SYED MOSTOFA MONSUR

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Research Interests

NLP, Multimodal Deep Learning, Conversational AI, ML, Human-Centered Design.

Professional Employments

- **Celloscope** — Dhaka, Bangladesh
  Research Engineer, NLP and Speech (R&D) — *Sept. 2020 – Current*
  - ◇ **Document AI.** Finetuned large multimodal document question answering model with Bengali synthetic data. The model can perform question answering on various types of scanned/unstructured documents beating several benchmarks including commercially available OCR products.
  - ◇ **License Plate Extraction.** Training sequence transduction models for extracting license plate contents in very noisy settings.
  - ◇ **NLU ChatBot for Fintechs.** Developed task-oriented bots for businesses; intent detection, slot-filling using Dual Intent and Entity Transformer; training data augmentation using unsupervised paraphrasing model (*t5*-based, fine-tuned on *TaPaCo*).
  - ◇ **Speaker Verification.** Developed production-level speaker verification system using ensemble of pre-trained *unispeech-sat*, *wavlm* and *ecapa-tdnn*.
  - ◇ **Bengali Text-to-Speech.** Trained a production-grade Text-to-Speech system for Bengali language with 40+ hours curated data. Improved generated audio quality with Vocoders (naturalizing audio)
  - ◇ **Bengali ASR.** Collected and pre-processed 400+ hrs of Bengali audio and text transcription data. Developed Hybrid CTC-Attention based end-to-end speech recognition system for Bengali. Integrated LM to improve accuracy.

- **GRP, ICTD** — Dhaka, Bangladesh
  Software Engineer, Backend — *Jul. 2019 – Sept. 2020*
  - ◇ Implemented automatic deployment of dockerized microservices in cloud; distributed service registry, load balancing, queueing, logging-tracing; API for scalable ERP softwares for public offices.

Education

- **Bangladesh University of Engineering and Technology** — Dhaka, Bangladesh
  Bachelor of Science in Computer Science and Engineering, Major AI, CGPA 3.54 (out of 4) — *Feb. 2015 – Apr. 2019*

Publications

- Md Ehtesham-Ul-Haque, **Syed Mostofa Monsur** and Syed Masum Billah. *Grid-Coding: An Accessible, Efficient, and Structured Coding Paradigm for Blind and Low-Vision Programmers*. **UIST'22**: *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology*. [**Best Paper Award, Core Ranking A***]

- **Syed Mostofa Monsur**, Sakib Chowdhury, Md Shahrar Fatemi and Shafayat Ahmed. *SHONGLAP: A Large Bengali Open-Domain Dialogue Corpus*. *Proceedings of the 13th Conference on Language Resources and Evaluation (**LREC 2022**)*

- **Syed Mostofa Monsur** and Muhammad Abdullah Adnan. *Distributing Active Learning Algorithms*. In Proceeding of the *7th International Conference on Networking, Systems and Security (NSysS), December 22–24, 2020, Dhaka*

Research Projects

- **Bengali Open-Domain Dialogue Data Collection and Speaker Bias Detection.**
  at Celloscope
  - ◇ Collected raw dialogue audio from political talk-shows, debates. Performed speech-to-text, diarization, speaker-role labeling. Fine-tuned *BanglaBERT* with our dataset for speaker bias detection task. Accepted in LREC'22 [draft]

- **Analysis of Active Learning Algorithms for Distributed Systems**
  Undergraduate Thesis under the supervision of Dr. Muhammad Abdullah Adnan
  - ◇ Research works on distributing SOTA Active Learning algorithms and perform various analyses on them. [thesis]

- **Generating Phylogenetic Hierarchies for Dog Species leveraging DL methods**
  ML course project under the supervision of Dr. Atif Hasan Rahman
  - ◇ Collected images of local and exotic dog species (Stanford Dogs Dataset) and constructed Phylogenetic Tree Hierarchies from the similarity information acquired from *InceptionV3*.

Relevant Coursework

ML, Pattern Recognition, AI, Simulation and Modeling, OS, Databases, Compilers, Algorithms, Data Structures etc.

Skills

- **Research**: NLP, ML, Technical Writing, System Analysis and Design, Quick-Prototyping
- **Tools**: Huggingface, PyTorch, Spacy, Docker, AWS, Google Cloud Platform
- **OS**: Linux, Windows
- **Languages & Frameworks**: Python, Java, C++, SQL, Bash-Script, LaTeX, Spring, Flask, React
- **Databases**: PostgreSQL, SQLite, BerkeleyDB

Reference

- Dr. Mamunur Rashid, Assistant Professor in Bioinformatics, University of Birmingham
- Dr. Muhammad Abdullah Adnan, Professor, Department of CSE, BUET
- Dr. Faizul Bari, University of Waterloo, CTO at Spectrum Software & Consulting Ltd.