Mohamed Salem Elaraby

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Research Interests

Natural Language Processing • Long-Context Summarization • Computational Argumentation • Large Language Models

Education

PhD in Computer Science 2021 – 2026
University of Pittsburgh, USA

MSc in Electronics & Electrical Communications 2014 – 2017
Cairo University, Egypt

BSc in Communications & Computer Engineering 2009 – 2014
Cairo University, Egypt

Professional Experience

Senior Applied Scientist — Zillow Group (Partner Communications AI, PCAI Team) Jul 2026 – Present

Working on evaluation and long-context problems.

Graduate Research Assistant — PETAL Lab, University of Pittsburgh Sep 2021 – Jun 2026

Argument-aware summarization of legal opinions (CASUM); summarization of student reflective writing (CourseMirror).

Applied Scientist Intern — Zillow Inc. (Conversational AI Team) May 2025 – Sep 2025

Developed `SynClaimEval`, an evaluation framework for the utility of synthetic data in long-context claim verification.

Research Intern — Microsoft (ROAR Team) May 2024 – Aug 2024

Automatic red-teaming of Large Language Models.

Research Intern (NLP) — TikTok / ByteDance (SAMI Team) May 2023 – Aug 2023

Developed HALO: hallucination estimation and reduction in open-source LLMs (BLOOM-7B).

Senior NLP Engineer — Agolo Apr 2021 – Aug 2021

Key-phrase-based headline generation; Python-based summary evaluation API.

Data Scientist (Contract) — Microsoft Advanced Technology Lab Cairo Jun 2020 – Apr 2021

Transfer learning & domain adaptation for Arabic ASR; delivered Arabic Yemeni locale and Gulf assistant scenario models.

Data Scientist II — Raisa Energy LLC Dec 2018 – Jun 2020

NLP-based IE from financial documents; well-spacing algorithms; deep learning time-series forecasting for oil production.

Research Assistant — NLP Lab, University of British Columbia Sep 2017 – Dec 2018

Arabic dialect identification (city-level dataset & new models); emotion detection (4th/30, WASSA 2018).

Researcher — RDI Egypt Oct 2015 – Aug 2017

Arabic pronunciation learning system (Hafss); DNN features for MGB Arabic 2016 challenge; LVCSR ASR engine contributions.

Publications

** denotes equal contribution*

Peer-Reviewed

1. **M. Elaraby**, A. Elhady, D. Litman. *Improving Argument Saliency Coverage in Small LLMs for Long Legal Opinion Summarization via Sequence-Level Distillation.* EMNLP 2026.
2. **M. Elaraby**, D. Litman. *ARC: Argument Representation and Coverage Analysis for Zero-Shot Long Document Summarization with Instruction Following LLMs.* EACL 2026.
3. **M. Elaraby**, J.P. Maheswar. *SynClaimEval: A Framework for Evaluating the Utility of Synthetic Data in Long-Context Claim Verification.* Eval4NLP @ AACL 2025.
4. **M. Elaraby**, D. Litman. *Lessons Learned in Assessing Student Reflections with LLMs.* BEA Workshop @ ACL 2025.
5. **M. Elaraby**, H. Xu, M. Gray, K. Ashley, D. Litman. *Adding Argumentation into Human Evaluation of Long-Document Abstractive Summarization: A Case Study on Legal Opinions.* HumanEval @ LREC-COLING 2024.
6. **M. Elaraby**, D. Litman, X.L. Li, A. Magooda. *Persuasiveness of Generated Free-Text Rationales in Subjective Decisions: A Case Study on Pairwise Argument Ranking.* Findings of EMNLP 2024.
7. **M. Elaraby***, Y. Zhong*, D. Litman, A.A. Butt, M. Menekse. *ReflectSumm: A Benchmark for Course Reflection Summarization.* LREC-COLING 2024.
8. Z. Liu, **M. Elaraby***, Y. Zhong*, D. Litman. *Overview of ImageArg-2023: The First Shared Task in Multimodal Argument Mining.* ArgMining Workshop @ EMNLP 2023.
9. **M. Elaraby**, Y. Zhong, D. Litman. *Towards Argument-Aware Abstractive Summarization of Long Legal Opinions with Summary Reranking.* Findings of ACL 2023.
10. **M. Elaraby**, D. Litman. *ArgLegalSumm: Improving Abstractive Summarization of Legal Documents with Argument Mining.* COLING 2022.
11. A. Magooda, **M. Elaraby**, D. Litman. *Exploring Multitask Learning for Low-Resource Abstractive Summarization.* Findings of EMNLP 2021.
12. **M. Elaraby**, D. Litman. *Self-Trained Pretrained Language Models for Evidence Detection.* ArgMining Workshop @ EMNLP 2021.
13. **M. Elaraby**, A. Zahran. *A Character-Level Convolutional BiLSTM for Arabic Dialect Identification.* WANLP @ ACL 2019.
14. H. Alhuzali, **M. Elaraby**, M. Abdul-Mageed. *UBC-NLP at IEST 2018: Learning Implicit Emotion with an Ensemble of Language Models.* WASSA @ EMNLP 2018.
15. **M. Elaraby**, M. Abdul-Mageed. *Deep Models for Arabic Dialect Identification on Benchmarked Data.* VarDial @ COLING 2018.
16. M. Abdul-Mageed, H. Alhuzali, **M. Elaraby**. *You Tweet What You Speak: A City-Level Dataset of Arabic Dialects.* LREC 2018.
17. H. Ahmed, **M. Elaraby**, M. Abdallah, A. Mousa, S. Abdou, M. Rashwan. *An Unsupervised Speaker Clustering Technique Based on SOM and I-Vectors for Speech Recognition Systems.* WANLP @ EACL 2017.
18. **M. Elaraby**, M. Abdallah, S. Abdou, M. Rashwan. *A Deep Neural Network-Based Model for a Computer-Aided Pronunciation Learning System.* SPECOM 2016.

Preprints

1. **M. Elaraby**, M. Lu, J. Dunn, X. Zhang, Y. Wang, S. Liu. *Halo: Estimation and Reduction of Hallucinations in Open-Source Weak Large Language Models.* arXiv 2023.

Service & Awards

- **CS50 Fellowship** (2025–2026), University of Pittsburgh (awarded to 2 PhD students per year).
- **Outstanding Reviewer**, EACL 2026.
- Co-organizer: ArgMining Workshop 2026 @ ACL 2026; ImageArg Shared Task @ EMNLP 2023.
- Reviewer: LREC 2020 & 2022, ArgMining 2023, ARR 2024–present, BEA 2025, EACL SRW 2026.

References

Dr. Diane J. Litman
PhD Advisor
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Dr. Adriana Kovashka
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Dr. Xiang Lorraine Li
Committee Member
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