014**  
Worked on the START natural language question answering system and its relational knowledge database backend, Omnibase.
- Advisor: Professor Boris Katz

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| PROFESSIONAL<br>EXPERIENCE                     | <p><b>scikit-learn</b><br/> <i>Google Summer of Code Developer</i> <span style="float: right;"><b>May - August 2016</b></span><br/> 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| SELECTED<br>PERSONAL / OPEN<br>SOURCE PROJECTS | <p><b>paraphrase-id-tensorflow</b><br/> <i>Creator</i> (150+ Github stars) <span style="float: right;"><b>March 2017 - Present</b></span><br/> 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).</p> <ul style="list-style-type: none"> <li>• Baseline Manhattan BiLSTM (Mueller et. al 2016)</li> <li>• Siamese BiLSTM with Matching Layer (Liu et. al 2016)</li> <li>• State of the Art Bilateral Multi-Perspective Matching model (Wang et. al 2017)</li> </ul> <p><b>deep_qa</b><br/> <i>Contributor</i> (200+ Github stars) <span style="float: right;"><b>January 2017 - Present</b></span><br/> 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.</p> <p><b>scikit-learn</b><br/> <i>Contributor</i> (21.6k+ Github stars) <span style="float: right;"><b>November 2015 - Present</b></span><br/> 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.</p> |
| HONORS AND<br>AWARDS                           | <p>Washington Research Foundation Fellowship, 2017<br/> Mary Gates Research Scholarship, 2016<br/> SciPy Scholarship, 2016<br/> Best Use of Microsoft Technology / Best Use of Data, DubHacks 2015<br/> Winner, Hack The Dot Seattle 2015<br/> Finalist, AngelHack Seattle 2015<br/> Winner, Lockheed Martin Code Quest Sunnyvale 2015<br/> Winner, Dave Wittry Memorial Programming Competition 2015<br/> Winner, California State University Los Angeles ProgFest 2015<br/> Winner, Improving MIT Award, MIT BitComp 2014</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| LEADERSHIP                                     | <p><b>Machines Who Learn</b><br/> <i>President</i> <span style="float: right;"><b>2016 - Present</b></span><br/> <i>Officer</i> <span style="float: right;"><b>2015 - 2016</b></span></p> <ul style="list-style-type: none"> <li>• Organizing and leading a machine learning and data science student organization at the University of Washington.</li> <li>• Giving weekly talks about various topics of interest to club members of all skill levels. Previous topics include subjects like sequence-to-sequence recurrent neural networks and the Python language and its tools for data science.</li> <li>• Helping other students gain real-world experience with data science projects by collaboratively working on machine learning competitions and other data science/machine learning-related projects.</li> </ul> <p><b>University of Washington Undergraduate Research Leader</b> <span style="float: right;"><b>2017 - Present</b></span></p> <ul style="list-style-type: none"> <li>• Helping undergraduates get involved in undergraduate research, and encouraging them to do so.</li> <li>• Leading workshops, speaking to classes, participating in panels, and designing outreach events to help current and prospective students learn more about undergraduate research.</li> </ul>                                                                         |
| TECHNICAL SKILLS                               | <ul style="list-style-type: none"> <li>• Languages / Tools: Python, Cython, Java, git, Unix shell scripts</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |