

Koushik Roy

Data Analyst at NEXT Ventures

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Work Experience

Jun 2022 - Present [Full Time]	Data Analyst <i>NEXT Ventures</i> <ul style="list-style-type: none">Processing, analyzing, visualizing data, and creating dashboards.Modularizing and automating data processing and reporting process.Applying machine learning for classification, regression, and forecasting problems.Tech Stack: R, Python, R Shiny Dashboard, AWS EC2 etc.
Apr 2022 - Jul 2022 [Full Time]	Machine Learning Engineer <i>NybSys Ltd.</i> <ul style="list-style-type: none">Driver's attention monitoring and alert system.Masked face detection and recognition for facial authentication based security system.Hand written digit sequence recognition for optical mark recognition (OMR).Multi camera surveillance and monitoring solution for industrial usage.Tech Stack: Python, PyTorch, TensorFlow, OpenCV, Pandas, NumPy, MediaPipe etc.
Sep 2021 - Mar 2022 [Full Time]	Data Scientist <i>NybSys Ltd.</i> <ul style="list-style-type: none">Location-based efficient navigation-equipped web app for emergency responders.Mixed fidelity synthetic data generation by combining statistical parameters of both low-fi and hi-fi data.Interactive web app for stock price prediction.Tech Stack: Python, R, Shiny, Leaflet, Dplyr, AWS, revgeo, ggmap, osrm, geosphere etc.
Mar 2021 - Present [Part Time]	Research Engineer <i>Visual Information Processing(VIP) Lab, MIST</i> <ul style="list-style-type: none">Lips-State Detection Using CNN.Automatic License Plate Detection and Recognition (ALPR).Eliminating false positives in LP detection.

Education

Feb 2017 - Feb 2021	Military Institute of Science and Technology, Bangladesh University of Professionals(Dhaka, Bangladesh) <i>B.Sc. in Electrical, Electronic and Communication Engineering</i> (Major: Communication , CGPA: 3.64/4.00)
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Research Interests

• Data Science • Deep Learning • Machine Learning • Computer Vision • Robotics • Human Computer Interaction

Relevant Courses

• Calculus • Vector analysis, Matrices and Geometry • Complex Variables and Statistics • Computer Programming • Continuous Signals and Linear Systems • Digital Communication • Digital Signal Processing • Random Signals and Processes

Technical Skills & Certifications

- Coding Skills:** Python, R, SQL, Matlab, C, LaTeX
- Deep Learning & Computer-vision Packages:** Keras, TensorFlow, PyTorch, Scikit-Learn, Open-CV, Mediapipe, Dlib
- Data Processing, Visualization & Deployment:** Numpy, Pandas, Matplotlib, Seaborn, R Shiny, Leaflet, dplyr
- Machine Learning:** Regression, Classification, Convolutional Neural Network, Transfer Learning, Time Series
- Robotics:** Arduino, Raspberry Pi, PCB Designing, Sensors & Micro-controllers

- **Selected Certifications:** TensorFlow Developer Certificate, Convolutional Neural Networks in TensorFlow, Crash Course on Python, Artificial Intelligence Foundations: Machine Learning, Intro to Deep Learning

Test Scores

Graduate Record Examination (GRE) - October 2021

Quantitative Reasoning: 156 | Verbal Reasoning: 147 | AWA: 3.5

The International English Language Testing System (IELTS) - November 2021

Listening: 8.5 | Reading: 8.0 | Speaking: 7.0 | Writing: 6.5 | Overall: 7.5

Academic Research Experience

Feb 2020 – Feb 2021 | **An undergraduate thesis on Demand Forecasting in Smart Grid Using Long Short-term Memory (LSTM)**
Supervisor: Dr. Kazi Abu Taher, Professor, Department of ICT, Bangladesh University of Professionals

Publications

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| 2022 | <ol style="list-style-type: none">1. Chanda, D. & Roy, K. A Novel Approach on Facial Emotion Recognition using Landmark Distance Based Deep Neural Network in International Conference on Information and Communication Technology for Development (ICICTD) [Under Review] (2022).2. Onim, M. S. H., Nyeem, H., Roy, K. & Hasan, M. BLPnet: A new DNN model and Bengali OCR engine for Automatic Licence Plate Recognition. <i>Journal: Array</i> 15, 100244 (2022).3. Roy, K. & Akif, M. A. H. Real Time Hand Gesture Based User Friendly Human Computer Interaction System in 2022 International Conference on Innovations in Science, Engineering and Technology (ICISSET) (2022), 260–265.4. Roy, K. & Chanda, D. A Robust Webcam-based Eye Gaze Estimation System for Human-Computer Interaction in 2022 International Conference on Innovations in Science, Engineering and Technology (ICISSET) (2022), 146–151. |
| 2021 | <ol style="list-style-type: none">5. Abtahi Ishmam, M. H., Onim, M. S. H., Roy, K., Akif, M. A. H. & Nyeem, H. Modelling Lips-State Detection Using CNN for Non-Verbal Communications. <i>arXiv preprint arXiv:2112.04752</i> [Accepted] (2021).6. Roy, K., Ishmam, A. & Taher, K. A. Demand Forecasting in Smart Grid Using Long Short-Term Memory in 2021 International Conference on Automation, Control and Mechatronics for Industry 4.0 (ACMI) (2021), 1–5. |
| 2020 | <ol style="list-style-type: none">7. Biswas, A. K., Roy, K. & Chakraborty, U. Investigation of a Four-element Textile Multiple Input Multiple Output Antenna for Ku-Band Applications in 2020 IEEE Region 10 Symposium (TENSYP) (2020), 382–385. |

Personal Projects

- Portrait Photo Generator using state of the art image segmentation and adaptive blurring edge smoothing [Link: Hugging Face]
- Upside down classifier using transfer learning and custom dataset class for training and testing data generation.
- Weather data forecasting with different machine learning techniques and performance comparison.
- Person counter using computer vision with different approaches such as full human body detection, face detection, head detection etc. Performance comparison among multiple models and ensemble modeling.
- Multi language fake name detector using BERT word embedding.

Undergraduate Projects

- Recognition of spoken digits using statistical modeling.
- Radar based industrial vehicular optimization and industrial safety enhancement.
- Automated alert system for safer operation of railway crossing.
- Intelligent irrigation system to improve agricultural output using IOT sensors.
- Integrated home-security, automation & surveillance with Raspberry Pi, sensors & webcam.
- Car parking management system automation and assistance.
- Automatic rain detector and windshield wiper system for self driving vehicles.
- Self-correcting dual axis solar panel for low income households.
- Admission test result data calculation and department allocation automation.

Achievements and Other Credentials

- 2021 | **TensorFlow Developer Certificate** | *Awarded By: TensorFlow.Org(Google) [See Credential]*
- 2019 | **IEEE Conference Project Presentation: 1st Runner-up** | *Awarded By: ICEEICT*
- 2018 | **Winner, National Power and Energy Hackathon** | *Awarded By: Ministry of Power, Energy and Mineral Resources (MPEMR)*
- 2017 | **Recipient of Dean's List Scholarship for Outstanding Academic Results** | *Awarded By: MIST*
| **Rank-52, MIST Undergraduate Admission Test, 2016, among 9,000 students**

References

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