tsor13.github.io

Taylor Sorensen

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Education

PhD Computer Science — Apr 2027
University of Washington, advised by Yejin Choi — *Seattle, WA*

MS Computer Science; 4.00 — Aug 2022
Brigham Young University, advised by David Wingate — *Provo, UT*

Incomplete - left to pursue PhD

- **GRE, 169 / 170 Quantitative (96th percentile), 165 / 170 Verbal (96th percentile)**

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

- **ACT, 36 / 36 (99.8th percentile)**

Experience

Xlab - Research Assistant — Sep 2022 - Present

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

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 Falkon - 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

- **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, Shoeybi, **Sorensen** (2022) Prompt Compression and Contrastive Conditioning for Controllability and Toxicity Reduction in Language Models. *Empirical Methods in Natural Language Processing, 2022*
- 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

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

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)