Mohammad Sabik Irbaz

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Last updated December 7, 2021

I am a Data Scientist at Leadbook Pte. Ltd. I am currently working with Dr. Md. Ruhul Amin from Fordham University on data-driven Social NLP problems. I used to work as a Lead ML Engineer at Omdena Inc. and Pioneer Alpha Ltd. where I have led several ML projects from research, development to production. During my four years of undergraduate studies, I was immensely fortunate to be advised by Dr. Md. Kamrul Hasan and Dr. Hasan Mahmud where I have mostly worked on Text Style Transfer (TST), Clinical ML, and Data-centric AI.

Research Interests

I am primarily excited in Natural Language Processing (NLP), Artifical Intelligence (AI) and Data Science research. My research interests include:
- Efficient modeling, benchmarking, evaluation and robustness in NLP **[P5, P6]**
- Annotating and cleaning datasets with minimal cost **[P5, P8]**
- Fact verification using historical data **[P7]**
- Explainable, Interpretable, and Reproducible AI
- Low-resource and Multilingual NLP **[P3, P4]**
- AI for Good (Social, Clinical & Other Disciplines) **[P1, P2, P5, P6, P7]**

Education

Islamic University of Technology(IUT)	Dhaka, Bangladesh
B.Sc. in Computer Science and Engineering (CSE)	Jan, 2017 - Mar, 2021

CGPA: 3.44/4.00

Dissertation: "Medical Expertise Style Transfer using Denoising Autoencoders" [Thesis Book] [Presentation]
Supervisor: Dr. Md. Kamrul Hasan, Professor, Department of CSE, IUT

Notre Dame College(NDC)		Dhaka, Bangladesh
Higher Secondary Certificate (HSC), 2016	GPA: **5.00**/5.00	Jul, 2014 - Dec, 2016
Cox's Bazar Government High School		Cox's Bazar, Bangladesh
Secondary Secondary Certificate (SSC), 2014	GPA: **5.00**/5.00	Jan, 2009 - Dec, 2013

Research Experience

{$^\alpha$primary contributor; $^\beta$secondary contributor; $^\gamma$supervisor}

Fordham Human Centered AI Research Lab	Mar, 2021 - Present

Department of CIS, Fordham University, New York, USA
Advisor(s): Dr. Md. Ruhul Amin
(1) $^\alpha$COVID-19 Public Policy Conformity Analysis — *NLP, Data Extraction, Topic Modeling, NLI, EDA* **[P7]**
(2) $^\alpha$Mitigating Social Bias in NLP — *NLP, Explainability, Text Style Transfer*

Computer Vision Lab (CVLab)	Nov, 2020 - Present

Department of CSE, IUT, Dhaka, Bangladesh
Advisor(s): Sabbir Ahmed
(1) $^\alpha$Automatic Radiology Report Generation — *NLP, Image Captioning, Image Segmentation* [Report]
(2) $^\gamma$Data-centric Approach for Explainabile Text Classification — *NLP, Active Learning, Explainability*
(3) $^\gamma$Logical Reasoning QA using Standardized Test Questions — *NLP, QA, CSR, Data Collection, NLI*

Systems and Software Lab (SSL)	Jul, 2019 - Present

Department of CSE, IUT, Dhaka, Bangladesh
Advisor(s): Dr. Md. Kamrul Hasan, Dr. Hasan Mahmud
(1) $^\beta$Automated wheelchairs for semi-paralyzed patients. — *Signal Processing, ML, Adruino*
(2) $^\alpha$Medical Expertise Text Style Transfer — *NLP, Active Learning, Text Style Transfer* **[P5, P6]**
(3) $^\alpha$Efficient Active Learning Approach for Data Annotation — *ML, Active Learning, Data Annotation* **[P8]**

(4) $^\gamma$Query-focused Multi-Document Text Summarization for Bangla — *NLP, Low-resource QA, Summarization*
(5) $^\alpha$Trustworthy NLP — *NLP, Out-of-domain Data Filtering*

Publications

More updated list here or Google Scholar
{*equal contribution, ^{c}corresponding author}

[P8] **Mohammad Sabik Irbaz**, Raian Rahman, Hasan Mahmud, and Md. Kamrul Hasan^c. **"Efficient Active Learning Approach for Data Annotation"**. *Manuscript in Preparation.*

[P7] **Mohammad Sabik Irbaz**, Md. Ruhul Amin^c, Rupak Sarkar, and Ashiqur R. KhudaBukhsh. **"COVID-19 Public Policy Conformity Analysis"**. *Manuscript in Preparation.* [Presentation]

[P6] **Mohammad Sabik Irbaz**, Abir Azad, Raian Rahman, Hasan Mahmud, and Md. Kamrul Hasan^c. **"Medical Expertise Style Transfer using Denoising Autoencoders"**. *Manuscript in Preparation.* [Book]

[P5] **Mohammad Sabik Irbaz**, Abir Azad, Zarif Ahmed, Md. Ashfaq Raiyan, Raian Rahman, Hasan Mahmud, and Md. Kamrul Hasan^c. **"c-MSD: A Curated Dataset for Medical Expertise Style Transfer using Active Learning Approach"**. *Under Review.*

[P4] Alif Ashrafee*, Akib Mohammed Khan*, **Mohammad Sabik Irbaz**^{c}, and MD Abdullah Al Nasim. **"Real-time Bangla License Plate Recognition Pipeline for Low Resource Video-based Applications"**. *Real-World Surveillance: Applications and Challenges Workshop, collocated with IEEE/CVF WACV 2022* [Presentation] [Poster]

