

# Emily Chang

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## Education

**University of Virginia (UVA), Bachelor of Science in Computer Science, GPA: 3.99**

2025

Minor in Applied Mathematics

Attended the 2024 Grace Hopper Conference on a trip fully-sponsored by Capital One

## Teaching Experience

**UVA COMPUTER SCIENCE DEPARTMENT, TEACHING ASSISTANT**

Jan 2024 - Present

- Hosted office hours and graded assignments for Discrete Math Theory 2 and Machine Learning, serving 893 students

**UVA APPLIED MATHEMATICS DEPARTMENT, PROBABILITY TEACHING ASSISTANT**

Jan 2022 - May 2023

- Debugged MATLAB code for 135 students and held office hours to assist with lecture material
- Created and lectured on course material that scaffolded student learning in class projects

**NEW YORK CITY'S UPPERLINE CODING SCHOOL, TEACHING ASSISTANT**

Jun 2021 - Aug 2021

- Instructed web design and data science classes, organized career panels, and tutored 60 middle and high school students

## Research Experience

**JOHNS HOPKINS UNIVERSITY'S CENTER FOR LANGUAGE AND SPEECH PROCESSING, LOW**

Aug 2024 - Present

RESOURCE LANGUAGE RESEARCHER

- Advised by Drs. David Yarowsky, David Mortensen, and Kenton Murray
- Tested the robustness of machine translation models to systematic dialectical variation and cross-lingual generalization
- Ascertained whether machine translation models can draw on knowledge of high-resource languages to run inference on low-resource languages

**UVA COMPUTER SCIENCE DEPARTMENT, LOW RESOURCE LANGUAGE RESEARCHER**

May 2024 - Present

- Investigated how linguistic distance between languages affects the amount of data needed to perform transfer learning between a high-resource language and low-resource language word embedding space
- Conducted supervised and unsupervised finetuning to develop Sentence Transformer models that can accurately perform the task Semantic Textual Similarity with low-resource languages

**VIRGINIA SPACE GRANT CONSORTIUM, MACHINE LEARNING RESEARCHER**

Aug 2023 - Aug 2024

- Demonstrated how machine learning models can simulate HVAC Model Predictive Control systems under lunar conditions
- Emphasized how calibrating these systems to the environmental conditions they are simulated in can conserve energy resources while maximizing thermal comfort

**NATIONAL SCIENCE FOUNDATION, NATURAL LANGUAGE PROCESSING INTERN**

May 2023 - Aug 2023

- Advised by Dr. Doug Downey
- Finetuned classification models to assess whether NSF-funded projects met the goals set out in the CHIPS and Science Act
- Evaluated whether LLMs could classify government documents according to specific criteria detailed in legislation

**CARNEGIE MELLON UNIVERSITY'S RESEARCH EXPERIENCE FOR UNDERGRADUATES IN**

May 2022 - Aug 2023

**SOFTWARE ENGINEERING, CYBERSECURITY INTERN**

- Advised by Professor Hanan Hibshi and Dr. Maverick Woo
- Performed a statistical case study to understand how Internet access in rural counties fared during COVID-19
- Practiced open coding—a qualitative analysis technique—to examine interviews with women in cybersecurity and identified methods in which institutions and industries could make cybersecurity a more inclusive field
- Proposed recommendations to the National Security Agency and Egypt's Board of Education

**HARVARD UNIVERSITY'S COVISUALIZE, PROJECT LEAD**

Mar 2020 - Jun 2021

- Led an international team of 15 high school and college students to determine whether a COVID-19 environmental policy suspension resulted in greater pollution levels
- Designed Bayesian Ridge Regression models and a comparative case study to forecast pollution levels and conclude that the suspension resulted in greater levels of air pollution

## Industry Experience

### CAPITAL ONE, ASSOCIATE SOFTWARE ENGINEER INTERN

Jun 2024 - Aug. 2024

- Achieved significant cost savings by migrating two credit card alerts from third-party platforms to company-run software
- Implemented unit, local, quality assurance, and end-to-end testing in Jest, AWS Kinesis Data Streams, and DynamoDB to ensure that the 21,000 people who receive these credit card alerts each day continue to do so post-code migration

