

Md. Rezuwan Hassan

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WORK EXPERIENCE

1. Sr. Technical Project Manager

July, 2026 - Present

SysModeler Inc. | Michigan, United States of America | Full-time (Remote)

- Coordinate technical teams and monitor individual progress, deliverables, bug resolution, and project milestones to ensure timely execution.
- Review technical progress, defect resolutions, and deliverables to ensure quality, consistency, and alignment with project requirements.
- Conduct regular system sanity checks from a user perspective, identify usability and functional issues, and communicate actionable feedback to the technical team.
- Translate project requirements into actionable technical tasks and coordinate their implementation across the development team
- Maintain project documentation covering development progress, bug resolutions, feature implementations, and technical updates.

2. AI Engineer

March, 2025 - June, 2025

SysModeler Inc. | Michigan, United States of America | Full-time (Remote)

- Developed natural language processing capabilities for system comprehension using Retrieval-Augmented Generation (RAG) architectures and vision models.
- Collaborated with the business team to tailor the AI chatbot for domain-specific use cases and requirements.
- Developed a computer-vision pipeline for converting system skeleton images into SysML v1 diagrams.
- Investigated and quantified limitations in the system requirements extraction pipeline to identify areas for improvement.

3. Graduate Research Engineer (AI & NLP)

February, 2024 - October, 2025

BRAC University | Dhaka, Bangladesh | Full-time (Hybrid)

- Reported regular research progress and technical updates to the supervising faculty.
- Developed research protocols, experimental pipelines, and methodologies, and documented findings for research publications.
- Processed, analyzed, curated, and developed datasets from multiple sources and data modalities.
- Automated research workflows and fine-tuned deep learning models based on research objectives and experimental requirements.
- Co-supervised and evaluated undergraduate thesis students, providing technical guidance throughout their research projects.

PUBLICATIONS

1. **Meaning Over Morphology: A Multi-Metric Benchmark of LLMs for Bangla Dialect Translation**

Soumik Deb Niloy, Subhey Sadi Rahman, Mahbub E Sobhani, Md. Golam Rabiul Alam, Farig Yousuf Sadeque, **Md. Rezuwan Hassan**
2026 Workshop on Dialects in NLP - A Resource Perspective (DialRes), LREC

2. **Are ASR foundation models generalized enough to capture features of regional dialects for low-resource languages?**

Tawsif Tashwar Dipto, Azmol Hossain, Rubayet Sabbir Faruque, **Md. Rezuwan Hassan**, Et al.
2025 International Joint Conference on Natural Language Processing and Asia-Pacific Chapter of the Association for Computational Linguistics (IJCNLP-AAACL)

3. **A Horizontal Federated Random Forest for Heart Disease Detection from Decentralized Local Data**

Shafin Mahmud, **Md. Rezuwan Hassan**, Md. Ashfaquul Haque, Md. Golam Rabiul Alam
2022 IEEE 10th Region 10 Humanitarian Technology Conference (R10-HTC)

4. **Monte Carlo Simulation for Reliability Worth Assessment of Distribution System Considering Momentary Interruptions**

Md. Tanjil Ahmed, **Md. Rezuwan Hassan**, Palash Chandra Ghosh, Mohammad Saiful Huq, Mohaimenul Islam, A. S. Nazmul Huda
2022 International Conference on Energy and Power Engineering (ICEPE)

5. **AgriBuddy: An AI-powered Agent-based System for Bangladeshi Agriculture Using RAG and Vision Models**

Md. Shaleh Islam Tonmoy, Rawhatul Rabbi, **Md. Rezuwan Hassan**, Ruwad Naswan, Tanmoy Shome
ResearchGate (Technical Report)

6. **RegSpeech12: A Regional Corpus of Bengali Spontaneous Speech Across Dialects**

Md. Rezuwan Hassan, Azmol Hossain, Kanij Fatema, Rubayet Sabbir Faruque, Tanmoy Shome, Et al.
arXiv Preprint (In process for a journal)

