Nazmun Nahar

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Research Interest

NLP, Health Informatics, AI driven Software Systems, Coversational AI, Data Science,

Work Experience

Research Software Engineer 2022 - Present

MedAi Health Limited

- AI-powered solutions for healthcare sector.
- Developing full backend service with knowledge graph.
- Deployment of services to aws server.

Assistant Programmer 2021 - 2022

Janata Bank PLC

Lecturer 2019 - 2020

Bangladesh Institute of Science and Technology

Publications (published/working on)

- Shariar Kabir; **Nazmun Nahar**; Mamunur Rashid; Shayamasree Saha."Automatic Speech Recognition for Biomedical Data in Bengali Language" **arXiv preprint arXiv:2406.12931 (2024).**[paper]
- **Nazmun Nahar**; Sumaiya tasnia khan; Shariar Kabir; Suparna Das; Shyamasree Saha; Mamunur Rashid. "MedAi: A Multilingual Digital Platform for AI-Driven Inclusive Primary Care Triage and Health Management". (Working on).

Education

Bachelor of Science 2015 - 2019

Computer Science and Engineering
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, then trained deep neural networks on it using a variety of methods, including CNN, RNN, LRU, and others. .
- **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

Projects

Symptom Checker & Clinical Decision Support System Link to app

This is an intelligent module that, in both Bengali and English, refers patients to the appropriate specialist physicians based on their identified signs, symptoms and concerns. Additionally, it prepares a preliminary diagnosis for physicians as part of ongoing research on the accuracy of our system's disease identification

Medical Assistant Chatbot

People can discover doctors who can aid them with their concerns by using this conversational chatbot. Patients may find it challenging to decide which expert to see, but this medical assistant AI BOT makes the process easier by suggesting physicians who focus on mental or physical health. This was created using the **RASA** framework, which is based on **NLU**.

NER pipeline & Symptom Normalization

We are currently working on this project. Our application takes in audio input, converts it to text, and then uses a NER Pipeline to extract text containing information about diseases, symptoms, drugs, and other topics. We used a **Clinical-NER** Bert model for this objective. We are now employing the English NER methodology to construct a Bengali NER. This endeavor is difficult because there aren't many dataset resources available in Bengali for NER. Gathering and annotating this dataset is our goal for future usage. Since the system is not perfect when it comes to speech to text conversion, we utilize output text normalization to obtain an appropriate mapping of that symptom. To do this, we used a range of techniques. One illustration is symptom mapping based on **LLM BERT**.

Amazon Web Services

I have significant experience in cloud engineering. I deployed our backend servers on **EC2 instances** and configured **API Gateway** to enable API access. Additionally, I have experience with various AWS services including **S3 buckets, Route 53, AMI, and SES**.

Django Backend

Created a complete Django back-end using **TypeDB**, **PostgreSQL**, **SQLite** and a **REST architecture** for our healthcare platform, **amardoctor**. A significant portion of my work was designing databases, systems and other infrastructure in addition to creating and managing APIs.

Skills

Programming Languages	Python, C, C++, Java, SQL, PostgreSQL, TypeQL
Natural Language Processing	NER, NLU, LLM, RASA, NLTK
Machine Learning	Tensorflow, Keras, PyTorch
Data Science	Pandas, Matplotlib, NumPy
Software Development	DRF, Firebase, VOIP notification, Swarm Locust, API testing
Amazon Web Services	EC2, Route53, S3 bucket, API Gateway, AMI, SES, Elastic IPs
Others	Git, Bash script, Web Scraping, Sphinx, Jira, Confluence

References

1. Dr. Mamunur Rashid

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

2. Dr. Shayamasree Saha

Medai Health Limited
Chief Technical Officer
Email: shyama.saha@medaihealth.com