Mohammad Sabik Irbaz

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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 [**3.90** in the final semester]
   Dissertation: "Medical Expertise Style Transfer using Denoising Autoencoders" [Report] [Presentation]
   Supervisor: Dr. Md. Kamrul Hasan, Professor, Department of CSE, IUT

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) $^{\alpha}$Public Policy Conformity Analysis — *NLP, Data Extraction, Topic Modeling, NLI, EDA* **[P6]**
   (2) $^{\beta}$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, P7]**
   (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*

Industrial Experience

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) Adobe Premiere Plugin for Automated Video Editing — *Vision, OpenCV, dlib, Adobe Premiere* [Code]
(5) Trello Automation for Directed Video Editing — *Vision, OpenCV, dlib, Adobe Premiere, Trello*

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 - Present
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

Publications

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

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

[P7] **Mohammad Sabik Irbaz**, Abir Azad, Raian Rahman, Dr. Hasan Mahmud and Dr. Md. Kamrul Hasan^c. **"Expertise Text Style Transfer using Denoising Autoencoders"**. *Manuscript in Preparation.*

[P6] **Mohammad Sabik Irbaz**, Dr. Md. Ruhul Amin^c, Rupak Sarkar and Dr. Ashique KhudaBukhsh. **"COVID-19 Public Policy Conformity Analysis"**. *Manuscript in Preparation.*

[P5] **Mohammad Sabik Irbaz**, Abir Azad, Zarif Ahmed, Md. Ashfaq Raiyan, Raian Rahman, Dr. Hasan Mahmud and Dr. 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, 2021*

[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, 2021*

[P1] **Mohammad Sabik Irbaz***, Abir Azad*, Tanjila Alam Sathi, 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]

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
— **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*)
— **Runners Up**, INWED Tech Fest IUPC 2019 (*among 30 teams*)
— **2nd Runners Up**, EDU Inter University Programming Contest 2020 (*among 50 teams*)
— **2nd Runners Up**, Britannia University Inter University Programming Contest 2020 (*among 25 teams*)
— **OIC Scholarship**, 75% expense coverage for undergraduate studies at IUT. [**2%** acceptance rate]

Competitive Programming Experience

— Solved **2000+** programming problems in different online judges using C++, Python.
— Participated in **20+** onsite Inter University Programming Contests and **200+** online contests.
— Participated in **ACM ICPC Dhaka Regionals** 3 times.
— Attended BACS - BUBT **National Programming Camp** 2017.
— Achieved 1632 max rating **(Expert)** in **Codeforces** and 1844 max rating **(Violet)** in **Codechef**.
— **Contest Judge**, 16th December Programming Contest 2019
— **Former Programming Instructor**, IUT Programming Community

Extra-curricular Activities

— **Associate Member**, Omdena Global 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'16
— Travelled across major locations in Bangladesh to understand the variance in demographics.

References

Available upon request