Shuhaib Mehri

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Education

University of Illinois Urbana-Champaign *Aug. 2024 - Present*
Ph.D. in Computer Science, Advisor: Prof. Dilek Hakkani-Tur

University of British Columbia *Sep. 2019 - May 2024*
B.Sc. Honours Computer Science

- Graduated with distinction and completed the co-operative education program.

Publications

Shuhaib Mehri, *Xiusi Chen, Heng Ji, Dilek Hakkani-Tur*. Beyond Sample-Level Feedback: Using Reference-Level Feedback to Guide Data Synthesis. [Preprint]

Shuhaib Mehri, *Chuyuan Li, Giuseppe Carenini*. Exploiting Questions Under Discussion for Discourse Relation Recognition in Dialog. [CODI Workshop at EACL 2024]

Shuhaib Mehri, *Vered Shwartz*. Automatic Evaluation of Generative Models with Instruction Tuning. [GEM Workshop at EMNLP 2023]

Research Experience

University of Illinois at Urbana-Champaign *Aug. 2024 – Present*
Research Assistant, Conversational AI Group

- Working with Prof. Dilek Hakkani-Tur and Gokhan Tur.
  - Designed an effective data synthesis framework that generates high-quality instruction tuning datasets. This framework is based on a novel feedback mechanism that captures the desirable qualities of reference samples, and use it to guide the synthesis process. LLMs finetuned on our synthesized data achieved state-of-the-art results on instruction-following benchmarks such as AlpacaEval 2.0 and Arena-Hard.
  - Present an analysis of the persuasive persuasive abilities of different LLMs in multi-turn settings. Evaluated persuasive abilities by having LLMs engage in multi-turn conversations. Additionally, used synthetic data to train a reward model for automatically evaluating persuasiveness of an argument and claim.
  - Designed an evaluation framework for Task-Oriented Dialogue systems that incorporates personalized user behavior, and improves upon pre-existing benchmarks by addressing elements like dialogue state tracking, dialogue action prediction, and multi-session policy management.

University of British Columbia *Aug. 2022 – Aug. 2024*
Research Assistant, Natural Language Processing Group

- Completed my honours thesis with Prof. Vered Shwartz on automatic evaluation of generative tasks.
  - We developed a dataset, performed instruction tuning on LLMs in various training settings, and demonstrated that our techniques yield good performance on many evaluation tasks.
  - Our publication was accepted to the *Generation, Evaluation & Metrics (GEM) Workshop at* ***EMNLP 2023***.
- Worked with Prof. Giuseppe Carenini and Dr. Chuyuan Li on modeling discourse relations in dialog.
  - Exploited question-answer generation-based linguistic frameworks to annotate pre-existing datasets and aid in identifying relations. Presented our extended abstract at the *CODI workshop at* ***EACL 2024***.
  - Conducted a comprehensive analysis of different approaches using PLMs or LLMs, and assessed their effectiveness in discourse relation recognition at multiple granularities and under different data availability settings. Paper currently in submission.
- Worked with Prof. Giuseppe Carenini and Dr. Chuyuan Li on self-reflection and feedback prompting to enable performance-aware prompting within LLMs.
  - Designed a methodology that collects performance-based feedback and integrates it into follow-up prompts. Then, assessed and analyzed how LLMs respond to different forms of feedback.

Professional Experience

iClinic Systems Inc. *Dec. 2023 – May 2024*

Research Scientist Intern

- Was awarded the *Mitacs Accelerated Fellowship for Master's and PhD Students* as an undergraduate student, under the recommendation of Prof. Vered Shwartz.
- Led the development of an NLP information extraction pipeline tailored for clinical documents.
- Devised a comprehensive annotation guideline, used LLMs for structured generation and refined prompting strategies, and employed data augmentation to establish a robust evaluation framework.
- Integrated the pipeline into an API, enabling information extraction for patient data.

Amazon *Jan. 2023 – Aug. 2023*

Software Development Engineer Intern

- Worked on the Gurupa Team, the team responsible for Amazon's core page assembly engine.
- Owned the end-to-end creation of an interactive data visualization tool responsible for a 90% increase in efficiency of data analysis, which streamlined the migration from a page rendering framework.
- Employed various techniques to optimize the data retrieval process, achieving an 80% reduction in website latency.
- Spearheaded productionalization by configuring pipelines and environments and establishing a robust support policy, which led to a fully operation web application deployed to production.

Amazon *May 2022 – Aug. 2022*

Software Development Engineer Intern

- Worked on Amazon's Dram Team, the team responsible for the primary HTTP interface or rendering content.
- Architected the design and development of a command line tool that uses cloud computing to generate and register consumer ready metadata, enabling developers to create/manage Amazon web pages.
- Collaborated with different teams to fully integrate the command line tool, ultimately automating a process that previously required manual code changes and reducing team operation load by 30%.

Clir Renewables *Sep. 2021 – Dec. 2021*

Software Development Engineer Intern

- Built and deployed a management software solution, effectively maintaining a portfolio of 1000+ renewable energy assets.
- Enhanced code functionality, efficiency, and user experience by introducing new features, writing tests, and integrating changes to the internal tool portal, data access, user authentication, and notification services.

Teaching

University of British Columbia *Sep 2020 – May 2024*

Teaching Assistant

- Effectively taught fundamental computer science principles to students in core computer science courses. Responsibilities include grading student work as well as organizing and leading programming labs, office hours, and review sessions.

  Introduction to Software Engineering (CPSC 310)
  Models of Computation (CPSC 121)

Awards

Mitacs Accelerate Fellowship *2023*