Mustahid Ahmed

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 Online Version

Residence
Tokyo, Japan

Nationality
Bangladesh

Git Profile
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Python	++++	C++20	++++	C	++++	Dart/Flutter	++++	Swift	+++	Javscript	+++
AWS	++++	Statistics	++++	Image Processing	++++	NLP	++++	Algorithms	++++	Data Structure	++++

Professional Experiece

Pioneer Electronics

Machine Learning Engineer

July 2023 - Present

Sensyn Robotics

Machine Learning Engineer

May 2022 - June 2023

HyperCube Ltd.

Machine Learning Engineer

April 2020 - April 2022

Batton Ltd.

Machine Learning Engineer (Freelance)

Aug 2023 - Dec 2023

AI Idea Lab Ltd.

Machine Learning Engineer (Freelance)

April 2023 - Dec 2023

Self employed

Software Engineer

April 2020 - Present

Projects

Implemented RAG pipeline with LLM for Qualcomm SoC, Pioneer Electronics

April 2024 - August 2024

```
Designed and implemented end to end RAG pipeline from scratch using faiss and llama.cpp.
Created separate library for RAG after deriving llama and embeddings from llama.cpp.
Implemented build system using Conan. CI CD using github action.
```

`C++` `Conan` `git` `faiss` `llama.cpp`

Designed end to end middleware system for automotive radar, Pioneer Electronics

August 2023 - March 2024

```
  Implemented API to that obtains sensor data streams and transfers them to machine learning
module to deliver inference results back into an alarm sytem.
  Implemented lock free ring buffer system that stopped data loss and enabled extremely fast
inference. Employed unit tests and CI CD.
```

`C++` `CMake` `git` `CI/CD`

Crack segmentation from tiles, Sensyn Robotics

Feb 2023 - April 2023

```
  Implementing model for crack segmentation using novel transformer based segmentation
architecture inspired from retinal vessel segmentation in medicine literature.  Implemented
continual learning system based on labelling->training cycle. Obtained high precision of 0.9 and
recall of 0.8.
```

`Python` `Pytorch` `OpenCV` `mmcv`

Analog gauge reading by computer vision, Sensyn Robotics

November 2022 - April 2023

```
  Constructed model for accurately reading the analog gauge by determining the position of the
dial, minimum and maximum values from the face of the scale after applying
  perspective transformation. Minimized expected error rate to 0.15%.
  Squeezed the model into smaller size by quantization in C++ using TVM. Deployed it into edge
device (NVIDIA jetson nano).
```

`Python` `Pytorch` `OpenCV` `onnx` `mmcv` `Apache TVM` `ncnn`

People detection from fish eye images, Sensyn Robotics

May 2022 - July 2022

```
  Because commonly used algorithms are not suitable for fish eye images, implemented new
algorithm that can detect people in such images by including information of angular values of
slanted bounding boxes. Implemented labelling to storage in cloud pipeline by connecting CoCo
Annotator to AWS S3. Obtained a high mAP score, on par with state of the art YOLO algorithms.
```

`Python` `Pytorch` `OpenCV` `AWS`

NLP based Chatbot, HyperCube Ltd.

June 2021 - October 2021

```
  Model deployment, system design and maintenance using AWS Amplify, AWS Api Gateway, AWS
Lambda, AWS Sagemaker.
  Front and backend development using Flutter/Dart/Swift programming languages.
```

`AWS` `Dart/flutter` `Swift` `Docker` `Git`

Database design and deployment, HyperCube Ltd.

March 2021 – May 2021

```
  Designed MySQL database schema and deployed it in Azure.
  Using web application API to connect web app with the database.
```

`MySQL` `Azure` `Python` `Git`

Designed novel algorithm for OCR of Japanese fax documents, Batton Ltd.

Aug 2023 - Dec 2023

```
  Collected and labelled dataset of fax documents containing tables. Implemented novel algorithm
to extract its data and obtained 97% accuracy.
  Dockerized the model and created http endpoint using torchserve. Deployed the docker container
into GCP Artifact registry and created
  inference endpoint through Vertex AI endpoint.
```

`Python` `Pytorch` `torchserve` `OCR` `Docker` `GCP`

Japanese kanji generation from a specific font, AI Idea Lab Ltd.

April 2023 - Sep 2023

```
  Used controlnet and prompt engineering to create Kanjis from novel fonts.
  Creating frontend using Gradio.
  Creating fastapi endpoint.
  Connecting gradio frontend with fast api
```

`Python` `Image Generation` `FastApi` `Gradio`

GPT based AI Callerbot, AI Idea Lab Ltd.

Oct 2023 - Dec 2023

```
  Converting caller's speech into text and using prompt engineering to obtain the best output
from Open AI api.
  Converting the api response into voice. Create WebRTC bridge between python and node js.
  This system is currently being deployed into the company app.
```

`Python` `Node.js` `WebRTC`

Memorize: A game for training memory,Self Employed

June 2021 - Sep 2021

```
Designing front end and game logic in Swift programming language.
```

`Swift` `Git` `CI/CD`

amusta-chain: A distributed peer to peer blockchain,Self Employed

June 2021 - Sep 2021

```
Emplyed end to end TDD.
p2p mining; Implementing transfer of currencies to user wallets;
Validation of transactions by miners.
```

`javascript` `Express` `Node.js` `Git` `CI/CD`

Education

Tohoku University
MSc, Particle Physics [2018 - 2020]

Tohoku University
BSc, Physics [2014 - 2018]

Tokyo University of Foreign Studies
Associate Degree, Japanese [2013 - 2014]

Research

Masters Thesis：Machine Learning, Deep Learning, Data Analysis

```
Simulation of particle collisions and their reaction in particle detectors using C++.
Desiging particle detectors using C++ framework.
Analyzing data read by particle detectors using machine learning and deep learning algorithms.
```

`Python` `OpenCV` `PyTorch` `C++` `Git` `CMake`

Conference Presentation: Japan Physical Society Annual Meeting

```
Full Detector Simulation of Pair Monitor and Application of Machine Learning to Determine
Determine Beam Size
Nagoya University, Nagoya, Japan [March '20]
```

Conference Presentation：International Workshop on Future Linear Colliders

```
Search for weakly interacting dark matter in the International Linear Collider
University of Texas, Arlington, Texas, USA. [Oct '18]
```

Languages

```
English, Business Level, TOEFL iBT 110
Japanese: Business Level
Bengali: Native Level
```

MOOCs

- [Deep Learning Specialization](): Coursera, Stanford Online
- [Algorithm Specialization](): Coursera, Stanford Online
- [GAN Specialization](): Coursera, Stanford Online
- [NLP Specialization](): Coursera, Stanford Online

Categories: `Python` `C++` `Algorithms` `Deep Learning`