Pallabjyoti Deka

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Education

Heriot-Watt University **Edinburgh, UK**

Ph.D. in Computer Vision *2024 Sept – 2028 Mar*

- **Research Topic:** Development of deep learning algorithms for robust reconstruction of low-resolution single photon data in challenging low-light conditions.
- **Research Interests:** Generative Modeling - Diffusion Models, Normalizing Flows, VAEs; Image Denoising & Super-resolution
- **Scholarship:** Recipient of ESPRC Fellowship

Indian Institute of Technology, Kharagpur **Kharagpur, India**

M.Tech in Computer Science and Data Processing, ***CGPA - 8.49/10.00*** *2019 Jul – 2021 May*

- **Selected Coursework:** Pattern Recognition and Image Understanding, Data Structures and Algorithms, Systems Programming, Operating Systems Design, Database Management and File Organization
- **Scholarship:** MHRD Scholarship for securing 99.16 percentile in Graduate Aptitude Test in Engineering (GATE 2019, Electrical Engineering)

Assam Engineering College, Jalukbari **Guwahati, India**

B.E. in Electrical Engineering, ***Percentage - 77.85%*** *(1st class Honors)* *2014 Aug – 2018 Jul*

- **Selected Coursework:** Digital Image Processing, Signals & Systems, Microprocessor Based Instrumentation, Control Systems
- **Scholarship:** Ishan Uday Scholarship for qualifying Common Entrance Exam (CEE-2014)

Publications

- *"3D Shape Completion using Multi-Resolution Spectral Encoding,"* Pallabjyoti Deka, S. Bhattacharya, D. Sen, and P. K. Biswas, Proceedings of the **IEEE Winter Conference on Applications of Computer Vision (WACV '25 (Oral))**, pp. 54–63, Feb. 2025.
- *"Conditional Diffusion for Single-Photon LiDAR Depth Super-Resolution,"* Pallabjyoti Deka, Stephen McLaughlin, Abderrahim Halimi, Proceedings of the **IEEE Statistical Signal Processing Workshop (SSP '25**, pp. 71–75, June. 2025.

Research Experience

Indian Institute of Technology Kharagpur **Kharagpur, India**

Junior Research Fellow *2023 Mar – 2024 May*

- Developed a novel deep learning architecture for 3D Shape Completion that focuses on preserving intricate details leveraging Implicit Functions using PyTorch framework. This work is published in WACV '25.
- Experienced in collecting 3D raw data using white light scanner and later processing them in Blender, PyTorch3D, and Open3D
- Principal Investigator - Dr. Prabir Kumar Biswas (Prof., E&EC, IIT Kharagpur)

Indian Institute of Technology Kharagpur **Kharagpur, India**

M. Tech Thesis - Image Deraining using Conditional Generative Adversarial Network *2020 Jun – 2021 Apr*

- Developed an improved algorithm for rain streak and accumulation removal from images utilizing a Conditional Generative Adversarial Network (CGAN).
- Innovatively designed and implemented a multi-level discriminator, significantly enhancing the algorithm's performance and producing visually appealing outputs.
- Leveraged the Tensorflow and Keras frameworks to execute the entire project.
- Thesis Supervisor - Dr. Adrijit Goswami (Prof., Dept. of Mathematics, IIT Kharagpur)

Work Experience

HCL Software (Product Division) **Noida, India**
Senior Software Engineer *2021 Jul – 2023 Feb*

- Developed Golang microservices as a part of the product IntelliService, and achieved high performance in providing resolutions to user queries with the help of Elasticsearch and an NLP-based microservice
- Awarded Champion Contributor for the FY 2022-23
- Played a crucial role in the integration of Datadog to monitor Kubernetes clusters continuously
- Experienced in deploying a micro-service as a docker container into Kubernetes cluster with the help of CI/CD pipeline
- Experienced in writing clean code and unit tests for APIs in Golang
- Experienced in the software industry working in Agile-adopted projects

Technical Skills

Computer Vision: Deep Learning, Image Processing, Signal Processing
Developer Tools: Python, C/C++, Golang, ElasticSearch, PostgreSQL, Git, Microservice Architecture, DevOps
Technologies/Frameworks: PyTorch, Tensorflow, Keras, OpenCV, Docker, Kubernetes, FastAPI, Azure, Datadog

Test Scores

- **Graduate Aptitude Test in Engineering 2019 (GATE-EE):** Secured 99.15 percentile with score 767/1000
- **TOEFL 2024:** Total marks obtained - 100/120, Reading - 25, Listening - 26, Speaking - 22, Writing - 27

Internships

- Carried out a MATLAB-based research internship on Image Processing which mainly focused on denoising and enhancement of an image using improved methods at *Indian Institute of Technology, Guwahati* under the guidance of Dr. P.K. Bora during the period *Jun – Jul, 2016*
- Industrial internship with particular reference to manufacturing of Solar Panels and various power electronic equipment at *Bharat Heavy Electricals Limited, Bengaluru* during the period *Jun – Jul, 2017*

Projects

Micro Hydro Power Plant - Planning and Design **Guwahati, India**
B.E. Thesis *2017 Jul – 2018 Jun*

- Experimental set up of a micro-hydropower plant with a peak potential power generating capacity of 25kW during the rainy
- Thesis Supervisor - Dr. Durlav Hazarika (Prof., Electrical Engineering Department, Assam Engineering College)

Teaching Experience

Teaching Assistant **Kharagpur, India**
Indian Institute of Technology, Kharagpur *2020 Aug – 2021 Apr*

- Mentored over 80 students during lab sessions, providing guidance and support in understanding complex subject matter for Operating Systems Design Laboratory (MA69006) and Programming Laboratory (MA69003).

Miscellaneous

Volunteer Work

- Worked as a non-profit Junior ML Engineer at Omdena (Aug-Dec, 2022) where I contributed to extracting capillary skeleton and other capillary features from thousands of raw data in video format along with tracking white blood cell information.
- Led the team from the front in organizing 'Sparks' (Feb, 2016) - a workshop on embedded systems design at Assam Engineering College.

Awards and Scholarships

- MHRD Scholarship (2019-2021), Ishan Uday Scholarship (2014-2018) and Anundoram Barooah Award by Govt. of Assam (07/2011)

Interests

- Photography, Article Writing