Momin Siddiqui

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Education

Georgia Institute of Technology – Masters of Science Computer Science — August 2023 - May 2025
Specialization: Human-Computer Interaction — **GPA: 4.0 / 4.0**

Jamia Millia Islamia University – Bachelor of Technology Computer Engineering — August 2019 - May 2023
Dean's List: Spring 2022, Fall 2022, Spring 2023 — **GPA: 3.85 / 4.0**

Graduate Coursework: Mobile & Ubiquitous Computing, Human-Computer Interaction, Qualitative Methods of HCI, Education Technologies

Undergraduate Coursework: Algorithms & Data Structure, Machine Learning, Artificial Intelligence, Computer Vision, Object Oriented Programming, Operating Systems, Database Management System, Automata & Complexity, Discrete Mathematics, Software Engineering

Research Experience

Teachable AI Lab – Graduate Research Assistant (*Advisor: Dr. Christopher Maclellan*) — August 2023 - Current
Python, SHOP2, Rete Algorithm, AI, Flask, Bootstrap, SQLAlchemy, Blackboard

- Designed and implemented **SHOP2** in **Python** with Horn clauses, standardizing **hierarchical planning** for lab projects including Gomoku playing agent and verbal apprentice learner (VAL). [GitHub]
- Led the development of an intelligent tutor using **Flask** and **SQLAlchemy**, incorporating the **Rete algorithm**. Successfully deployed on Blackboard impacting over **2000 classrooms** in the Technical College System of Georgia. [Website]

Human Machine Interaction Lab – Research Intern (*Advisor: Dr. Jainendra Shukla*) — June 2022 - May 2023
Python, PyTorch, OpenFace, LSTM, Scikit-Learn, SciPy, AutoML.

- Engineered a **bidirectional LSTM** architecture using PyTorch and OpenFace for efficient feature extraction from webcam streams, resulting in a highly accurate regression model with a **mean squared error (MSE) of 0.022** utilizing Scikit-Learn.
- Developed and deployed a mobile widget interaction detection system with **90% accuracy** using SciPy and AutoML.

MixORG – Research Intern — July 2021 - June 2022
Python, GANs, Generative AI, Object Detection, YOLO, SSL, AWS (EC2)

- Pioneered the creation of a novel synthetic embryo dataset utilizing NVIDIA's **StyleGAN**, enabling advanced embryological research.
- Attained **0.8 mAP** in embryo stage detection with YOLOv5, enhancing developmental stage analysis accuracy.
- Utilized SimCLR and DINO for SSL, advancing **medical image** classification pre-training on E2C

Publications

S. Yadav, **M. Siddiqui,** J. Shukla, EngageMe: Assessing Student Engagement in Online Learning Environment Using Neuropsychological Tests, in AIED, 2023

A Sharma, R Kakulavarapu, V Thambawita, **M Siddiqui** et al., Detecting Human Embryo Cleavage Stages Using YOLO v5 Object Detection Algorithm, in Nordic Artificial Intelligence Research and Development, Jan 2022 **(Best Conference Paper)**

M. Siddiqui*, U. Masud* et al., SCS-Net: An Efficient And Practical Approach Towards Face Mask Detection, in Procedia Computer Science, Jan 2023

A. Sharma, M. Stensen, E. Delbarre, **M.Siddiqui et. al,** P-243 Automating Tracking of Cell Division for Human Embryo Development in Time Lapse Videos, Human Reproduction, vol. 37, Jul. 2022

Projects

Passive Haptic Rehabilitation App (*Advisor: Dr. Thad Starner*) — August 2023 - December 2023
Kotlin, MediaPipe, Android Studios, SQLite, Machine Learning, OpenCV

- Engineered Kotlin-based Android app for stroke recovery assessment.
- Implemented **OpenCV** and **MediaPipe** for sensor data capture and pose/gesture analysis.
- Built **3** gamified stroke evaluation tests, achieving **81% accuracy**. [Demo]

Face Mask Detection — January 2022 - June 2022
Python, Tensorflow, Keras, Image Classification, Object Detection

- Developed and optimized face detection system using YOLOv5 and TensorFlow, integrating custom Squeeze-Excitation blocks for enhanced **accuracy of 95.41%** compared with **VGG**, **GoogleNet**, and **ResNet** variants.

Skills

Languages:	**Python**, Java, JavaScript, CSS, HTML, Kotlin, LISP, **SQL**, C/C++, HTML, Bash
Frameworks:	Pandas, **NumPy**, OpenCV, SciPy, Scikit-Learn, **PyTorch**, **Tensorflow, Keras**, Weights & Biases, Flask, LangChain
Tools:	Docker, **Git**, Linux Kernel, AWS (EC2)
Interest Areas:	Generative AI, Self-Supervised Learning, Optimization, Deep Learning, Computer Vision, Natural Language Processing