# Mohammad Sabik Irbaz

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## Education

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| **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

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| **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

**Fordham Human Centered AI Research Lab** — Mar, 2021 - Present
*Department of CIS, Fordham University, New York, USA*
**Advisor(s):** Dr. Md. Ruhul Amin
(1) Public Policy Conformity Analysis — *NLP, Data Extraction, Topic Modeling, NLI, EDA* **[P6]**
(2) 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) Automatic Radiology Report Generation — *NLP, Image Captioning, Image Segmentation* [Report]
(2) Data-centric Approach for Explainabile Text Classification — *NLP, Active Learning, Explainability*
(3) Logical Reasoning QA using Standardized Test Questions — *NLP, QA, CSR, Data Collection, NLI*
(4) Intended Sarcasm Detection in Arabic and English — *Multilingual NLP, NLU*

**Systems and Software Lab (SSL)** — Jul, 2019 - Present
*Department of CSE, IUT, Dhaka, Bangladesh*
**Advisor(s):** Dr. Md. Kamrul Hasan, Dr. Hasan Mahmud
(1) Automated wheelchairs for semi-paralyzed patients. — *Signal Processing, ML, Adruino*
(2) Medical Expertise Text Style Transfer — *NLP, Active Learning, Data Cleaning, Text Style Transfer* **[P5, P7]**
(3) Efficient Active Learning Approach for Data Annotation — *ML, Active Learning, Data Annotation* **[P8]**
(4) Query-focused Multi-Document Text Summarization for Bangla — *NLP, Low-resource, QA, Summarization*
(5) 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.
**Software Engineer, Intern**

Dhaka, Bangladesh
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
**Head Course Instructor**

Dhaka, Bangladesh
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.

## Publications

More updated list here or Google Scholar
[P8] **"Efficient Active Learning Approach for Data Annotation"**
    *Co-authors:* Raian Rahman, Dr. Hasan Mahmud, Dr. Md. Kamrul Hasan
    *Manuscript in preparation*
[P7] **"Text Style Transfer using Denoising Autoencoders"**
    *Co-authors:* Abir Azad, Raian Rahman, Dr. Hasan Mahmud, Dr. Md. Kamrul Hasan
    *Manuscript in preparation*
[P6] **"COVID-19 Public Policy Conformity Analysis"**
    *Co-authors:* Dr. Md. Ruhul Amin, Rupak Sarkar, Dr. Ashique KhudaBukhsh
    *Manuscript in preparation*
[P5] **"c-MSD: A Curated Dataset for Medical Expertise Style Transfer using Active Learning Approach"**
    **Mohammad Sabik Irbaz**, Abir Azad, Zarif Ahmed, Md. Ashfaq Raiyan, Raian Rahman,
    Dr. Hasan Mahmud, Dr. Md. Kamrul Hasan
    *Under Review* [PDF]
[P4] **"Real-time Bangla License Plate Recognition Pipeline for Low Resource Video-based Applications"**
    Alif Ashrafee*, Akib Mohammed Khan*, **Mohammad Sabik Irbaz**, MD Abdullah Al Nasim
    *Accepted for oral presentation in IEEE / CVF WACV - RWS 2022* [PDF] [Presentation] [Poster]
[P3] **"End-to-End Natural Language Understanding Pipeline for Bangla Conversational Agents"**
    Fahim Shahriar Khan, Mueeze Al Mushabbir, **Mohammad Sabik Irbaz**, MD Abdullah Al Nasim
    *Accepted for oral presentation in IEEE ICMLA 2021* [PDF]
[P2] **"Real-Time Face Recognition System for Remote Employee Tracking"**
    **Mohammad Sabik Irbaz**, MD Abdullah Al Nasim, and Refat E Ferdous
    *Presented in BIM 2021* [PDF]
[P1] **"Nurse Care Activity Recognition Based on Machine Learning Techniques Using Accelerometer Data"**
    **Mohammad Sabik Irbaz***, Abir Azad*, Tanjila Alam Sathi, Lutfun Nahar Lota
    *Presented in ACM UbiComp / ISWC - HASCA 2020* [DOI] [PDF] [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, 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*