

# 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. He holds a B.Sc. in Computer Science & Engineering 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, which utilizes large language models for document-driven question answering. He has also accomplished projects on computer vision, biometrics, bioinformatics, time series analysis, etc. He actively mentors machine learning enthusiasts and has a proven track record of success in machine learning competitions.

## EXPERIENCE

### Jr. Software Engineer (AI)

Dhaka, Bangladesh

*Nascenia Ltd.*

Dec 2022 - present

Developing multilingual conversational chatbots (Bengali, English, etc.) for government websites, increasing citizen access to information much more easily. An alpha version of the chatbot has been developed on an AWS server with a Llama-2 model of 7 billion parameters, context length 4096, 5-bit quantization, and compiling in C language with llama.cpp. Developed a RAG system for document-driven question-answering and custom action execution (e.g., registration, profile update, etc.). This service eliminated the need for manual searches, saving users time.

### Mentor

Dhaka, Bangladesh

*Code Studio Academy*

Feb 2023 - present

Running a machine learning boot camp with over 120 enrolled students, covering foundational concepts in Python, math, and statistics for ML, deep learning, hands-on projects, etc. Successfully delivered the curriculum to its first cohort consisting of more than 50 sessions. Some select classes are also available in [YouTube](#).

### AI Research Assistant

Florida, USA (Remote)

*MyMedicalHUB Int.*

Oct 2020 - Sep 2022

Developed an AI system for detecting Parkinson's disease with an accuracy of about 0.98 utilizing pattern recognition, ML models, etc., used in healthcare. Analyzed image and video data of gait and sports with angle-based posture patterns, OpenPose model, etc.

## EDUCATION

### B.Sc. in Computer Science & Engineering (CSE)

Rajshahi, Bangladesh

*Rajshahi University of Engineering & Technology (RUET)*

Jan 2017 - Oct 2022

**Result (CGPA):** 3.22 (Out of 4.0)

**Thesis Title:** Most Dominant Metabolomic Biomarkers Identification for Lung Cancer

**Supervisor:** Abu Sayeed and Dr. Md. Al Mehedi Hasan

## RESEARCH INTERESTS

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

## PUBLICATIONS

- **Ghosh, Utshab Kumar** et al. (2022). "Most dominant metabolomic biomarkers identification for lung cancer". In: Informatics in Medicine Unlocked 28, p. 100824. [Q2 journal, First and corresponding author]
- Rifaat<sup>1</sup>, Nahian and **Ghosh<sup>1</sup>, 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, First author]

# MACHINE LEARNING COMPETITIONS

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- **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

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### Bone Marrow Cell Classification

Ongoing

Developing an automated system to classify bone marrow cells using image processing and machine learning techniques. Lastly obtained a precision of 0.84-0.90 for some classes like Abnormal eosinophil, Artefact, etc., by fine-tuning the EfficientNetB7.

### ML Bootcamp

2023

Mentored over 120 students on Python, data analysis, visualization, mathematics for ML, algorithms, SQL, CNN, etc. Added hands-on projects relevant to the topics so that the students can get some handy experience of the theories. [Link](#).

### IMDB Clone

2023

Created a web application replicating functionalities similar to IMDB using ReactJS. [Link](#).

### Time Series Analysis

2022

Prediction of stock price, air quality, ads currency forecasting, etc. with an accuracy of 0.8-0.9. [Link](#).

### E-commerce Site

2020

Developed an e-commerce website using the Django framework. This project involved building functionalities like product management, user accounts, shopping carts, etc. [Link](#).

## SKILLS

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

## ACCOMPLISHMENTS

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- **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

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

## TALKS

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**Opportunities in programming career: Talk with the experts**

May 2023

*IEEE RUET RAS Student Branch Chapter*

## LANGUAGES

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Bengali, English

## REFERENCES

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