SAMUEL STEVENS

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RESEARCH INTERESTS

I am broadly interested in foundation-scale models in natural language processing and computer vision. My work is often cross-disciplinary: I combine alternative fields such as cryptography or evolutionary biology with these large, pre-trained models.

EDUCATION

Ohio State University August 2021 - Present
Ph.D. in Computer Science & Engineering *Columbus, OH*
Advisor: Professor Yu Su

Ohio State University (3.93 GPA) August 2017 - May 2021
Honors B.S. in Computer Science & Engineering, *Summa Cum Laude* *Columbus, OH*
Honors Research Distinction in Computer Science & Engineering
German Minor

PUBLICATIONS

An Investigation of Language Model Interpretability via Sentence Editing
Samuel Stevens and Yu Su
In *EMNLP 2021 BlackboxNLP Workshop: Analyzing and Interpreting Neural Networks for NLP*

Bootstrapping a User-Centered Task-Oriented Dialogue System
Shijie Chen, Ziru Chen, Xiang Deng, Ashley Lewis, Lingbo Mo, **Samuel Stevens**, Zhen Wang, Xiang Yue, Tianshu Zhang, Yu Su and Huan Sun
In *1st Proceedings of Alexa Prize TaskBot*

arXivEdits: Understanding the Human Revision Process in Scientific Writing
Chao Jiang, Wei Xu and **Samuel Stevens**
In *EMNLP 2022*

RESEARCH EXPERIENCE

Self-Attention Interpretability in Sequence Classification October 2019 - April 2021
Undegraduate Honors Research Thesis *Columbus, OH*

- Fine-tuned pre-trained language models on existing sequence classification task.
- Manually created adversarial examples to probe language models' understanding of the task.
- Qualitatively analyzed trends in the attention maps of BERT, SciBERT and RoBERTa to identify differences in interpretability.
- Identified a gap in existing literature (no large-scale quantitative measurement of BERT's interpretability on sequence level classification) and designed experiments leading to a baseline result.

ENGINEERING EXPERIENCE

SpaceX (Starlink) May 2021 - August 2021
Hardware Test Associate Engineer *Seattle, WA*

- Refactored legacy code leading to $66K expected annual savings and 25% increase in first-pass yield.

- Developed generic data visualization used to demonstrate micropositioner actuator repeatability and bound laser link noise during thermal testing.
- Debugged PCBA board with multimeter and oscilloscope with no previous hardware experience.
- Developed thermal camera testing prototype to reduce test time from over 30 minutes to 30 seconds.

Microsoft May 2020 - August 2020
Software Engineering Intern *Seattle, WA (Remote)*

- Developed new Power BI feature to improve customers' ability to diagnose data-refresh problems.
- Authored feature spec to communicate intent and implementation details to feature stakeholders.
- Ramped up quickly in a 100 million-line C++ codebase to begin delivering value immediately.
- Demoed project to Power BI customers to demonstrate value and gain feedback.

TicketBay January 2018 - August 2020
Co-Founder and Lead Developer *Columbus, OH*

- Collaborated with OSU students to develop a mobile app for students to buy and sell football tickets.
- Facilitated the transfer of $165K worth of tickets between more than 7K customers.
- Led system architecture decisions in order to balance ease of development and system performance.

GE Aviation May 2018 - August 2018
Digital Technology Intern *Cincinnati, OH*

- Built an end-to-end testing solution to automate QA testing of customer-facing web application.
- Applied agile methodology in a collaborative environment to meet specs, despite frequent changes
- Completed integration with existing deployment pipeline, leveraging existing infrastructure and leading to a net positive impact on product quality with no additional developer work.

The Ohio State University May 2018 - November 2019
Lead Developer *Columbus, OH*

- Supported a professor's research by developing an online app to distribute rich media.
- Implemented agile methodology to manage 2 student developers in multiple time zones.

GE Aviation May 2017 - August 2017
INTERalliance Intern *Cincinnati, OH*

- In-sourced customer-facing search, targeting $300K in savings and 40K customers.
- Led MongoDB integration, giving customers access to previously unsearchable documents.

AWARDS

1st Alexa Priza Taskbot Challenge: 3rd Place 2021-2022
"The challenge is focused on developing agents that assist customers in completing tasks requiring multiple steps and decisions. It's the first conversational AI challenge to incorporate multimodal (voice and vision) customer experiences."

- Developed internal dashboard to support bug-fixes in near-real time.
- Designed and implemented automated test suite using fuzzy matching to support dynamic chatbot responses and improve deployment speed and quality.

Hack OHI/O: Awarded 3rd Place 2021
"A 48 hour hackathon that attracts over 800 participants annually for a full weekend of coding, building, learning, networking, and innovation"

· Developed an optimal trick-or-treating route planner using OpenStreetMap data and quadtrees to maximize predicted candy per mile walked.

Hack OHI/O: Awarded Best UI/UX & People's Choice 2020

· Developed a web-based, voice-powered, natural language code editor to convert natural, spoken language into Python code in real time.
· Fine-tuned pretrained transformer models and developed a custom parser to convert natural language to structured code.

Hack OHI/O: Awarded Best Hack 2019

· Developed an accessibility-focused text extraction app for visually impaired users.
· Used Tesseract OCR to extract text from images to provide content in a variety of accessible formats.

Brain Health Hack: Awarded Best Project at Large 2018

"Teams of future scientists, clinicians, engineers and coders compete to create tools that enable better care, more powerful research, or ruther empower patients to live independent and productive lives"

· Developed a Android and iOS Parkinson's Disease tracking app to improve effectiveness of medication.
· Used device accelerometers to measure a user's tremors to improve effectiveness of medication.

Hack OHI/O: Awarded Best Software Hack 2017

· Developed an iOS social media trend aggregator in 24 hours to aggregate trending topics on Twitter and Instagram.

ADDITIONAL INFO

OSU Club Water Polo — August 2017 - Present

· Club Risk Manager — August 2020 - May 2021

Study abroad in Dresden, Germany — June 2019 - August 2019

· Awarded Huntington International Fellowship