Prasanjit Dey

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Profile

Ph.D. candidate specializing in LLMs, deep learning, computer vision, and AI-based prediction systems. Experienced in designing machine learning models for real-world applications such as air quality forecasting and vision enhancement. Eager to apply skills in AI research for smart network innovation.

Education

Technological University Dublin, Dublin, Ireland
Ph.D. in Computer Vision and Deep Learning Sep 2022 – Present
MAKAUT, WB, Kolkata, India
M.Tech in Information Technology 2016
WBUT, Kolkata, India
B.Tech in Computer Science and Engineering 2013

Key Skills

- **Programming Languages:** Python, C
- **Frameworks:** TensorFlow, PyTorch
- **AI/ML Techniques:** LLMs, Deep Learning, Computer Vision, Time-Series Forecasting
- **Tools:** MATLAB, OpenCV

Selected Experience

Technological University Dublin, Dublin, Ireland
Tutor, Secure Programming Jan 2023 – Jun 2023
- Instructed undergraduate students on secure programming practices.
- Provided technical assistance in lab work and programming exercises, enhancing students' understanding of secure code.

National Institute of Technology, Jamshedpur, India
Junior Research Fellow Dec 2020 – Aug 2022
- Developed deep learning models for time-series air quality predictions using satellite data.
- Improved pollutant prediction accuracy through the integration of computer vision techniques.

CSIR-CIMFR, Dhanbad, India
Project Assistant-III Dec 2018 – Oct 2020
- Designed and implemented vision enhancement software for foggy weather using TensorFlow and OpenCV, improving image clarity by 30%.
- Led the development of Digital Mine software for hazard prediction and real-time monitoring using IoT and deep learning models.

Selected Projects

AI-based Air Pollutant Forecasting System Technological University Dublin
- Developed deep learning models for forecasting atmospheric pollutants using satellite imagery and AI.
- Created early warning systems for detecting hazardous gases in the atmosphere.

Vision Enhancement for Foggy Weather CSIR-CIMFR

- Implemented real-time image stitching and vision enhancement techniques using YOLO models for object detection.
- Achieved significant improvement in image clarity during foggy conditions.

Digital Mine Using IoT CSIR-CIMFR

- Developed IoT-based systems for monitoring and predicting hazards in underground mines using deep learning.
- Implemented real-time gas monitoring and prediction for safer mining environments.

Selected Publications

- Dey, P. *et al.* "Predicting Multivariate Air Pollution: A Gaussian-Mixture Nested Factorial Variational Autoencoder Approach." *IEEE Geoscience and Remote Sensing Letters*, 2024.
- Dey, P. *et al.* "CombineDeepNet: A Deep Network for Multi-Step Prediction of Near-Surface $PM_{2.5}$ Concentration." *IEEE JSTARS*, 2024.
- Dey, P. *et al.* "NeSNet: A Deep Network for Estimating Near-Surface Pollutant Concentrations." *IEEE JSTARS*, 2023.

Patents

- **Location Tracking System for Indoor Environment**
  Inventors: Prasanjit Dey, Debashis De, Sourav Hati
  Patent No: 465850, Application No: 201831030620 Granted: Nov 2023

Awards & Certifications

- NPTEL Deep Learning Certification (2020)
- CSIR-CIMFR Dr. Adinath Lahiri Award for Highest Impact Factor Paper (2021)

Referee

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