

MUHAMMAD HAMMAD FAHIM SIDDIQUI

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EDUCATION

University of Ottawa

Ph.D. Computer Science

January 2021 – June 2025

Ottawa, Canada

National Polytechnic Institute

MS Computer Science

August 2018 – July 2020

Mexico city, Mexico

National University of Computer and Emerging Sciences

BS Computer Science

July 2013 – June 2017

Islamabad, Pakistan

EXPERIENCE

National Research Council of Canada (NRC)

AI Researcher co-op

May 2024 – December 2024

Ottawa, Canada

- NRC Digital technologies research group
- Analysis of aporophobic content on social media, collected and annotated a new dataset
- Prompt-engineering and AI alignment for classification using DPO/ORPO
- Publication at NAACL 2025

Amazon

Applied Scientist II Intern

May 2023 – September 2023

Toronto, Canada

- Alexa AI Natural Language Understanding research group
- Customer representation learning for personalized SmartHome interactions
- Prompt-engineering using LLMs for generating representation embeddings
- Publication in internal Amazon conference

SafeToNet

Graduate Researcher

March 2021 – April 2023

Ottawa, Canada

- Detecting emotions, hate speech, and child abuse through zero-shot and few-shot emotion classification in social media data.
- Data augmentation for low-resource languages

Abstrakt Co.

Machine Learning Engineer

August 2020 – January 2021

Lahore, Pakistan

- Fine-tuning LLMs for hate speech analysis and target classification
- Profiling fake news spreaders on social media
- Publications at ACL workshop 2019 & CLEF 2020

PROJECTS

Explainable emotion analysis in social media

- Instruction tuning prompts for fine-tuning LLMs, using Python, OpenAI API, transformers
- Explainable AI to decode the decision-making process of a language model
- Preference dataset for aligning LLMs to generate better explanations using DPO/ORPO, using unsloth, bitsandbytes
- Dynamic few-shot classification using RAG and vector datastores
- Multiple publications in CanadianAI 2024, IV2024 and NLP AI 2025

Reducing faults in Alexa Smart home interactions

- Developed a GPT-based model to predict intended appliance names from user utterances, using Python, huggingface-transformers, cuda, Pandas
- Managed 60 million records, created pipeline to read and process the data for distributed training
- Reduced faults by 8 million in offline tests, published research at an internal company conference

Detecting aporophobia in social media

- Experimented with BERT, RoBERTa, and large language models (GPT-4o, LLAMA, Mistral) using zero-shot, few-shot learning, and supervised fine-tuning, using Python, huggingface-transformers, Pandas
- Improved model performance with DPO/ORPO techniques and preference datasets for alignment with human expectations using PEFT, bitsandbytes, unsloth

TECHNICAL SKILLS

Languages: Python, PySpark, R, Java, C++, SQL

AI, Machine Learning, and NLP: Pytorch, TensorFlow, scikit-learn, Huggingface transformers, Langchain, unsloth, PEFT, bitsandbytes, distributed training, and inference, Reinforcement Learning (RL), XGBoost / CatBoost, Large Language Models

Statistical methods: Bayesian methods, HMMs, graphical models, dimension reduction, clustering, classification, regression techniques

Statistical softwares: SPSS Statistics, R Studio, Rapid Miner

RESEARCH PUBLICATIONS

Self-Explaining Emotion Classification through Preference-Aligned Large Language Models <i>M.H.F. Siddiqui, D Inkpen, A Gelbukh</i>	CCSEA 2025
Tackling Social Bias against the Poor: A Dataset and Taxonomy on Aporophobia <i>G Curto, S Kiritchenko, M.H.F. Siddiqui, I Nejadgholi, KC Fraser</i>	NAACL 2025
Instruction Tuning of LLMs for Multi-label Emotion Classification in Social Media Content <i>M.H.F. Siddiqui, D Inkpen, A Gelbukh</i>	CanadianAI 2024
Towards Interpretable Emotion Classification: Evaluating LIME, SHAP, and Generative AI <i>M.H.F. Siddiqui, D Inkpen, A Gelbukh</i>	IV 2024
Multi-label emotion classification in texts using transfer learning <i>Iqra Ameer, M.H.F. Siddiqui, et al.</i>	ESWA Journal 2023