

# Muqeeth Mohammed

📧 personal-web   📧 muqeeth101@gmail.com

## EDUCATION

- **University of North Carolina - Chapel Hill** Chapel Hill, NC  
*Masters of Science in Computer Science* Aug 2021 - July 2023
  - **Research Interests:** Modularity, Parameter Efficient Learning, Continual Model Development, Mixture of Experts
- **Indian Institute of Technology Madras** Chennai, India  
*Bachelor of Technology (Honors) in Electrical Engineering — GPA:9.36/10.0 (Rank 8/60)* Jul 2016 – May 2020
  - **Thesis:** Estimation of relatedness between courses in Workflow

## PUBLICATIONS

- **Git-Theta: A Git Extension for Collaborative Development of Machine Learning Models (ICML, 2023)**  
*Nikhil Kandpal\*, Brian Lester\*, **Mohammed Muqeeth**, Anisha Mascarenhas, Monty Evans, Vishal Baskaran, Tenghao Huang, Haokun Liu, Colin Raffel*
- **Soft Merging of Experts with Adaptive Routing (arXiv preprint)**  
*Mohammed Muqeeth, Haokun Liu, Colin Raffel*
- **Models with Conditional Computation Learn Suboptimal Solutions (ICBINB@NeurIPS, 2022)**  
*Mohammed Muqeeth, Haokun Liu, Colin Raffel*
- **Few-Shot Parameter-Efficient Fine-Tuning is Better and Cheaper than In-Context Learning (NeurIPS, 2022)**  
*Haokun Liu\*, Derek Tam\*, **Mohammed Muqeeth\***, Jay Mohta, Tenghao Huang, Mohit Bansal, Colin Raffel*
- **Alignment-Augmented Consistent Translation for Multilingual Open Information Extraction (ACL, 2022)**  
*Keshav Kolluru\*, **Mohammed Muqeeth\***, Shubham Mittal, Soumen Chakrabarti, Mausam*

## EXPERIENCE

- **University of North Carolina - Chapel Hill** Chapel Hill, NC  
*Research Assistant — Advisor: Prof. Colin Raffel* Aug 2021 - present
  - Actively contributing to the development of “git-theta”, a version control system for ML models to facilitate efficient storage, communication, and collaboration.
  - Demonstrated that learned routing strategies using gradient estimation techniques are suboptimal and underperform heuristic routing in models with conditional computation. Designed a new method SMEAR that enables standard gradient based training for mixture of experts models, outperforming all gradient estimators and heuristic routing with no increase in compute costs compared to discrete routing.
  - Worked on demonstrating that few-shot parameter efficient fine-tuning is better in terms of cost and performance than in-context learning.
- **Indian Institute of Technology, Delhi** Delhi, India  
*Research Assistant — Advisors: Prof. Mausam, Prof. Soumen Chakrabarti* Jul 2020 - Jul 2021
  - Identified inconsistencies when translating OpenIE data from English to other languages and built a system that overcame these inconsistencies to provide state-of-the-art performance on the OpenIE task over five languages.
  - Created and publicly released OpenIE test sets for low-resource Indian languages like Hindi and Telugu.
  - Worked on a unified labeling architecture for structured prediction tasks that include syntax, semantics, information extraction, and sentiments in NLP which is 3x faster than state-of-the-art achieving comparable accuracy.
  - Improved the inference speed of OpenIE6 by 20% through parallel output processing and GPU processing, making it suitable for web-scale deployment.
- **Senior Thesis** Chennai, India  
*Undergrad Student — Advisors: Prof. Sutanu Chakraborti, Prof. Anil Prabhakar* Jan 2020 - May 2020
  - Designed a retrieval system to retrieve relevant courses to a given query course from the university courses at IITM.

- Used explicit semantic analysis with the addition of phrases to achieve 0.868 nDCG score compared to a neural model baseline of 0.735. Implemented the idea of retrofitting to user feedback to further improve the score to 0.92.

- **Flipkart**

Bengaluru, India

*Summer Intern*

*May 2019 - July 2019*

- Built an unsupervised classification model to classify opinion-aspect pairs from Flipkart review corpus for shoes into categories. Achieved an accuracy of 76 % on human-annotated test set.

## SKILLS

---

- **Tools:** PyTorch, Numpy, Matplotlib, and Git
- **Languages:** Python, C, C++, L<sup>A</sup>T<sub>E</sub>X, and Racket

## MISCELLANEOUS

---

- Received Masters Merit Fellowship which covers full tuition and provides stipend for the first year at UNC Chapel Hill
- Received RamShriram Merit Scholarship at IIT Madras for maintaining 8.0+ GPA every year
- Reviewer: NeurIPS 2023, ACL 2022, EMNLP 2022