[P3] Fahim Shahriar Khan, Mueeze Al Mushabbir, **Mohammad Sabik Irbaz**^{c}, and MD Abdullah Al Nasim. **"End-to-End Natural Language Understanding Pipeline for Bangla Conversational Agents"**. *Proceedings of the 20th IEEE International Conference on Machine Learning and Applications, 2022* [Presentation]

[P2] **Mohammad Sabik Irbaz**^{c}, MD Abdullah Al Nasim, and Refat E Ferdous. **"Real-Time Face Recognition System for Remote Employee Tracking"**. *Proceedings of the International Conference on Big Data, IoT, and Machine Learning, 2022. Springer, Singapore.*

[P1] **Mohammad Sabik Irbaz***, Abir Azad*, Tanjila Alam Sathi, and Lutfun Nahar Lota^c. **"Nurse Care Activity Recognition Based on Machine Learning Techniques Using Accelerometer Data"**. *Proceedings of the 8th International Workshop on Human Activity Sensing Corpus and Applications, collocated with ACM UbiComp/ISWC 2020* [DOI] [Presentation]

Industrial Experience

Leadbook Pte. Ltd.   Singapore
Data Scientist   Dec, 2021 - Present
We have millions of contacts in our database. An important problem is to cluster contact job titles into categories in an unsupervised or semi-supervised manner. Most of my works involve improving and maintaining this pipeline. The project involves — NLP, Data Cleaning, Clustering, Phrase Similarity [Code]

Omdena Inc.   New York, USA
Lead Machine Learning Engineer   Apr, 2021 - Jun, 2021
Collaborated with 50 ML and data engineers from 20 countries on **Equilo Project** - Building Gender Equality Assessment Functionality using NLP. This large scale work was divided into 7 major tasks. I was the **task leader** of the team building the **recommender system** for the organizations with low gender equality scores. I also lead the team building the web app and deploying the whole data and ML pipeline to **GCP**.
This project involved — *Scraping, NLP, GCP, Firestore, Django, ReactJS, StreamLit, Cloud SQL* [Article]

Pioneer Alpha Ltd.   Dhaka, Bangladesh
Lead Machine Learning Engineer   Jan, 2021 - Oct, 2021
Supervised and delivered the following core projects successfully to the corresponding clients:
(1) Multilingual Chatbot as Business Assistant — *NLP, NLU, Low-resource, Tensorflow, Rasa, Flask* **[P3]**
(2) Low-resource Bangla License Plate Detection and Recognition — *OCR, Tensorflow, OCR, Flask* **[P4]**

(3) Face Detection and Recognition for Remote Office — *Vision, OpenCV, dlib, Flask* **[P2]**
(4) Trello Automation for Directed Premiere Video Editing — *Vision, OpenCV, dlib, Adobe Premiere, Trello* [Code]

Nascenia Ltd.   Dhaka, Bangladesh
Software Engineer, Intern   Nov, 2019 - Jan, 2020
Worked on a large-scale government project on VAT automation, **Project Uddogi**
This project involved — *Ruby on Rails, HTML, CSS, Heroku* [Article]

Teaching Experience

Amar iSchool   Dhaka, Bangladesh
Head Course Instructor   Mar, 2021 - Dec, 2021
Applied Data Science and Machine Learning — [Course Repository]
Our prime goal is to empower the local ML enthusiasts with a limited background CS and Mathematics.
- Taught data science and machine learning for production
- Gave 15 lectures, all self-developed
- Developed course assignments and projects

Selected Projects

An exhaustive list can be found here
(1) **Medical Expertise Style Transfer System for Layman Patients** — *PyTorch, Fastai, Flask* [Code]
(2) **Multimodal Multi-label Genre Classifier** — *PyTorch, Fastai, Numpy, Pandas* [Code]
(3) **Anime vs Animation vs CGI** — *PyTorch, Fastai, Flask* [Code]
(4) **Original Transformer for Bengali Translation** — *PyTorch* [Code]

Skills

Programming Language: Python, C, C++, Ruby, Octave
Framework: Pytorch, fastai, Flask, Tensorflow, Keras, Ruby on Rails
Tools and Libraries: Git, LaTeX, Google Colab, HuggingFace, Google Cloud Platform
Languages: English, Bangla, Hindi, Arabic

Selected Awards & Achievements

An exhaustive list can be found here
− Won the OIC Scholarship that waived 75% of my undergraduate education costs (2% acceptance rate)
− **Champion**, 2nd Nurse Care Activity Recognition Challenge 2020. Won a trip to Japan. **[P1]**
− **Finalist**, AI For Bangla Challenge 2021 (*among 147 teams*) **[P3]**
− **Runners Up**, IUT Computer Programming Contest 2019 (*among 77 teams*)
− **2nd Runners Up**, EDU Inter University Programming Contest 2020 (*among 50 teams*)

Extra-curricular Activities

− Travelled across major locations in Bangladesh.
− Part of ML Discussion Groups: Fordham DS Research Group, Turing NLP Group
− **Associate Member**, Omdena AI Global Community
− **Contest Judge**, 16th December Programming Contest 2019
− **Former Programming Instructor**, IUT Programming Community
− **Former Vice President**, IUT Computer Society
− **Assistant General Secretary**, IUT 10th ICT Fest
− **Volunteer Coordinator**, IUT 9th ICT Fest
− **Class and Batch Representative**, IUT CSE Batch'16

References

Available upon request