

Zachary Levonian

Computer Science PhD Student
My most up-to-date info: <https://z.umn.edu/zlevonian>

Minneapolis, MN

Education

- **(Ongoing) PhD in Computer Science** Minneapolis, MN
University of Minnesota *Sep. 2017–Present*
 - Researching human-computer interaction (HCI) and social computing
 - Co-advised by Professors Loren Terveen and Lana Yarosh
- **B.A. in Computer Science** Northfield, MN
Carleton College *Sep. 2010–Jun. 2014*
 - Graduated *magna cum laude*
 - Core coursework: Data Structures, Programming Languages, Computer Organization and Architecture, Algorithms, Software Design, Computability and Complexity, Mathematics of Computer Science, Calculus (Multivariable)
 - Advanced coursework: Natural Language Processing, Data Mining, Artificial Intelligence, Parallel and Distributed Computing, Operating Systems, Mobile Application Development

Industry Experience

- **The MITRE Corporation** McLean, VA
Computer Scientist *Jan. 2015–Jul. 2017*
 - Designed and developed prototype Automatic Speech Recognition (ASR) safety systems as researcher in the Center for Advanced Aviation System Development (CAASD).
 - Improved ASR performance on air traffic controller and pilot radio transmissions through the application of cutting-edge techniques from academia.
 - Architected and implemented a Hadoop-based capability for large-scale processing of air traffic controller radio transmissions data.
 - Wrote and collaborated on research proposals and conference papers produced by our team.
- **General Dynamics Mission Systems** Fairfax, VA
Software Developer *Oct. 2014–Jan. 2015*
 - Provided design, integration, and software development support for research & development team exploring Activity-Based Intelligence capabilities.
 - Researched querying geospatial data efficiently in graph databases.

Teaching and Mentoring

- **Research mentorship of undergraduates** Minneapolis, MN
University of Minnesota ProDUCT Lab *Sep. 2017–Present*

- Mentored undergraduate and Master’s students under supervision of advisor Lana Yarosh. Current students: Wenqi, Kirsten, Khiem, Drew, Prateek
- My current students are applying qualitative coding, regression, causal inference, and other methods to projects related to understanding user behavior in online health communities.
- Completed work with Saumik Narayanan: qualitative coding for identification of transitions in online health community text posts.
- Completed work with Changye Li: health condition classification of online health community text posts.

- **TA for *CSCI1001: Overview of Computer Science*** Minneapolis, MN
University of Minnesota CS Department *Jan. 2018–May 2018*
 - Managed five undergraduate TAs along with grading and lab section logistics.
 - Designed database problem set for new unit in the course.
 - Updated course webpage and assignment descriptions.
 - Handled grading questions and other course conflicts.
 - Maintained weekly office hours period for myself and other TAs.
- **Prefect for *CS202: Mathematics of Computer Science*** Northfield, MN
Carleton College CS Department *Jan. 2014–Mar. 2014*
 - Organized weekly prefect sessions of 5-15 students to review the material of this foundations-level course.
 - Selected practice problems and assembled review sheets before major exams.
 - Attended class to assist professor and to link lecture material with prefect sessions.
 - Covered topics: logic and proofs, number theory, elementary complexity theory and recurrence relations, basic probability, counting techniques, and graphs.

Publications

- Two full papers under review as of January 2019.
 - Primary author on ICWSM ’19 submission proposing the use of qualitative themes in social media user models. Method evaluated in collaboration with CaringBridge.org, a large online health community, resulting in models of cancer patient phase.
 - Coauthor on TOCHI submission exploring the social support needs of cancer patients.
- H. Miller Hillberg, **Z. Levonian**, D. Kluver, L. Terveen, and B. Hecht, “What I See is What You Don’t Get: The Effects of (Not) Seeing Emoji Rendering Differences across Platforms,” in *Computer Supported Cooperative Work 2018*, New York, 2018.
 - This paper was the final stage of Dr. H. Miller Hillberg’s thesis work.
 - Conducted statistical analyses of survey response data.
- C. Li, **Z. Levonian**, H. Ma, S. Yarosh, “Condition Unknown: Predicting Patients’ Health Conditions in an Online Health Community,” poster at *Computer Supported Cooperative Work 2018*, New York, 2018.
 - Directed Master’s student C. Li’s research, submitted as a poster to CSCW.

