Katy Felkner

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EDUCATION

University of Southern California | Los Angeles, CA

- Ph.D. in Computer Science | Expected 2025 | Supported by **NSF Graduate Research Fellowship**
- Coursework: Advanced Natural Language Processing, Advanced Algorithms, Crafting a Research Agenda in Computer Science, Representation Learning in NLP, Foundations of AI, Fairness in AI | **GPA: 3.88/4.00**

University of Oklahoma | Norman, OK

- B.S. in Computer Science *(summa cum laude)*, B.A. in Letters *(summa cum laude)* | May 2020
- Minor: Mathematics | **GPA: 4.00/4.00**

RESEARCH INTERESTS

machine translation, low-resource NLP, NLP for social good, fairness and bias in large language models (LLMs), ethical AI

RELEVANT EXPERIENCE

Border Translation Project, USC Information Sciences Institute – Graduate Research Assistant AUGUST 2020 – PRESENT

- Build and evaluate neural machine translation systems for extremely low-resource languages
- Improve domain adaptation of NMT systems from news domain to asylum testimonials via backtranslation of English data
- Develop corpus augmentation techniques for languages with very little parallel or monolingual data available
- Currently working on NMT system for K'iche', a Mayan indigenous language, with intended application of helping NGOs provide legal assistance to immigrants and asylum seekers.

NLP Fairness and Bias, USC Information Sciences Institute – Graduate Research Assistant JANUARY 2022 – PRESENT

- Design a novel benchmark dataset for detecting homophobic and transphobic bias in large language models (LLMs)
- Develop finetuning methods to mitigate anti-LGBTQ+ bias in LLMs
- Work started as a class project for DSCI 531: Fairness in AI and continued under fellowship funding

DARPA ReMATH, USC Information Sciences Institute – Graduate Research Assistant JANUARY 2021 – JUNE 2022

- Built and evaluated NMT models for extraction of symbolic math from assembly code and bit-vector expressions
- Developed novel metrics for evaluation of NMT-generated mathematical expressions

Los Alamos National Laboratory, Ultrascale Systems Research Center — Research Intern MAY 2020 – AUGUST 2020

- Collected 750000 lines of non-secret syslog data using a 20-node virtual compute cluster
- Tested a variety of word embedding and clustering algorithms to extract natural language features from supercomputer syslog
- Showed that these natural language features are not sufficient on their own but can be used to augment other models for HPC node failure detection and prediction

Epic Systems Corporation — Software Developer Intern MAY 2019 – AUG. 2019

- Prototyped a menstrual cycle tracking feature within MyChart for iOS to allow patients to share cycle data with providers
- Designed and implemented server and client side data structures to save cycle data to the patient's medical record
- Built four complete and interactive user-interface screens and partial prototypes of several others
- Conducted user research, including about 100 internal survey responses and 5 user interviews

PUBLICATIONS

- **Virginia K. Felkner**, Ho-Chun Herbert Chang, Eugene Jang, Jonathan May**.** *Towards WinoQueer: Developing a Benchmark for Anti-Queer Bias in Large Language Models.* QueerInAI Affinity Group Workshop, NAACL 2022.
- Nicolaas Weideman, **Virginia K. Felkner**, Wei-Cheng Wu, Jonathan May, Christophe Hauser, Luis Garcia. *PERFUME: Programmatic Extraction and Refinement For Usability of Mathematical Expressions*. CheckMATE, ACM CCS 2021.
- **Virginia K. Felkner** and Elisabeth Moore. *Investigating the Efficacy of Unstructured Text Analysis for Node Failure Detection in Syslog.* Second Workshop on Machine Learning for Computing Systems, Supercomputing 2020.
- **Virginia K. Felkner.** A Brief History of QED. *The Honors Undergraduate Research Journal* 16th edition. 2017.

COMMUNITY LEADERSHIP

Queers in Engineering, Science and Technology (QuEST) — Graduate Representative SEP. 2020 – PRESENT

- Recruit graduate students to QuEST and advocate for their needs in the organization
- Develop workshops on graduate school and fellowship applications and mentor undergraduate members during applications
- 2022 oSTEM Region F Conference organizer: presented graduate application workshop, spoke on Queer in Academia panel, wrote and hosted charity Dungeons & Dragons livestream, raising $950 for LGBTQ community organizations in LA

HONORS AND AWARDS

National Science Foundation Graduate Research Fellowship
Viterbi Graduate School Fellowship
Gallogly College of Engineering Outstanding Senior
Outstanding Senior in Computer Science
Alpha Sigma Kappa National Outstanding Leader
Outstanding Greek Senior
Letzeiser Honor List – Silver Medalist
OU Campus Life Award (40 outstanding upperclassmen)
Regents' Award for Outstanding Juniors
Ronald Lehr Phi Beta Kappa Undergraduate Research Award
Rita H. Lottinville Prize (5 outstanding sophomores)
President's Award for Outstanding Sophomores
Engineering Diversity and Inclusion Scholarship
Doug and Hilda Bourne Women in Engineering Scholarship
Phi Beta Kappa Honor Society
Tau Beta Pi (National Engineering Honor Society)