

EDUCATION

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**PhD Computer Science***University of Washington, advised by Yejin Choi*Apr 2027  
Seattle, WA**MS Computer Science; 4.00***Brigham Young University, advised by David Wingate*Aug 2022  
Provo, UT

Incomplete - left to pursue PhD

- GRE, 169 / 170 Quantitative (96<sup>th</sup> percentile), 165 / 170 Verbal (96<sup>th</sup> percentile)

**BS Applied and Computational Mathematics; 3.89***Brigham Young University*Apr 2021  
Provo, UT

- ACT, 36 / 36 (99.8<sup>th</sup> percentile)

EXPERIENCE

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**Xlab - Research Assistant**

Sep 2022 - Present

- Researching large language models, common sense reasoning, morality and AI, and NLP for social good

**Allen Institute for AI**

June 2023 - Sep 2023

- Publication in review at AAAI '24. (paper)
- Project exploring AI system's ability to model pluralistic human values, mentored by Chandra Bhagavatula

**Perception, Control, and Cognition Laboratory - Research Assistant**

Apr 2020 - Sep 2022

- Demonstrated the effectiveness of mutual information as a prompt selection criterion on 8 datasets and 7 models (first author, ACL)
- Engineered psychology-backed automatic rephrasing technique with GPT-3 to aid productivity of online conversations in collaboration with social scientists at Duke and BYU (in human trials)
- Developed and validated effective prompt compression technique up to 100x for large language models (in review, EMNLP)
- Controlled difficult soft robot in real-time by combining first-principles physics and deep learning (Frontiers in Robotics and AI)
- Contributed to open-source NLP data augmentation library (paper)

**Enveda Biosciences - Data Science Intern**

Aug 2022 - Sep 2022

- Improved mass spectrometry to chemical structure machine translation model's validation performance by 5% using backtranslation (currently being worked into a paper and deployment)

**Double River Investments - Machine Learning Engineer**

Jun 2020 - Aug 2021

- Informed live-traded quantitative investment model with transformer-based neural network, combining recent work by implementing and validating 5 research papers
- Deployed production pipeline so model could be used in real time by multi-million dollar hedge fund

**Gray Falcon - Deep Learning Consultant**

Dec 2019 - Apr 2020

- Sold NLP class project to company for \$10k by solving a crucial business need, saving thousands of man-hours monthly

**Math Department, BYU - Competitive Coding Instructor**

Jan 2020 - Apr 2020

- Taught 18 students three times a week by developing coursework from scratch
- Helped place several students at top jobs and internships by refining their coding interview skills

**Computer Vision - Research Assistant**

Feb 2019 - Dec 2019

- Awarded top prize in student research conference for work in pose correspondence
- Developed human-led, AI-assisted video annotation website to be used by MTurk workers

## SELECT PUBLICATIONS

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- **Sorensen**, Jiang, Hwang, Levine, Pyatkin, West, Dziri, Lu, Rao, Bhagavatula, Sap, Tasioulas, Choi (2023) Value Kaleidoscope: Engaging AI with Pluralistic Human Values, Rights, and Duties. *In review at AAAI 2024*. <https://arxiv.org/abs/2309.00779>
- Jung, West, Jiang, Brahman, Lu, Fisher, **Sorensen**, Choi (2023) Impossible Distillation: from Low-Quality Model to High-Quality Dataset Model for Summarization and Paraphrasing. *In review at EMNLP 2023*. <https://arxiv.org/abs/2305.16635>
- Rytting, **Sorensen**, Argyle, Busby, Fulda, Gubler, Wingate (2023) Towards Coding Social Science Datasets with Language Models. *Arxiv Preprint* <https://arxiv.org/abs/2306.02177>
- **Sorensen**, Robinson, Rytting, Shaw, Rogers, Delorey, Khalil, Fulda, Wingate (2022) An Information Theoretic Approach to Prompt Engineering Without Ground Truth Labels. *Association for Computational Linguistics, 2022* <https://aclanthology.org/2022.acl-long.60/>
- Wingate, Shoenybi, **Sorensen** (2022) Prompt Compression and Contrastive Conditioning for Controllability and Toxicity Reduction in Language Models. *Findings of EMNLP 2022*. <https://aclanthology.org/2022.findings-emnlp.412/>
- Dhole, Gangal, ..., **Sorensen** (2021) NL-Augmenter: A Framework for Task-Sensitive Natural Language Augmentation <https://arxiv.org/abs/2112.02721>
- Johnson, Quackenbush, **Sorensen**, Wingate, and Killpack (2021) Using First Principles for Deep Learning and Model-Based Control of Soft Robots. *Front. Robot. AI* 8:654398. doi: 10.3389/frobt.2021.654398 <https://www.frontiersin.org/articles/10.3389/frobt.2021.654398/full>

## SKILLS

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**Python, PyTorch, Huggingface, Numpy, Pandas, SQL, Unix/Bash, Git, LaTeX, Docker**

Some proficiency in Tensorflow, Julia, Java, C++, data scraping, and web development

## RELEVANT PROJECTS

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**Solve Reinforcement Learning Environments:** Used several DL/ML techniques to solve complex control environments from OpenAI's gym, including implementing Proximal Policy Optimization (PPO) from scratch

**Deepfake Detector Facebook Competition:** Implemented 3D-CNN and CNN/LSTM from scratch to classify video data as real or synthetic, achieving 83% validation accuracy ([link](#))

**App Game Development:** Independently programmed and released a game on the App Store for iPhone called Flux Ball (10,000+ downloads)