

Dr Emon Kumar Dey

Assistant Professor

Institute of Information Technology, University of Dhaka, Bangladesh

Email: emonkd@iit.du.ac.bd

Mobile: +88 01716004382



CAREER OBJECTIVES

Research

- To be an internationally renowned researcher in the field of point cloud data processing
- Contribute significantly to a variety of computer science and information technology fields, such as image processing, pattern recognition, data science, and machine learning

Teaching

- To provide quality teaching and assist students in achieving their academic goals
- Create new concepts, knowledge, and ideas for the higher education sector

Collaboration and Grants

- To develop communication and work with the experienced researcher, industries, and academicians
- Maintaining and nurturing the collaboration effectively with these organisations and professionals to draw attention to competitive grants

EDUCATION

| | |
|------|---|
| 2022 | Doctor of Philosophy School of Information and Communication Technology, Griffith University, Australia Thesis Title: Effective 3D Building Extraction from Aerial Point Cloud Data |
| 2008 | Master of Science Department of Computer Science and Engineering, University of Dhaka, Bangladesh Thesis Title: Computer Vision-based Gender detection from facial images |
| 2007 | Bachelor of Science Department of Computer Science and Engineering, University of Dhaka, Bangladesh Thesis Title: Real-time Vision-based Pedestrian Detection by Contour Matching |

PROFESSIONAL EXPERIENCE

| | |
|---|--|
| Griffith University Nathan, Australia | Sessional Instructor , School of ICT, 06/2019 to 09/2019, 02/2020 to 05/2020, and 02/2021 to 05/2021 |
| University of Dhaka Dhaka, Bangladesh | <ul style="list-style-type: none">• Assistant Professor, Institute of Information Technology, 11/2015 to present• Lecturer, Institute of Information Technology, 04/2012 to 11/2015 |
| Daffodil International University Dhaka, Bangladesh | Lecturer , Department of CSE, 01/2012 to 04/2012 |

SELECTED INTERNATIONAL PUBLICATIONS

Journal Publications

- 2022** 1. Tarsha Kurdi, F., Gharineiat, Z., Campbell, G., Awrangjeb, M., & **Dey, Emon Kumar** (2022). [Automatic Filtering of Lidar Building Point Cloud in Case of Trees Associated to Building Roof](#). *Remote Sensing*, 14(2), 430.
- 2021** 2. **Dey, Emon Kumar**, Tarsha Kurdi, F., Awrangjeb, M., & Stantic, B. (2021). [Effective Selection of Variable Point Neighbourhood for Feature Point Extraction from Aerial Building Point Cloud Data](#). *Remote Sensing*, 13(8), 1520.
- 2020** 3. **Dey, Emon Kumar**, & Awrangjeb, M., [A Robust Performance Evaluation Metric for Extracted Building Boundaries from Remote Sensing Data](#). *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 13 (2020): 4030-4043
4. **Dey, Emon Kumar**, Awrangjeb, M., & Stantic, B., [Outlier detection and robust plane fitting for building roof extraction from LiDAR data](#). *International Journal of Remote Sensing* 41, no. 16 (2020): 6325-6354
- 2018** 5. Rahman, M., and **Dey, Emon Kumar**. [Datasets for aspect-based sentiment analysis in Bangla and its baseline evaluation](#). *Data* 3.2 (2018): 15
6. Hussain, M. A., & **Dey, Emon Kumar**. (2018). [Remote sensing image scene classification](#). *J. Manuf. Sci. Eng*, 4, 13-20
- 2017** 7. Islam, S. S., **Dey, Emon Kumar**, Tawhid, M. N. A., & Hossain, B. M. (2017). [A CNN Based Approach for Garments Texture Design Classification](#). *Advances in Technology Innovation*, 2(4), 119-125
- 2016** 8. Amil, F. M., Rahman, S., Rahman, M. M., & **Dey, Emon Kumar** (2016). [Bilateral Histogram Equalization for Contrast Enhancement](#). *International Journal of Software Innovation (IJSI)*, 4(4), 15-34
- 2015** 9. **Dey, Emon Kumar**, Tawhid, M., Ahad, N., & Shoyaib, M. (2015). [An Automated System for Garment Texture Design Class Identification](#). *Computers* 4, no. 3 (2015): 265-282
10. Rahman, M. M., Rahman, S., **Dey, Emon Kumar**, & Shoyaib, M. (2015). [A gender recognition approach with an embedded preprocessing](#). *International Journal of Information Technology and Computer Science (IJITCS)*, 7(7), 19
- 2013** 11. **Dey, Emon Kumar**, Mohsin Khan, and Md Haider Ali. [Computer Vision Based Gender Detection from Facial Image](#). *International Journal of Advanced Computer Science*, Vol 3, No 8 (2013): IJACSci, August, 2013

Conference Publications

- 2021** 1. **Dey, Emon Kumar**, Awrangjeb, M., Kurdi, F. T., & Stantic, B. [Building Boundary Extraction from LiDAR Point Cloud Data](#). In *2021 Digital Image Computing: Techniques and Applications (DICTA)* (pp. 1-6). IEEE.
2. Tarsha Kurdi, F., Gharineiat, Z., Campbell, G., **Dey, Emon Kumar**, & Awrangjeb, M. (2021). [Full series algorithm of automatic building extraction and modelling from LiDAR data](#). In *2021 Digital Image Computing: Techniques and Applications (DICTA)* (pp. 01-08). IEEE.