7. **IPA Transcription of Bengali Texts**

8. **RoshikBot: Towards Culturally Grounded Bangla Satire and Humor with Foundation Models**

Nusrat Jahan Mim, Md. Ishmam Tasin, **Md. Rezuwan Hassan**, Tanmoy Shome, Zumaina Islam, Syed Ishtiaque Ahmed, Farida Chowdhury, S M Taiabul Haque

2026 Under review — ACM CHI Conference on Human Factors in Computing Systems (CHI)

PROJECTS

Data Science and Machine Learning

1. Aviation Accident Risk Analysis and Business Recommendations

Used the "Aviation Accident Database" and Tableau to identify low-risk aircraft and recommend safer models and practices for the aviation industry.

- [GitHub](#) | [Cleaned Dataset Link](#) | [Tableau Dashboard](#)

2. Titanic EDA and Survival Prediction

This project analyzes factors like age, class, and gender affecting Titanic survival and predicts passenger survival chances based on given features using different machine learning algorithms.

- [GitHub](#)

Agentic AI

1. AgriBuddy: An AI-powered Agent-based System for Bangladeshi Agriculture Using RAG and Vision Models

AI-powered agent-based agricultural assistant system for Bangladeshi farmers using RAG and Vision Models

- [GitHub](#) | [Presentation Slides](#) | [Technical Report](#) | [Overview Video](#)

Natural Language Processing

1. Bengali Speech Recognition with Regional Dialects

My master's thesis involved building a regional speech corpus and fine-tuning Wav2Vec2 for Bengali dialect transcription. The project led to a datathon using a dataset checkpoint, after which I fine-tuned a Whisper model and deployed it on HuggingFace Space.

- [Github](#) | [Model Deployment](#) | [Model Weights](#) | [Thesis Report](#) | [Datathon](#)

2. Automatic Bengali Transcription System

A robust Bangla speech recognition system has been prototyped, achieving exceptional transcription accuracy. We are now in the deployment phase, aiming to provide a user-friendly web interface for generating CSV/Excel outputs from audio inputs.

- [Github](#)

3. Multi-label Film Genre Classifier

Scraped movie and TV data to build a multi-label genre classifier, fine-tuned a transformer model, converted it to ONNX for faster inference, and deployed it via Flask on HuggingFace Space and OnRender.

- [GitHub](#) | [Dataset](#) | [Web App](#) | [Hugging Face Space](#)

4. Chatbot using Mistral 7B LLM

I developed an advanced chatbot by fine-tuning a Mistral 7B Large Language Model using the renowned 'Alpaca: A Strong, Replicable Instruction-Following Model' dataset

- [GitHub](#) | [Model Weights](#)

Computer Vision

1. Parrot Classifier

Scraped parrot species images, fine-tuned a fast.ai classifier (93% accuracy on 60 species), deployed on Hugging Face Spaces, and integrated the API into another custom website.

- [GitHub](#) | [Dataset](#) | [Web App](#) | [Hugging Face Space](#)

2. Custom Training YOLOv8 to detect Vehicle, Pedestrians, and Signboards

Fine-tuned YOLOv8n on a custom dataset from video frames, auto-labeled with Roboflow, and deployed on Hugging Face Spaces, Streamlit, and locally without API support.

- [GitHub](#) | [Dataset](#) | [Web App](#) | [Hugging Face Space](#)

Federated Learning

A Horizontal Federated Random Forest for Heart Disease Detection from Decentralized Local Data

Developed a federated learning-based heart disease detection system using Python, Horizontal Federated Learning, and a Random Forest classifier, enabling hospitals to train a model without sharing patient data.

- [GitHub](#)

Web Scraping and Tableau Data Analysis

1. Last 100+ years of Earthquake Data Scraping Analysis and Visualization

Scraped earthquake data from a website covering Bangladesh and neighboring countries, cleaned, curated, and visualized insights using Tableau.

