

# Fahad Siddique Faisal

ML/AI ENIGINEER · AI RESEARCHER

Dhaka, Bangladesh

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“Be the change that you want to see in the world.”

## Research Interest

Human-Computer Interaction, Machine Learning, Deep Learning, Natural Language Processing, LLMs, AI

## Work Experience

### AI Solutions USA

New York, USA

SOFTWARE ENGINEER(AI/ML)

Jun. 2025 - Present

- Designed a multi-agent orchestration framework with CrewAI, Instruct, and Agno to orchestrate AI agents for collaborative task execution.
- Preprocessed the data with Pandas and Numpy, implemented Chunking techniques, Indexing, and vectorizing with embedding models and RAG-Techniques
- Gained Proficiency in NoSQL (MongoDB) and Vector DBs (Lancedb, Qdrant, Milvus).

### Walton Hi-Tech Industries PLC

Dhaka, Bangladesh

AI RESEARCHER & SENIOR DEPUTY ASSISTANT DIRECTOR

Apr. 2025 - Present

- Developed a fully local AI-based knowledge-base and chat system using open-source AI models and Langchain and LangGraph with a Corrective-RAG pipeline, trained on internal data.
- Developed a Long-term memory system for any Conversational AI
- Developed an AI-based Real-time on-device Speech Recognition and Transcription system utilizing whisper.cpp and Open-sourced LLM models.
- Implemented distributed and Parallel GPU training and inference capability of NVIDIA GPU with PyTorch, CUDA programming and llama.cpp
- Finetuned LoRA Adapters, Developed GPT-2-based Small language model with 20M and 30M parameters with function-calling capability.

### Outlier AI

Remote

DATA ENGINEER

Oct. 2024 - Feb. 2025

- Curated around 22GB of English to Bangla translated and Question Answering text
- Gained hands-on experience in developing datasets to train transformer-based and AI models
- Gained extensive knowledge regarding data curation and the importance of quality data for training AI models.

### Riseup Labs

Uttara, Dhaka

SOFTWARE ENGINEER INTERN

Jun. 2023 - Jul. 2023

- Gained experience on Software development life-cycle
- Got proficient with linux, Bash, Google Cloud Platform, VM and Cloud Run Deployment
- Introduction to Big Data analysis using Hadoop and Spark

## Undergraduate Thesis

### Investigation and Transforming Resource-Scarce Language Question Generation: A Study on Text-to-Text Transformer Models for Bengali

Bangladesh

AUTHOR

2024

- Developed and improved an automatic FAQ generation system using text-to-text transformer models to enhance Question Generation (QG) in multilingual contexts.

## Honors & Awards

### INTERNATIONAL

2024	<b>Best Technical Paper in a Session on AI</b> , 27th International Conference ICCIT2024	Cox's Bazar
2022	<b>Winner</b> , scholarship for CSCA (Certified Supply Chain Analyst)	Ohio, U.S.A
2022	<b>Winner</b> , ISCEA Prize Global Supply Chain	Ohio, U.S.A

## DOMESTIC

2025	<b>Champion among 170 Engineering Team</b> , Walton AI Creative Award 2025	Bangladesh
2024	<b>Winner</b> , University Semester Scholarship for Outstanding Result	Bangladesh
2020	<b>Winner</b> , University Semester Scholarship for Outstanding Result	Bangladesh
2019	<b>Winner</b> , University Semester Scholarship for Outstanding Result	Bangladesh

## Publications

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- **F. S. Faisal**, S. N. Islam, M. F. Hossain and M. A. Hossain. "Optimizing Resource-Scarce Language Question Generation on Bengali: A Comparative Study of Transformer-Based Models," *27th International Conference on Computer and Information Technology (IEEE ICCIT)*, 2024. [Link](#)
- S. N. Islam, **F. S. Faisal**, M. F. Hossain and M. A. Hossain, "Enhancing Bilingual Sarcasm Detection with an Advanced Ensemble Model: A Dual-Language Deep Learning Framework," *27th International Conference on Computer and Information Technology (IEEE ICCIT)*, 2024. [Link](#)
- M. S. H. Sarker, **F. S. Faisal**, A. Istiaque and T. Taher, "Design and Comparative Analysis of 1-BIT ALU and Full Adder using MGDI Technique for High-Performance PLC Applications," *27th International Conference on Computer and Information Technology (IEEE ICCIT)*, 2024. [Link](#)
- A. R. Akand, M. M. H. B. Nipu, I. Das, G. Ali, A. Hossain, **F. S. Faisal**. "A Federated and Explainable Machine Learning Framework for Robust Intrusion Detection and Network Security Enhancement in Industrial Internet of Things (IIoT) Environments," *International Conference on Electrical, Computer & Telecommunication Engineering (IEEE ICECTE)*, 2026. [Accepted!](#)

## Projects

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### Early and Late Fusion For Multimedia Hateful Meme Classification

TECH STACK : PYTHON, RESNET, VGG19, DENSENET, TRANSFORMERS

2025

- Optimized a high-performance RAG pipeline utilizing the Llama-3.2-3B LLM, achieving a 70% reduction in memory requirements (from 12GB to 3.5GB) using 8-bit quantization (llama.cpp backed) while maintaining 99.5% of the original model's performance.

