JUSTIN LOVELACE

(512) 964-9498 ⋄ jl3353@cornell.edu
https://justinlovelace.github.io/

EDUCATION

Cornell University August 2022 - Present
– Ph.D. in Computer Science GPA: 4.20
– Advisor: Prof. Kilian Q Weinberger

Carnegie Mellon University August 2020 - August 2022
– M.S. in Language Technologies, School of Computer Science GPA: 4.10
– Advisor: Prof. Carolyn Rosé

Texas A&M University August 2016 - May 2020
– B.S. in Computer Science, Minor in Mathematics GPA: 4.0
– Advisor: Prof. Bobak Mortazavi
– Honors Fellow, Undergraduate Research Scholar

PUBLICATIONS

1. Sample-Efficient Diffusion for Text-To-Speech Synthesis
Justin Lovelace, Soham Ray, Kwangyoun Kim, Kilian Q Weinberger, Felix Wu
Interspeech, 2024

2. Diffusion Guided Language Modeling
Justin Lovelace, Varsha Kishore, Yiwei Chen, Kilian Q Weinberger
Findings of the Annual Meeting of the Association for Computational Linguistics (**Findings of ACL**), 2024

3. Latent Diffusion for Language Generation
Justin Lovelace, Varsha Kishore, Chao Wan, Eliot Shekhtman, Kilian Q Weinberger
Conference on Neural Information Processing Systems (**NeurIPS**), 2023

4. IncDSI: Incrementally Updatable Document Retrieval
Varsha Kishore, Chao Wan, **Justin Lovelace**, Yoav Artzi, Kilian Q Weinberger
International Conference on Machine Learning (**ICML**), 2023

5. A Framework For Adapting Pre-Trained Language Models to Knowledge Graph Completion
Justin Lovelace and Carolyn Rosé
Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2022.

6. Robust Knowledge Graph Completion with Stacked Convolutions and a Student Re-Ranking Network
Justin Lovelace, Denis Newman-Griffis, Shikhar Vashishth, Jill Fain Lehman, and Carolyn Rosé
Annual Meeting of the Association for Computational Linguistics and the International Joint Conference on Natural Language Processing (**ACL-IJCNLP**), 2021.

7. Learning to Generate Clinically Coherent Chest X-Ray Reports
Justin Lovelace, Bobak Mortazavi
Findings of the Conference on Empirical Methods in Natural Language Processing (**Findings of EMNLP**), 2020.

8. Dynamically Extracting Outcome-Specific Problem Lists from Clinical Notes with Guided Multi-Headed Attention
Justin Lovelace, Nathan C. Hurley, Adrian Haimovich, Bobak Mortazavi
Machine Learning for Healthcare Conference (**MLHC**), 2020.

ACADEMIC EXPERIENCE

ML Core Lab at Cornell University August 2022 - Present
Graduate Research Assistant *Advisor: Dr. Kilian Q. Weinberger*

· Developing methods to adapt diffusion to language generation.

Teledia Lab at Carnegie Mellon University August 2020 - August 2022
Graduate Research Assistant *Advisor: Dr. Carolyn Rosé*

· Developed methods that leveraged pre-trained language models to improve the coverage of knowledge graphs.

STMI Lab at Texas A&M University April 2018 - May 2020
Undergraduate Researcher *Advisor: Dr. Bobak Mortazavi*

· Developed convolutional attention models to extract information from clinical notes and predict adverse outcomes for ICU patients.
· Developed an abstractive radiology report generation framework that improved the clinical correctness of generated reports.

TEACHING EXPERIENCE

Cornell University January 2024 - May 2024
Course Developer and Co-Instructor *CS 4782: Introduction to Deep Learning*

· Developed and co-taught the pilot offering of Cornell's undergraduate deep learning course, covering fundamentals of neural networks, computer vision, NLP, generative models, and reinforcement learning
· Created comprehensive curriculum including lectures, assignments, and projects for 4000-level CS course
· Managed course staff of 5 teaching assistants and oversaw all aspects of course delivery
· Designed project where students reproduce state-of-the-art deep learning research papers

INDUSTRY EXPERIENCE

Adobe Research May 2024 - August 2024
Research Intern- Speech AI Group *San Francisco, CA*

· Developing a multi-task generative speech model capable of performing diverse downstream tasks (enhancement, TTS, etc.).

ASAPP May 2023 - August 2023
Research Intern *New York City, NY*

· Developed the first diffusion model for text-to-speech synthesis that does not require explicit phoneme alignment for generation.
· Outperformed the state-of-the-art autoregressive TTS system using less than 2% the training data.

Facebook May 2020 - August 2020
Software Engineering Intern- Search *Menlo Park, CA*

· Developed a service (C++, Python, SQL) to onboard keywords to the search index in real time from a variety of sources (e.g. news articles).
· Conducted experiment with live traffic and found that my framework improved Facebook's total search volume, search value, and keyword retrieval latency.
· Launched service to production.

Facebook May 2019 - August 2019
Software Engineering Intern-Notification Ranking *Menlo Park, CA*

· Implemented rate limiting service (C++, Python) to protect Facebook's internal reachability service and its dependencies from unstable traffic.
· Developed ML pipeline (Python, SQL) to extend reachability service from email to include SMS.
· Demonstrated that the ML model can reduce the amount of undeliverable SMS sent by over half.

TECHNICAL SKILLS

Python, C++, SQL, Pytorch, Git

HONORS AND AWARDS

NSF National Artificial Intelligence Research Resource (NAIRR) Pilot Award 2024
Principal Investigator *Estimated value: $50,000*

· Project: "Enhancing Large Language Model Alignment through Diffusion Generated Soft-Prompts"
· Award: 10,000 GPU Hours on TACC Vista Supercomputer

Cornell University Ph.D. Fellowship 2022-2023

Carnegie Mellon University Research Fellowship 2020-2022

CRA's Outstanding Undergraduate Researcher Award (Honorable Mention) 2020

Outstanding Undergraduate Honors Thesis Award 2019

SERVICE

Reviewer

· ACL Rolling Review (2024)
· ACM Conference on Health, Inference, and Learning (2020, 2021)
· NeurIPS Machine Learning for Health (ML4H) Workshop (2019, 2020, 2021)