## Publications

- Bafna N, **Chang E**, et al. [Two Paradigms for Achieving Dialectical Robustness in Machine Translation](#), *ACL 2025*, 2024. [In Submission]
- **Chang E**, Basit N. [Endangered Languages—How many words do we need to model them?](#), *6th International Conference on Data Mining and NLP*, 2024. [In Submission]
- **Chang E**, [Broadband Expansion: Disseminating Policy Lessons on COVID-19](#), *United Nation's Forum on Science, Technology, and Innovation*, 2023.
- Martorana A, **Chang E**, Hibshi H, Cuevas A, [Investigating the Experiences of Female CTF Players](#), *Workshop on Security Information Workers*, 2023.
- **Chang E**, Zhang K, Paczkowski M, Kohler S, Ribeiro M, [Association of temporary Environmental Protection Agency regulation suspension with industrial economic viability and local air quality in California, United States](#), *Environmental Sciences Europe*, 2021.
- Liu Q, Liu W, Sha D, Kumar S, **Chang E**, et al. [An Environmental Data Collection for COVID-19 Pandemic Research](#), *Data*, 2020.

## Presentations

- **Chang E**, Alemazkoor N, [A Methodology for Controlling Smart HVAC Systems in Planetary Environments](#), *Virginia Space Grant Consortium Student Research Conference*, Poster, 2024.
- **Chang E**, [Considering Anthropogenic Factors in PM 2.5 Machine Learning Models](#), *Association for Computing Machinery Capital Region Celebration of Women in Computing*, Poster, 2024.

## Awards

Society of Women Engineers: Liebherr Mining (Senior) Scholarship	May 2024
Best Connection/Connectivity Hack at the University of Virginia's Hack the Map competition	Feb 2024
UVA Engineering's Isabella Merrick Sampson Scholarship	Jun 2023
Gordon C. Burris Parents Committee Scholarship	May 2023
Virginia Space Grant Consortium's Undergraduate Research Scholarship	Apr 2023
UVA Engineering's Barbara B. Darden Endowed Scholarship	Jun 2022
Virginia Broadband Association Future Leader's Scholarship	Jun 2022
Virginia Space Grant Consortium STEM Bridge Scholarship	Apr 2022
Jefferson Scholars Foundation's Lettie Pate Whitehead Scholarship	Sep 2021
American Groundwater Trust Baroid Scholarship	Aug 2021
Exceptional voluntary service as a US Department of State Youth Program Alumni Outreach Ambassador	Aug 2020

## Service

### VOLUNTEERS WITH INTERNATIONAL STUDENTS, STAFF, & SCHOLARS, CLASSROOM

Sept 2023 - Present

#### ASSISTANT, ESL ASSISTANT, MODERATOR

- Reviewed the research presentations of 49 international graduate students to provide feedback on improving their English and presentation skills

### UVA HOUSING AND RESIDENCE LIFE, RESIDENT ADVISOR AND CAMPUS SECURITY AUTHORITY

Jan 2023 - Present

- Created programs emphasizing community engagement, diversity, and career development for over 122 students

### UVA TRANSFER GUIDE, TESTING MANAGER

Jan 2023 - May 2024

- Practiced agile development in designing an app that allows students and faculty to search for courses transferable to UVA
- Led alpha and beta-testing, interviewed students and faculty as part of requirements elicitation, and developed the student interface

### RODMAN SCHOLAR STUDENT COUNCIL, RESEARCH CO-CHAIR

Sep 2021 - May 2022

- Organized the Engineering Research and Design Symposium and raised \$1,000 in event funding

## **MINERVA'S LIST, CO-FOUNDER**

*Jun 2019 - Present*

- Developed a database where students can find scholarships that fit their academic and financial needs

## **STATE DEPARTMENT'S TECHGIRLS PROGRAM, STUDENT AMBASSADOR AND COURSE FOUNDER**

*Jun 2019 - Present*

- Engineered video games in Java, managed Unix operating systems, and promoted cultural education
- Taught a course on combating COVID-19 misinformation with data science and mentored girls hailing from 13 countries

## **Skills**

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Languages Python, R, Java, JavaScript, PHP, MATLAB, C, Assembly x86-64, SQL, English, Latin, Mandarin

Tools Tensorflow, Git, Rivanna supercomputer, SLURM, JavaFX, JUnit, Metasploit, Nmap, Unix, Wireshark

## **Hobbies and Interests**

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- **Postcard collector** namely postcards from the New York Public Library and ones that glow-in-the-dark
- **Judy Blume and Stephen King reader** with *Summer Sisters* and novels with Holly Gibney in them being my favorites
- **Fan of standup comedy** and my favorite comedians are Ari Shaffir, Josh Johnson, Chris Garcia, and Sam Morril