- 2019** 3. Dey, Emon Kumar, Awrangjeb, M., & Stantic. B., [An Unsupervised Outlier Detection Method for 3D Point Cloud Data](#). In *IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium*, pp. 2495-2498. IEEE, 2019
- 2018** 4. Rahman, M. A., & Dey, Emon Kumar (2018, June). [Aspect Extraction from Bangla Reviews using Convolutional Neural Network](#). In *2018 Joint 7th International Conference on Informatics, Electronics & Vision (ICIEV) and 2018 2nd International Conference on Imaging, Vision & Pattern Recognition (icIVPR)* (pp. 262-267). IEEE
- 2016** 5. Amil, F. M., Rahman, M. M., Rahman, S., Dey, Emon Kumar, & Shoyaib, M. (2016, May). [Bilateral histogram equalization with pre-processing for contrast enhancement](#). In *2016 17th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD)* (pp. 231-236). IEEE
6. Islam, S. S., Rahman, S., Rahman, M. M., Dey, Emon Kumar, & Shoyaib, M. (2016, May). [Application of deep learning to computer vision: A comprehensive study](#). In *2016 5th international conference on informatics, electronics and vision (ICIEV)* (pp. 592-597). IEEE.
- 2015** 7. Rahman, M. M., Rahman, S., Kamal, M., Abdullah-Al-Wadud, M., Dey, Emon Kumar, & Shoyaib, M. (2015, December). [Noise adaptive binary pattern for face image analysis](#). In *2015 18th Int. Conference on Computer and Information Technology (ICCIT)* (pp. 390-395). IEEE.
- 2014** 8. Dey, Emon Kumar, & Muctadir, H. M. (2014, May). [Chest X-ray analysis to detect mass tissue in lung](#). In *2014 International Conference on Informatics, Electronics & Vision (ICIEV)* (pp. 1-5). IEEE.
9. Imran, A., Dey, Emon Kumar, & Sakib, K. [Active-Threaded Algorithms for Provenance Cognition in the Cloud preserving Low Overhead and Fault Tolerance](#), *International Conference on Recent Advances in Computer Engineering, Communications and Information Technology (CEA2014)*, Spain, January 2014, pp:249 - 255

ONLINE RESEARCH PROFILES

| | |
|------------------------|---|
| Google Scholar Profile | https://scholar.google.com/citations?user=QsuIiqQAAAAJ&hl=en&oi=ao |
| Research gate Profile | https://www.researchgate.net/profile/Emon_Dey |
| Orchid ID | https://orcid.org/0000-0002-2089-9557 |

COURSES TAUGHT AND SUPERVISION

Courses Taught

- Daffodil International University, Bangladesh (2012)
 - Data Structure, Database Design, Computer Graphics, Simulation and Modeling
- University of Dhaka, Bangladesh (2012 to 2018)
 - Computer Vision and Pattern Recognition, Artificial Intelligence, Database Design, Strategic Management, Algorithms, Parallel Computing, Simulation and Modeling, Operating system
- Griffith University, Australia
 - Database Design / Data Management (2814ICT, trimester 1, 2020, 2021)
 - Software Development Process (1810ICT, trimester 2, 2019)

Supervision

Successfully supervised 3 MS level research students and more than 10 BSc students in the Institute of Information Technology, University of Dhaka, as a principal supervisor since 2012 to 2018

DETAIL EXPERIENCE

- 2018-2022 **Postgraduate Research (PhD)**
 Griffith University, Australia
Thesis Title: Effective 3D Building Extraction from Aerial Point Cloud Data
Summary: Building extraction is important for a wider range of applications including smart city planning, disaster management, security, and cadastral mapping. This thesis aims to present an effective data-driven strategy using aerial LiDAR point cloud data. It focuses on various aspects of building extraction and proposes several new and effective ideas, which include a robust variable point neighbourhood estimation method, effective outlier detection method, individual roof plane and building extraction, a realistic evaluation metric, a corner correspondence algorithm, and a robust classification method using machine learning.
- 2019-2021 **Sessional Instructor**
 Griffith University, Australia
Responsibilities: Taking labs, lectures, and assisting students in achieving their learning outcomes. Marking student assignments, scripts, and providing feedback where necessary in a timely manner. Checking the progress of the individual student. Ensure understanding of the university policies, code of conduct, integrity, and rules.
- 2012-2018 **Lecturer/Assistant Professor**
 University of Dhaka, Bangladesh
Responsibilities: Teaching, research, and supervision. Preparing lesson plans, course materials, and conducting lectures, labs, and workshops. Working as a member and/or chairman of different exam committees. Working as a coordinator of post-graduation diploma in IT course and different basic computer training courses. Actively carrying out research and publishing quality journal and conference papers with BSc and MS students. Working as an assistant house tutor for 2 years (2016-18) at Jagannath Hall, University of Dhaka.
- Jan- Apr 2012 **Lecturer**
 Daffodil International University, Dhaka
Responsibilities: Preparing lesson plans, providing lectures, taking labs, and assisting students in achieving the learning outcomes. Checking the progress of the individual student. Ensure understanding of the university policies, code of conduct, integrity, and rules.

