# Sherin Muckatira

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## Education

**University of Massachusetts** — Lowell, Massachusetts
Ph.D. in Computer Science; GPA 4.00 — September 2021–Present
Advisor: Prof. Anna Rumshisky

**Arizona State University** — Tempe, Arizona
Master of Science in Electrical Engineering; GPA 3.79 — August 2011–May 2013

**Sir M Visvesvaraya Institute of Technology** — Bangalore, India
Bachelor of Engineering in Electronics and Communication; GPA:4.00 — September 2007–July 2011

## Publications

[1] S. Muckatira, V. Deshpande, V. Lialin, and A. Rumshisky, "Emergent abilities in reduced-scale generative language models", in *Findings of the Association for Computational Linguistics: NAACL*, 2024.

[2] V. Lialin, S. Muckatira, N. Shivagunde, and A. Rumshisky, "Relora: High-rank training through low-rank updates", in *The Twelfth International Conference on Learning Representations*, 2023.

[3] N. Shivagunde, V. Lialin, S. Muckatira, and A. Rumshisky, "Deconstructing in-context learning: Understanding prompts via corruption", in *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024)*, 2024, pp. 4509–4529.

[4] S. Pan, V. Lialin, S. Muckatira, and A. Rumshisky, "Let's reinforce step by step", in *NeurIPS 2023 Workshop on Instruction Tuning and Instruction Following*, 2023.

[5] S. Muckatira, "Properties of winning tickets on skin lesion classification", *ECCV WiCV Workshop*, 2020.

[6] Q. Sun, S. Muckatira, L. Yuan, S. Ji, S. Newfeld, S. Kumar, and J. Ye, "Image-level and group-level models for drosophila gene expression pattern annotation", *BMC bioinformatics*, vol. 14, pp. 1–13, 2013.

## Reserach Experience

**University of Massachussetts** — Lowell, MA
**Research Assistant, PI: Prof. Anna Rumshisky** — May 2023–Present
Improving in-context learning capabilities of small language models through vocabulary filtration. Parameter-efficient pre-training and fine-tuning. Studying the internal structures of language models.

**Amazon** — Remote
**Applied Scientist Intern, PI: Ikkei Itoku** — May 2024–August 2024
Developed an innovative data generation pipeline using Claude to create synthetic career advancement documents. These documents span various job families and include detailed descriptions of how employees demonstrated readiness for the next level while executing projects. Fine-tuned Mistral-7B-Instruct model with this synthetic data, enabling it to identify specific next-level guidelines demonstrated by employees.

**Arizona State University** — Tempe, AZ
**Research Aide, PI: Prof. Jieping Ye** — July 2012–May 2013
Implemented Gene expression pattern annotation using SIFT feature extraction on images in the Berkeley Drosophila Genome Project (BDGP). Constructed Codebooks using Bag of Words and Sparse Coding Approach.

## Other Industry Experience

**Qualcomm** October 2016–December 2021
**Senior Software Engineer**
Developed firmware for the physical layer of Wireless LAN chips using the Wifi 802.11 protocol, including the design and implementation of features such as Spectral Scan and Radar Detection.

**NXP** June 2013–October 2016
**Applications Software Engineer**
Developed signal processing applications for radio communication, focusing on transmit and receive chains on a Vector Signal Processor for Power Amplifier characterization. Implemented communication interfaces between host processors and co-processors to enhance functionality in Power Amplifier characterization applications.

## Teaching Experience

Deep Learning for NLP; Spring 2025
Computing 1 Lab; Fall 2022, Spring 2023

## Skills

Python, Pytorch, sklearn, Machine Learning, Deep Learning, NLP, Huggingface Transformers, generative AI, pre-training, fine-tuning, prompting, zero-shot/few-shot evaluation, C, C++, Perforce, Git, Matlab, Embedded Systems, Signal Processing, Data Analysis, Software development