- Developed and evaluated text classifiers for the identification of online post authors’ health conditions.
- S. Chen, H. D. Kopald, R. S. Chong, Y.-J. Wei, and **Z. Levonian**, “Readback Error Detection using Automatic Speech Recognition,” in *Air Traffic Management Research and Development Seminar 2017*, Seattle, 2017.
 - This paper captures the research activities of our research team applying acoustic model adaptation and training techniques to ASR for air traffic control.
 - Conducted literature review and drafted background on acoustic modeling for ASR.
- S. Chen, H. D. Kopald, A. Elessawy, **Z. Levonian**, and R. M. Tarakan, “Speech Inputs to Surface Safety Logic Systems,” in *IEEE/AIAA 34th Digital Avionics Systems Conference (DASC)*, Prague, Czech Republic, 2015.
 - Computed the quantitative automatic speech recognition (ASR) results presented in this conference paper and took an active role reviewing and editing this paper.

Research Funding and Awards

- **Early Career Research Program funding recipient** McLean, VA
\$83,000 of Funding *Oct. 2016–Sep. 2017*
 - Wrote proposal for selective MITRE Corporation funding; available on request.
 - Proposed research applying contemporary semantic parsing techniques to transcriptions of air traffic controller radio transmissions in order to extract meaning.
 - Conducted extensive literature review in NLP and semantics to identify algorithms to utilize in a cross-comparison.
 - Implemented and compared identified techniques to an existing corpus of air traffic controller communications.
- **Distinction in integrative exercise** Northfield, MN
Carleton College CS Department *Sep. 2013–Mar. 2014*
 - Distinction awarded by reviewing faculty of the Carleton College CS department.
 - 11 students received distinction of 28 total students.
 - Cooperated with a six-person team to complete a twenty-week capstone development project.
 - Designed an integrated development environment (IDE) to introduce basic developer tools for students learning Python.
 - Expanded a 10,000-line Java codebase with additional features.
 - Assessed usability via user-testing on Python learners enrolled in *CS111: Introduction to Computer Science*.

Other Experience

- **Undergraduate Researcher** Bozeman, MT
Montana State University REU Program *Jun. 2013–Aug. 2013*
 - Researched with faculty adviser Professor Mike P. Wittie and Dr. Eben Howard (then a graduate student).
 - Conducted literature review in resesarch area: the impacts of network latency on user Quality of Experience in collaborative online environments.
 - Designed and implemented a testing framework to emulate various types of network degradation in the local area network of the research lab.
 - Prepared a weekly technical design document to report progress and results.
- **CS Lab Assistant** Northfield, MN
Carleton College Information Technology Services *Mar. 2014–Jun. 2014*
 - Assisted students working on coding assignments for a variety of CS classes.
 - Communicated debugging techniques and helped students perform conceptual planning before coding begins.
- **Lead Writing Consultant** Northfield, MN
Carleton College Writing Center *Sep. 2012–Jun. 2014*
 - Tutored undergraduates in professional and academic writing across many disciplines.
 - Collaborated with English-as-a-second-language (ESL) students in focused one-to-one sessions across two years.
 - Co-trained 15+ new writing consultants as lead student consultant.
 - Assisted students with lab report writing as the Writing Assistant for *CS100: Human Centered Computing*.
- **Sexuality and Gender Activism Lead Facilitator** Northfield, MN
Carleton College Student Organization *Sep. 2012–Jun. 2014*
 - Planned and coordinated several 25-50 person public events.
 - Facilitated social justice work by providing planning resources to students and organizations.

Programming Skills

In academic settings and in industry. Italics indicate less than one month of experience.

- Languages: Java, Python, R, C, Objective C, Scheme, Bash, SQL, *Visual Basic, Perl, Awk, x86 Assembly, C++, Clojure, C#, Lua, Groovy, JavaScript*
- Frameworks: PyTorch, SciPy stack, scikit-learn, Hadoop MapReduce, fast.ai, *SpaCy, NLTK, gensim*
- Tools: Maven, Git, Mercurial, Vim, Xcode, various Java and Python IDEs, Jupyter, \LaTeX , *MongoDB, Redis, Ant, CVS, Valgrind*
- Operating Systems: RHEL, Fedora, Ubuntu, Windows, Mac OS X