Nazmun Nahar

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Research Interest

Digital Health, HCI, Social Computing, Mental Health, Human-centered NLP, Data Science

Work Experience

R & D Software Engineer, Tech Team Lead 2021 - Present
MedAi Pvt. Limited
Assistant Programmer 2021 - 2022
Janata Bank PLC
Lecturer 2019 - 2020
Bangladesh Institute of Science and Technology

Publications

1. Shariar Kabir; **Nazmun Nahar**; Mamunur Rashid; Shyamasree Saha."Automatic Speech Recognition for Biomedical Data in Bengali Language" **arXiv preprint arXiv:2406.12931 (2024).**[pdf]
2. **Nazmun Nahar**; Shariar Kabir; Sumaiya tasnia khan; Suparna Das; Shyamasree Saha; Mamunur Rashid. "AmarDoctor: First Multilingual Digital Platform For AI-Driven Primary Care Triage And Patient Management System For Bengali Speakers". (Working on).[pdf][suppl. data]

Awards & Achievements

1. Our project **AmarDoctor** by MedAi Limited has been selected as one of the six solvers out of 2200+ participants worldwide for the **MIT Solve 2024 Global Health Equity Challenge Award** for its innovative approach to accessible healthcare. Source
2. University Merit Scholarship from BUET (2015-2019)
3. Primary Government Scholarship, Dhaka Education Board, Bangladesh (2006)

Education

BSc. Computer Science & Engineering 2015 - 2019
Bangladesh University of Engineering and Technology

- **Project & thesis**: Bengali Text Recognition Using Deep Learning, under the supervision of Professor Dr. Md. Monirul Islam. For this project, I created a word image dataset from printed documents, annotated it and trained a deep neural network model. [pdf]
- **Coursework**: Artificial intelligence, Structured programming language, Object oriented programming language, Data Structures, Algorithms, Database, Computer architecture, Software engineering and information system design, Software development, Basic graph theory and others.

Skills

Programming Languages	Python, C/C++, Java, SQL, PostgreSQL, TypeQL, Assembly, Bash
Natural Language Processing	NER, NLU, LLM, Rasa, NLTK
Machine Learning	Scikit-Learn, Tensorflow, Keras, Huggingface Trnasformers, Diffusers
Data Science	Pandas, Matplotlib, NumPy
Software Development	DRF, Firebase, VOIP notification, Git, Locust, API testing
Amazon Web Services	EC2, Route53, S3 bucket, API Gateway, SES, AMI, Load balancer, Auto Scaling Group, VPC, Launch Template
Others	Web Scraping, Sphinx, Jira, Confluence

Projects

AmarDoctor : Ai-powered digital health platform [2021 - 2023] [Demo]

Working with **Dr. Mamunur Rashid** and **Dr. Shyamasree Saha** I desigend and developed Bangladesh's first digital health platform with AI powered technology. This platform, named "**AmarDoctor**" (My Doctor) [**pub.2**], provides symptom checking and provisional diagnosis support in the local language. To build this system, we created a medical knowledge graph comprising symptoms, diseases, and their weighted relationships, which were meticulously translated into colloquial Bengali variations and two widely used dialects. The symptom data also contributed to the collection of audio samples to train our Bengali ASR module [**pub.1**].

Leveraging AWS and Django for Scalable Healthcare Solution [2022 - 2024]

My experience in cloud engineering and back-end development has enabled me to build robust and scalable healthcare solutions. For **AmarDoctor**, I developed a comprehensive Django back-end utilizing TypeDB, PostgreSQL, and SQLite, adhering to REST architecture principles. My responsibilities extended beyond API creation and management to encompass database design, system architecture, and infrastructure setup. I have effectively utilized AWS services such as EC2, API Gateway, S3, Route 53, AMI, AWS NLB, VPC, and SES to deploy and manage our back-end architecture.

Medical Assistant Bot [2023] [GitHub]

To assist individuals with low health literacy in finding appropriate specialists, I developed an **NLU**-based medical assistant bot using the **RASA** framework for AmarDoctor. This bot interactively queries users to identify the intent of their responses and directs them to either a general physician or a mental healthcare provider.

API as Service - Client Management System [2023]

Design and developed an API-based SaaS client management system that authorizes client access to our APIs. The system uses JWT authentication and allows clients to purchase services for flexible durations based on pre-defined packages.

References

1. Dr. Mamunur Rashid

Assistant Professor
Birmingham University, UK
Email: m.rashid.1@bham.ac.uk

2. Dr. Shyamasree Saha

Founder, CTO
MedAi Pvt. Limited
Email: shyama.saha@medaihealth.com

3. Dr. Md. Monirul Islam

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Bangladesh University of Engineering & Technology
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