- [GitHub](#) | [Dataset](#) | [Tableau Dashboard](#)

2. Demographics of Best CS Scientists Worldwide

This project involved web scraping from a dynamic site and using Tableau to analyze top computer scientists, highlighting key research regions and institutions.

- [GitHub](#) | [Dataset](#) | [Tableau Dashboard](#)

SKILLS

Programming Language	Python, Dart
Frameworks and Libraries	Scikit-learn, TensorFlow, Fast.ai, Fastbook, HuggingFace, OpenAI, LangChain, Faiss, NumPy, Pandas, Matplotlib, Seaborn, Plotly, Librosa, ONNX, OpenCV, NLTK, SpaCy, LIME, Selenium, GeckoDriver, BeautifulSoup, request, JSON, Flutter
Development Tools	Google Colab, Kaggle, GitHub, SQL, VS Code, Netlify, Onrender, Streamlit
Other Tools	Overleaf, Tableau, Notion, RoboFlow, LabelBox
Soft	Time management, Leadership, Team Player, Problem-Solving, Proactive
Miscellaneous	Google Workspace, Adobe Illustrator-Photoshop-Premiere_Pro-XD, Figma
Others	Research, Automation pipelines, SFT, RAG, Model Deployment, Web Scraping, Dataset Curation, Basic front-end development, Illustration and design, Video Editing, Documentation and presentation

EDUCATION

Master of Science in Computer Science and Engineering	October, 2021 – 2024
Institution: BRAC University Major: Artificial Intelligence CGPA: 3.88/4.00	
Bachelor of Science in Electrical and Electronic Engineering	January, 2016 – April, 2020
Institution: BRAC University Major: Communication and Wireless Technologies CGPA: 3.45/4.00	

EXTRA CURRICULAR ACTIVITIES

1. **AI/ML Researcher | Assistant Co-ordinator** (Bengali.AI) December 2022 – Present
Founded in 2018, Bengali.AI develops open-source AI tools for the Bengali language, addressing the shortage of datasets and tools in AI. I focus on speech projects, including Bengali speech-to-text with regional dialects and indigenous transcriptions, and contribute to other projects with my skills.
2. **Project involvement:** Regional Speech-to-Text; Indigenous Speech-to-Text; Dialect to IPA Transcription; Regional Transliteration Project; Word Sense Disambiguation Dictionary; Text to IPA Conversion.

AWARDS AND HONORS

1. **Runner Up** (2025) | AI Hackathon - Bangladesh Innovation Conclave
Our team "AgriBRACUion" reached the finals at the National AI Hackathon. We built AgriBuddy, a smart farming assistant using RAG and vision models to support Bangladeshi farmers with personalized advice and rice disease detection.
2. **Merit Based Scholarship** (2022 – 2023) | BRAC University
Received a full tuition waiver for my master's based on academic performance in Fall21, Spring22, and Summer22.
 - [Overview Video](#) | [Details](#) | [Technical Report](#) | [Github Repo](#) | [Presentation Slides](#)
3. **VC's List** (2020) | BRAC University
Achieved a perfect 4.00 GPA with 18 credits in Spring20, earning a place on the Vice Chancellor's list.
4. **Contributed to a Google project (2023)** | Google
Successfully collaborated with Google and Bengali.AI on Bengali language research as part of a small team.
5. **Served as a judge at multiple national datathons**
Invited to serve as a judge at multiple national datathons hosted at different universities.
 - [BUET](#) | [DU](#) | [IUT](#) | [UIU](#)
6. **Workshop Host and Mentor**
Invited to serve as a trainer/instructor on multiple national datathons workshops.
 - [National AI Workshop on Speech Recognition](#)
 - [NLP Datathon Bootcamp](#)
 - [Where Bangla Stands in AI](#)
 - [Language, Academic Thinking](#) [Smarter Learning Tech](#).
7. **Participant** (2023) | Foreign Ministry of Bangladesh
Invited to discuss AI's potential for advancing various sectors in Bangladesh at the Foreign Ministry.

REFERENCES

Available upon request