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] V. Lialin, **Muckatira, Sherin**, N. Shivagunde, and A. Rumshisky, "Relora: High-rank training through low-rank updates", *ICLR*, 2024.

[2] **Muckatira, Sherin**, V. Deshpande, V. Lialin, and A. Rumshisky, "Emergent abilities in reduced-scale generative language models", *Under Review*, 2024.

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

[4] N. Shivagunde, V. Lialin, **Muckatira, Sherin**, and A. Rumshisky, "Deconstructing in-context learning: Understanding prompts via corruption", *NeurIPS RO-FoMo Workshop*, 2023.

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

[6] 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 — Lowell, MA
Research Assistant, PI: Prof. Anna Rumshisky — 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 Though (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 — Tempe, AZ
Research Aide, PI: Prof. Jieping Ye — 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

Qualcomm Boxborough, MA
Senior Software Engineer 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 Chandler, AZ
Applications Software Engineer 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

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