Nazmun Nahar

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Research Interest

Healthcare AI | Multimodal Learning | Explainable AI | Intelligent Systems | Accessible HCI

Preprints

1. Nazmun Nahar, Generative AI for Trauma-Informed Therapeutic Visualization: A Conceptual Framework for Inner Child Therapy. [**pdf**] (2026). **Earlier 2-page version accepted at AIHealth 2026*.
2. Nahar, Nazmun, et al. 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)
3. 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 3)
- Designed computer vision-powered dietary recommendation system, providing personalized food guidance based on patient's chronic conditions.
- Created an LLM-based conversational assistant to enhance user interaction in app-based menu navigation.
- 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 Pipeline [2025]**
   - 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 12K+ 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.
   - 2 arXiv papers | 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] (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

B.Sc. 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 at Bangladesh Institute of Science and Technology to classes of 25-30 students. Other responsibilities included designing lab exercises, grading assessments, and preparing exam questions.

- **CS520223** Microprocessors and Assembly (theory and lab)
- **CS540206** Computer Graphics (lab)
- **CS540219** Network and Information Security (theory)

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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