Utshab Kumar Ghosh

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EXPERIENCE

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

- Developed multilingual conversational chatbots (Bengali & English) for government websites, increasing citizen access to information much more easily. An alpha version of the chatbot has been developed on AWS server with a Llama-2 model.
- Developed a RAG system for document-driven question-answering and custom action execution (e.g., registration, profile update, etc.) with Rasa. This service eliminated the need for manual searches, saving users time.
- Developed an android app for hardware sensors with Modbus protocol.
- Developed a full-stack web application with Laravel, implementing user authentication, data management, admin panel, and interactive dashboards.

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 selected 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[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, first author**]

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
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.

NER & POS Tagging   2024
An NLP project for Bangla sentence processing, tagging Named Entity Recognition and Parts of Speech. This features a FastAPI-powered web application, utilizing deep learning models and comprehensive data preprocessing. Link.

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

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	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*.
- **GRE Score:** 303 (Quantitative - 163, Verbal - 140, AWA - 3.5).

ACTIVITY

- **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

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

LANGUAGES

Bengali, English

REFERENCES

Available upon request.