Utshab Kumar Ghosh

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BIOGRAPHY

Utshab Kumar Ghosh is a Machine Learning Engineer and Researcher with a strong foundation in computer science and a keen interest in artificial intelligence applications for healthcare and natural language processing. He holds a B.Sc. in Computer Science and has authored research papers published in top-ranked journals.

Ghosh's experience spans various sectors, including government services, education, and healthcare. Currently, he is working with a team developing multilingual chatbots with a focus on retrieval-augmented generation, utilizing large language models for document-driven question answering. He actively mentors machine learning enthusiasts and has a proven track record of success in machine learning competitions.

RESEARCH INTERESTS

Machine Learning, Large Language Models, Medical Imaging, Biometrics, Bioinformatics

EXPERIENCE

Machine Learning Engineer
Dhaka, Bangladesh
Nascenia Ltd. — Dec 2022 - present

Development of multilingual conversational chatbots, including Bengali and English, specifically for government websites. End-to-end RAG (Retrieval Augmented Generation) chatbot system for document-driven question-answering, utilizing Large Language Models (LLMs) through LangChain. Document chunking, Vector embeddings, Retrieval-based question-answering, and advanced research in LLMs like Llama-3, and GPT-3.5, coupled with Data scraping, Preprocessing, Pre-training, and Fine-tuning the models. Development of Flask APIs to deploy along the chatbots in the AWS server.

Mentor
Dhaka, Bangladesh
Code Studio Academy — Feb 2023 - present

Running of Machine Learning Bootcamp with over 120 enrolled students, covering Foundational concepts in Python, Math, and Statistics for ML, Deep Learning, Hands-on-projects, etc. Successfully delivered the Machine Learning Bootcamp curriculum to its first cohort. Some classes are also available in YouTube.

AI Research Assistant
Florida, USA (Remote)
MyMedicalHUB Int. — Oct 2020 - Sep 2022

Detection of Parkinson's disease utilizing Pattern Recognition, ML Models, etc. Image and video data analysis of gait and sports with angle-based posture pattern, OpenPose model, and so on.

Smart Book Writer
Dhaka, Bangladesh
10 Minute School — Oct 2020 - Sep 2022

Comprehensive demystifier to simplifying O and A level textbooks.

EDUCATION

B.Sc. in Computer Science & Engineering (CSE)
Rajshahi, Bangladesh
Rajshahi University of Engineering & Technology (RUET) — Jan 2017 - Oct 2022

Thesis Title: Most Dominant Metabolomic Biomarkers Identification for Lung Cancer
Supervisor: Abu Sayeed and Dr. Md. Al Mehedi Hasan

PUBLICATIONS

- Rifaat[1], Nahian and **Ghosh[1], Utshab Kumar** and Sayeed, Abu (2022). "Accurate gait recognition with inertial sensors using a new FCN-BiLSTM architecture". In: Computers and Electrical Engineering 104, p. 10842. [**Q1 Journal**]

- **Ghosh, Utshab Kumar** et al. (2022). "Most dominant metabolomic biomarkers identification for lung cancer". In: Informatics in Medicine Unlocked 28, p. 100824. [**Q2 Journal**]

Machine Learning Competitions

- **Ranked 54th out of 2034 Participants (Top 2.6%)**
  HackerEarth ML Challenge: A Fine Windy Day.
- **Ranked 86th out of 2796 Participants (Top 3%)**
  HackerEarth ML Challenge: Fast, Furious and Insured.
- **Ranked 443th out of 3545 Participants (Top 12.5%)**
  Kaggle PetFinder.my - Pawpularity Contest.
- **Ranked 1019th out of 2109 Participants (Top 48%)**
  Kaggle TensorFlow - Help Protect the Great Barrier Reef.
- **Running**
  DataHack Traffic Forecasting.

Projects

Bone Marrow Cell Classification   Ongoing

Developing an automated system to classify bone marrow cells using image processing and machine learning techniques. This project aims to improve efficiency and accuracy in medical diagnosis.

Machine Learning Projects   2021-present

Engaged in various machine learning competitions to hone my skills and explore diverse applications. These projects encompass computer vision tasks like image recognition, natural language processing for text analysis, and working with tabular data for predictive modeling. Link.

ML Web App   2023

Built a web application using Flask to demonstrate the deployment of API to the students of the Bootcamp that I lead. This project allows users to interact with a trained model and visualize the results. Link.

IMDB Clone   2023

Created a web application replicating functionalities similar to IMDB using ReactJS for the frontend and HTML/CSS for the user interface. This project provided experience with building dynamic and interactive web experiences. Link.

E-commerce Site   2020

Developed a full-fledged e-commerce website using the Django framework. This project involved building functionalities like product management, user accounts, shopping carts, etc. Link.

Skills

Programming	Python, C, OOP, Data Structures & Algorithms.
Data Science, ML and DL	Data Analysis & Visualization, ANN, CNN, RAG LLM, Supervised & Unsupervised Learning Algorithms, Pipelines, Feature Engineering, Selection & Extraction, Fine-tuning, Training.
Frameworks, Library and Tools	TensorFlow, PyTorch, Keras, OpenCV, NumPy, Pandas, Scikit-Learn, Tableau, Excel Spreadsheet.
Mathematics for ML and DL	Algebra, Statistics, Possibility, Geometry, Matrix.
Web Development	ReactJS, SaaS, Tailwind, JavaScript, Django, Flask.
Database	MySQL, MariaDB, ChromaDB, Redis, Firebase, MongoDB.
Cloud	AWS, Azure, Apache Server, Nginx.
Miscellaneous	Git, Docker, Linux, Latex, MS Office, Adobe Illustrator, Premiere Pro.

Accomplishments

- **Kaggle Expert (x3)**
- **300+ Problems solved** in *Codeforces, Codechef, Leetcode, and other Online Judges.*
- **Deep Learning Specialization** in *deeplearning.ai.*
- **Applied Data Science Specialization** in *IBM.*
- **Data Scientist Career Track** in *Datacamp.*
- **AI for Medical Diagnosis** in *deeplearning.ai.*
- **Gold Medalist** in *National High School Programming Contest.*

ACTIVITY

- **Vice President (Admin)**, *Onuronon, RUET Cultural Club*.
- **Asst. Publication Secretary**, *RUET Career Forum*.
- **Founder, Keyboardist, and Guitarist**, *Plectrum, a Bangladeshi Band*.

TALKS

Opportunities in programming career: Talk with the experts   May 2023
IEEE RUET RAS Student Branch Chapter

LANGUAGES

Bangla, English

REFERENCES

Name:	**Dr. Md. Al Mehedi Hasan**	**S M Shovan**
Organization:	Rajshahi University of Engineering & Technology	Rajshahi University of Engineering & Technology
Designation:	Professor	Lecturer
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Relation:	Supervisor	Supervisor