Sophia Hager

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Overview

I work on controllable text generation at the Center for Language and Speech Processing. In particular, I am currently interested in knowledge representations in large language models – how to use verbalized uncertainty, parametric knowledge, and tools or knowledge bases to minimize the probability that LLMs mislead their users. I also have experience with other controllable text generation tasks, particularly style-controlled generation, and with controllable music generation.

Education

PhD Student Fall 2022 - Present

Johns Hopkins University — CLSP affiliated — Advised by Nicholas Andrews and Kevin Duh

MSE Computer Science Fall 2022 - Fall 2024

Johns Hopkins University — CLSP affiliated — Advised by Nicholas Andrews and Kevin Duh

BA Computer Science Fall 2018 - Spring 2022

Smith College — Advised by Joseph O'Rourke, thesis advised by Katherine M. Kinnaird

- Summa Cum Laude with Highest Honors in Computer Science
- Bert Mendelson Prize for Excellence in the Computer Science Major

Papers

1. Hager, S. *et al.* "Learning Extrapolative Sequence Transformations from Markov Chains". in *Submitted to ICML 2025* under review (2025).
2. Hager, S. *et al.* "Uncertainty Distillation: Teaching Language Models to Express Semantic Uncertainty". in *Submitted to ARR 2025* under review (2025).
3. Hager, S. & Andrews, N. "Learning to Generate Verbalized Confidences". in *Workshop on Statistical Frontiers in LLMs and Foundation Models at NeurIPS* (2024).
4. Hager, S., Hablutzel, K. & Kinnaird, K. M. *Generating Music with Structure Using Self-Similarity as Attention*. 2024. arXiv: 2406.15647 [cs.SD].
5. Khan, A. *et al.* *Learning to Generate Text in Arbitrary Writing Styles*. 2024. arXiv: 2312.17242 [cs.CL].

Teaching and Mentoring

AI Ethics and Social Impact, Johns Hopkins University 2024

Teaching assistant for Prof. Anjalie Fields. Duties included helping to design the syllabus, grading student work, as well as occasionally designing and conducting classes. Received an average evaluation of 4.61/5.

Introduction to Computer Science through Programming, Smith College 2022

Teaching assistant for Prof. Alicia Grubb. Duties included answering student questions, grading assignments, and providing informative feedback on student work.

Service

JHU CLSP Application Support Mentor 2022-present

Providing feedback on PhD applicants' materials.

CLSP Social Committee 2023-present

Planning and assisting in community and social events involving graduate students in the Center for Language and Speech Processing.

CLSP Student Recruitment Committee 2022

Organized and assisted with the spring recruiting weekend for prospective students.