Nazmun Nahar

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Research Interest

Health Informatics | Intelligent Systems | Multimodal Learning | Human-centered and Explainable AI

Preprints

2. **Nazmun Nahar**; Ritesh Harshad Ruparel; Shariar Kabir; Sumaiya tasnia khan; Shyamasree Saha; Mamunur Rashid. "AmarDoctor: An AI-Driven, Multilingual, Voice-Interactive Digital Health Application for Primary Care Triage and Patient Management to Bridge the Digital Health Divide for Bengali Speakers". **preprint arXiv:2510.2472** [pdf] **[2025]**
1. Shariar Kabir; **Nazmun Nahar**; Mamunur Rashid; Shyamasree Saha."Automatic Speech Recognition for Biomedical Data in Bengali Language" **preprint arXiv:2406.12931** [pdf] **[2024]**

Experience

Research and Development Engineer & Tech Lead - MedAi Limited [2021-Present]

- Designed and developed a multilingual, voice-interactive digital health platform for primary care triage and patient management. (**preprint 2**)
- Developed clinical decision support algorithm achieving overall **81.08%** diagnostic accuracy.
- Contributed to the research on Bengali ASR for biomedical applications. (**preprint 1**)
- Designed computer vision-powered dietary recommendation system, identifying food in images and providing personalized guidance based on patient chronic conditions.
- Created an LLM-based conversational assistant to enhance user interaction within app-based menu navigation.
- Working on the automated conversion of paper-based medical documents to **EHR** using **LLM and knowledge graphs**, focusing on prescriptions and diagnostic reports.

Selected Projects

1. Medical Report-to-EHR Conversion System [ongoing]

- LLM-powered OCR system for automated clinical data extraction from paper-based medical data.
- Addresses digitization bottlenecks in resource-limited healthcare settings.
- **Tech Stack**: Python, Gemini 2.5 Pro, REST API, Knowledge Graph.

2. AmarDoctor: Multilingual AI-driven Mobile Healthcare Platform [2021-24]

- Comprehensive telemedicine platform for Bengali speakers with **16K+** users and **4K+** consultations.
- Achieved **81.08%** diagnostic precision vs. **50.27%** physician baseline (**validated: 185 clinical cases**).
- Integrated adaptive symptom assessment, video consultations, voice AI for low-literacy populations.
- **Publications**: 2 arXiv papers | **Award**: MIT Solve Global Health Equity Challenge Award'24 (6/2200) [details]
- **Tech Stack**: Django, REST API, PostgreSQL, TypeDB, Data Analytics, Cloud Computing.

3. Medical History-Based Dietary Recommendation System [2024]

- Computer vision + medical knowledge integration for personalized dietary guidance.
- Automated nutrition guideline for chronic disease management (diabetes, hypertension, kidney disease).
- **Tech Stack**: Cloud Vision, Medical Knowledge Base.

4. **Symptom Assessment BOT Using RASA [2023]**
   - RASA-based conversational AI for preliminary health triage and condition classification.
   - Dynamic dialogue management for mental vs. physical health screening.
   - **Tech Stack**: RASA Framework, Python, NLU.

5. **Bengali OCR Using Deep Learning [2018-19] (Undergrad Thesis)** - **Prof. Md. Monirul Islam**
   - Deep learning OCR for Bengali text: **87.3%** word recognition accuracy.
   - Open-source dataset for low-resource language NLP research.
   - **Tech Stack**: Keras, TensorFlow, CNN-RNN, OpenCV. [**Dataset**]

Education

BSc. Computer Science & Engineering [2015-19]

Bangladesh University of Engineering and Technology (BUET)

Coursework: Artificial Intelligence, Structured Programming Language, OOP language, Data Structures, Algorithms, Database, Complex Variables and Statistics, Computer architecture, SE and information system design, Digital System Design, Computer Networks, Operating System, Computer Interfacing, Basic graph theory, VLSI Design, and others.

Teaching Experience

Taught undergraduate courses: (**CS520223**) Microprocessors and Assembly, (**CS540206**) Computer Graphics, and (**CS540219**) Network and Information Security at **Bangladesh Institute of Science and Technology** with the class sizes of 25 to 30 students. Responsibilities included designing lab exercises, grading assessments, and preparing exam questions.

Technical Skills

Programming Languages	Python, C/C++, Java, SQL, PostgreSQL, TypeQL, Assembly, Bash
AI/ML Frameworks&Libraries	Scikit-Learn, Tensorflow, Keras, OpenCV, Transformers, Diffusers
Research Tools	Data analysis (Pandas, NumPy), Visualization (Matplotlib, Seaborn)
AI Applications	Gen AI, LLM, RAG
Software Engineering	Django, REST API, Firebase & VOIP notification, Git, Locust, CI/CD
AWS	EC2, Route53, S3 bucket, API Gateway, SES, AMI, Load balancer, Auto Scaling Group, VPC, Launch Template, Lambda Function

References

1. Dr. Md. Monirul Islam

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2. Dr. Mamunur Rashid

Assistant Professor
Birmingham University, UK
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