PRESENTATIONS AND TALKS

- Poster on Building Boundary Extraction from LiDAR Point Cloud Data. In 2021 Digital Image Computing: Techniques and Applications (DICTA). IEEE
- Poster on Full Series Algorithm of Automatic Building Extraction and Modelling From LiDAR Data. In 2021 Digital Image Computing: Techniques and Applications (DICTA). IEEE
- Poster on An unsupervised outlier detection method for 3D point cloud data." IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium. IEEE
- Oral Presentation on Chest X-ray analysis to detect mass tissue in lung." 2014 International Conference on Informatics, Electronics & Vision (ICIEV). IEEE

ACADEMIC ACHIEVEMENTS

- Postgraduate research scholarships GUIPRS and GUPRS from Griffith University Australia (attained)
- Postgraduate research award and International postgraduate tuition award from the University of Wollongong (not attained)
- Bangabandhu Science and Technology Fellowship, Ministry of Science and Technology, Bangladesh 2017-18, (not attained)
- Offer of admission from Western Sydney University, Australia (not attained), University of Wollongong, Australia (not attained)
- Best Paper Award in 5th International Conference on Informatics, Electronics & Vision, 2016
- Merit scholarship (in B.Sc.) for brilliant result at the University of Dhaka (held in 2007)
- Education Board Bangladesh scholarship for Brilliant Result in 2003 for the H.S.C examination
- Education Board Bangladesh scholarship for Brilliant Result in 2001 for S.S.C examination
- Bangladesh Government general scholarship 1998 for class 8 examination

RESEARCH INTEREST

- Light Detection and Ranging (LiDAR) point cloud data processing
- Three dimensional (3D) Building extraction, modeling, and classification
- Image processing, feature extraction, computer vision, and pattern recognition
- Machine learning
- Information retrieval

GRANTS/FUNDS

- | | |
|---------|--|
| 2015-16 | University Grant Commission, Bangladesh Project: A similarity-based recommendation system for online shopping for garments Objectives: The goal of this project is to propose a set of filters to extract the design features using the texture of the garments. Using these features appropriate clothing product is recommended to the customer with better accuracy, effective and efficient ways. |
| 2017-18 | ICTD, Bangladesh Fellowship (supervisor) Project: Aspect Extraction from Bangla Reviews using Convolutional Neural Network Objectives: The goal of this project is to analyse the customer reviews and extract the aspect of the reviews to assist customers in purchase decision-making on an online business platform. |

EXTRA-CURRICULAR ACTIVITIES

- A trained 'Kathak' dancer
- A trained singer
- Several national level awards from the prime minister of Bangladesh
- An enlisted regular dance artist of Bangladesh Television (BTV)
- A passionate photographer. One of the photograph was selected as an Internal Artwork in the 2019 Student Associations Diary at Griffith University, Australia.
- An active member of Dhaka University Cultural Club (DUCC) (2007-2009)
- A student leader, 2019 (Secretary, Griffith University Bangladesh Association (GUBA))
- A student leader, 2020 (Vice-President, Griffith University Bangladesh Association (GUBA))

MEMBERSHIPS

- 2017 Member of the IEEE (Institute of Electrical and Electronics Engineers)
- 2018-2022 Member of Griffith University Bangladesh Association (GUBA)
- 2018-2021 Member of Bangladesh Association in Brisbane, Australia
- 2018-2022 Member of Bangladesh Puja and Cultural Society Brisbane, Australia

REFEREES

Dr Mohammad Awrangjeb (Principle PhD supervisor)
Senior Lecturer, School of Information and Communication Technology
Griffith University, Nathan, QLD, 4111, Australia, Office: N44_2.20
Tel: +61 7 3735 5032 (office)
Email: m.awrangjeb@griffith.edu.au

Professor Bela Stantic (Principle PhD supervisor)
Director "Big Data and Smart Analytics" Lab - IIS
School of Information and Communication Technology
Griffith University, QLD 4222, Australia
Tel: +61 7 555 28761 (office)
Fax: +61 7 555 28066
Email: b.stantic@griffith.edu.au

Dr Fayez Tarsha Kurdi (External PhD supervisor)
School of Surveying and Built Environment
Casual Employment, School of Information and Communication Technology
University of Southern Queensland, Toowoomba, QLD, Australia
Mobile: +61 497 423 653
Email: fayez.tarshakurdi@usq.edu.au

Dr. Mohmmmed Shafiul Alam Khan
Associate Professor and Director
Institute of Information Technology
University of Dhaka, Dhaka 1000, Bangladesh
Phone: +8801748890280
Email: shafiul@du.ac.bd