

Mourad Heddaya

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Research Interests

Language processing and LLM evaluation in domains with natural ambiguity.

- Automatically and efficiently extracting and generating useful information from large-scale, messy, and complex real-world data.
- Better understand capabilities and limitations of LLMs, particularly in challenging domains such as long-context summarization and understanding.
- Building compound systems, using LLM agents and feedback mechanisms, to achieve new capabilities.

Education

Ph.D. Student in Computer Science, 2021-,

Expected Graduation June 2026.

University of Chicago, Chicago, IL.

Advisor: Chenhao Tan

B.S. in Informatics, 2015-2019,

University of Washington, Seattle, WA.

Research Supervisor: Noah Smith & Mari Ostendorf

Selected Publications

[LLM training, evaluation, and analysis. Information extraction from real-world complex and noisy data.]

- [Causal Micro-Narratives](#). **Mourad Heddaya**, Q. Zeng, R. Voigt, A. Zentefis, Chenhao Tan. EMNLP 2024 Workshop on Narrative Understanding.
- [Language of Bargaining](#). **Mourad Heddaya**, S. Dworkin, R. Voigt, A. Zentefis, Chenhao Tan. ACL 2023 Main Conference.

[LLM Long-context summarization and evaluation.]

- [CASESUMM: A Large-Scale Dataset for Long-Context Summarization from U.S. Supreme Court Opinions](#). **Mourad Heddaya**, K. MacMillan, Hongyuan Mei, Chenhao Tan, A. Malani. NAACL 2025 Findings. Accepted with talk at [ALEA 2024](#).

Internships

Applied Scientist at Amazon AWS AI Labs, Summer 2023. Earned return offer.

[Bedrock Team](#), JFK 14, New York City, NY.

Mentor: Miguel Ballesteros

- Proposed self-supervised alignment, an efficient method for aligning LLMs to human preferences for summarization and toxicity without RLHF (without RL and with less human feedback).

- Allow the model to score its own hypotheses (sampled sentences) and incorporate it as self-feedback in the SFT loop, providing more effective regularization for better alignment.

Additional Research Experiences

Research Engineer, University of Washington, 2020-2021,

Advisors: Noah Smith, Mari Ostendorf

- Project outcome: [Unsupervised Learning of Hierarchical Conversation Structure](#)
- Industry collaboration designing and developing unsupervised & supervised information extraction systems to model noisy real-world conversational speech data.
- Based on learned topology from unsupervised HMM, identified distinct conversation paths corresponding to low & high customer service issue resolution, providing insight into successful vs unsuccessful interactions. Final methods and analyses delivered to industry partner.

Invited Talks

Max Planck Institute for Research on Collective Goods,

Research Group Engel, February 2025

Talk Topic: NLP In the Legal Domain (summarization, reasoning, etc). Talk to occur in early 2025.

University of Chicago,

Language Evolution Acquisition & Processing Workshop (LEAP), January 2023

Talk Title: Language of Bargaining

Service

ARR Reviewer: June, November 2024

Teaching Assistantships

University of Chicago,

CMSC 25400 – Machine Learning, Winter 2023

CMSC 25300 / 35300 – Mathematical Foundation of Machine Learning, Fall 2022

CMSC 35100 - Natural Language Processing, Winter 2022