

# Sherin Muckatira

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## EDUCATION

### University of Massachusetts

Ph.D. in Computer Science; GPA 4.00

Advisor: Prof. Anna Rumshisky

Lowell, Massachusetts

September 2021–Present

### Arizona State University

Master of Science in Electrical Engineering; GPA 3.79

Tempe, Arizona

August 2011–May 2013

### Sir M Visvesvaraya Institute of Technology

Bachelor of Engineering in Electronics and Communication; GPA:4.00

Bangalore, India

September 2007–July 2011

## PUBLICATIONS

- [1] V. Lialin, **Muckatira, Sherin**, N. Shivagunde, and A. Rumshisky, “Stack more layers differently: High-rank training through low-rank updates”, *NeurIPS WANT Workshop*, 2023.
- [2] S. Pan, V. Lialin, **Muckatira, Sherin**, and A. Rumshisky, “Let’s reinforce step by step”, *NeurIPS Instruction Tuning and Instruction Following Workshop*, 2023.
- [3] N. Shivagunde, V. Lialin, **Muckatira, Sherin**, and A. Rumshisky, “Deconstructing in-context learning: Understanding prompts via corruption”, *NeurIPS RO-FoMo Workshop*, 2023.
- [4] **Muckatira, Sherin**, “Properties of winning tickets on skin lesion classification”, *ECCV WiCV Workshop*, 2020.
- [5] Q. Sun, **Muckatira, Sherin**, 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, no. 1, p. 350, 2013.

## 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

## RESERACH EXPERIENCE

### University of Massachussetts

Research Assistant, PI: Prof. Anna Rumshisky

Lowell, MA

May 2023–Present

1. LoRA with restarts (ReLoRA) Fine-tuning
  - (a) Explored if ReLoRA, a parameter efficient pre-training method, can be adopted for fine-tuning.
  - (b) Fine Tuned and compared performance of T5-base (220M params) and T5-large (770M params) with ReLoRA and LoRA on the GLUE benchmark.
2. In-Context Learning (ICL) and Chain of Thought (CoT) in Small Language Models
  - (a) Exploring the in-context in smaller (<110M params) language models
  - (b) Pre-trained GPTNeo config based models on the SlimPajama dataset to induce ICL capabilities in smaller models.
  - (c) Evaluated the zero-shot capabilities of the model using Eleuther’s lm-eval harness.

### Arizona State University

Research Aide, PI: Prof. Jieping Ye

Tempe, AZ

July 2012–May 2013

1. Implemented Gene expression pattern annotation using SIFT feature extraction on images in the Berkeley Drosophila Genome Project (BDGP).

2. Extracted Dense SIFT features from embryonic images and annotated images with ontology terms.
3. Constructed Codebooks using Bag of Words and Sparse Coding Approach.

## OTHER INDUSTRY EXPERIENCE

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### Qualcomm

Senior Software Engineer

Boxborough, MA

October 2016–December 2021

- Developing firmware for the physical layer of Wireless LAN chips(Wifi 802.11 protocol).
- Developed features such as Spectral Scan and Radar and supported Transmit and Receive data path features.

### NXP

Applications Software Engineer

Chandler, AZ

June 2013–October 2016

- Created Signal Processing applications for Radio Communication in the transmit and receive signal processing chain on a Vector Signal Processor for PA characterization.
- Created test benches, graphical user interfaces, and enhanced data analysis tools for Radio applications in Matlab.
- Implemented the communication interface between the host processor and the co-processor for Power Amplifier characterization applications.

## TEACHING EXPERIENCE

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Teaching Assistant (TA), COMP 1030L: Computing 1 Lab; Fall 2022, Spring 2023