### Walton-AI: Local AI Assistant and AI-based Knowledge Management System

TECH STACK : PYTHON, LANGCHAIN, LANGGRAPH, LLAMA.CPP

2025

- Optimized a high-performance RAG pipeline utilizing the Llama-3.2-3B LLM, achieving a 70% reduction in memory requirements (from 12GB to 3.5GB) using 8-bit quantization (llama.cpp backed) while maintaining 99.5% of the original model's performance.

### Real Time Image Pattern Detection and Recognition using OpenCV and CLIP

#### Embeddings

TECH STACK: OPENCV, CLIP EMBEDDINGS, YOLOv8, QDRANTDB

2025

- Developed an end-to-end computer vision system combining YOLOv8 for real-time refrigerator detection, CLIP embeddings for feature extraction, and Qdrant vector database for similarity search.

### Development of a 400M Parameter Small Language Model with Function-Calling and ONNX Deployment

TECH STACK : PYTHON, PYTORCH, ONNX

2025

- Developed an end-to-end computer vision system combining YOLOv8 for real-time refrigerator detection, CLIP embeddings for feature extraction, and Qdrant vector database for similarity search.

### Multi-class Bangla News Classification using Early Fusion and Late Fusion

TECH STACK: PYTHON, BI-LSTM, CNN

2022

- Developed an end-to-end computer vision system combining YOLOv8 for real-time refrigerator detection, CLIP embeddings for feature extraction, and Qdrant vector database for similarity search.

## Control Sequencer for SAP-1 Architecture

LOGISM

2022

- Designed a control sequencer incorporating a 6-bit ring counter to facilitate efficient loading of two data values into registers.
- Integrated user-friendly buttons for voting and ensured accurate tallying and display of results in real time.

## Microcontroller and IoT Projects

TECH STACK: MOSQUITTO MQTT, ESP32, ARDUINO, WHISPER.CPP, AC RELAY & WIFI MODULE.

2022

- Developed an AI-based-voice controlled over-the-internet Automatic Warehouse Switching and Monitoring system.
- Real-time Weather Monitoring and Forecasting system

## Ongoing Researches

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### Automated Chest X-Ray Report Generation Using Vision-Language Models: A LLaMa

#### 3.2 Based Approach

Co-AUTHOR

- The combination of structured visual classification via EfficientNetB7 & reasoning through the LLaMA 3.2 Vision-Instruct model.

### Conversational AI Model for the Medical Domain Adapted Using QLoRA on

#### Qwen2-0.5B

AUTHOR

Jul 2025 - Present

- The project adapts the model using the ruslanmv/ai-medical-chatbot dataset of patient–doctor conversations, optimizing training with cosine scheduling, gradient accumulation, and Hugging Face integration

## Education

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### Chittagong University of Engineering and Technology

B.S. IN ELECTRONICS AND TELECOMMUNICATION ENGINEERING

Chittagong, Bangladesh

Feb. 2019 - Jul. 2024

- Obtained CGPA of 3.44 out of 4.0 with last semester GPA 3.73

## Relevant Coursework

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- **Programming Related:** C/C++, Object-Oriented Programming, Numerical Analysis, Algorithms
- **Data Management:** Data Structures, Database Management (SQL, NoSQL, VectorDB)
- **Machine Learning:** Advanced Python Programming, Linear Algebra and Statistics
- **Microprocessor Related:** Microcontroller, Microprocessor, VLSI Technology.

## Extracurricular Activities

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2022   **Problem Writer**, 2022 ETE DecaHertz Programming Contest

Bangladesh

2023   **Organizer & Program Co-ordinator**, Infixon

Bangladesh

2023   **Organizer**, Tarunner Uthsob by CUET Debating Society

Bangladesh

## Leadership Experiences and Affiliations

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### CUET Debating Society

VICE-PRESIDENT

Chittagong, Bangladesh

July. 2023 - Sept. 2024

- Arranged a National Level Inter-University Debate Competition and Cultural Program.
- Participants at Inter University English Debate Competition.

### House of the Language and Literature, CUET

ORGANIZING SECRETARY

Chittagong, Bangladesh

August. 2023 - Sept. 2024

- Arranged a literature fest for all the members of the university to explore books.
- Arranged weekly book reading sessions with fellow book lovers.