

Shouvik Paul

B.tech in Computer Science and Engineering

Cooch Behar Government Engineering College

- Intern at Xu Lab, Carnegie Mellon University, USA

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OBJECTIVE:

I want to achieve a prestigious position in educated world and to enhance my knowledge, skills and experience while taking more responsibility and contribution to the growth of the organization.

EDUCATION:

Bachelors of Technology in Computer Science and Engineering (Summer 2017 – Summer 2021)

- Cooch Behar Government Engineering College (CGEC), Maulana Abul Kalam Azad University of Technology, West Bengal, India
- Instruction Medium : [English](#), [WHED](#): IAU-021193, DGPA: 8.5/10 (till 7th Sem) , [Equivalent US GRADE: A \(GPA: 4/4\)](#) .
- Bachelors Thesis: “*Applications of Metaheuristic Algorithms in Data Clustering and Image Processing for Better Performance*”
Supervisor: Prof. Dr. Sourav De

Higher Secondary Education (12th Std.) (Spring 2015 - Spring 2017)

- Jodhpur Park Boys School, West Bengal Council of Higher Secondary Education, West Bengal (WB), India
- Instruction Medium : English, Percentage: 81.80, [Equivalent US GRADE: A \(GPA: 4/4\)](#) .

Secondary Education (Matriculation, 10th Std.) (Spring 2014 - Spring 2015)

- Behala Aryya Vidyamandir, West Bengal Board of Secondary Education, WB, India
- Instruction Medium : English and Bengali (Bilingual), Percentage: 90.14, [Equivalent US GRADE: A \(GPA: 4/4\)](#) .

AWARDS AND HONORS:

- Undergraduate Research Grant, CGEC, India (2018-2021)
- Swami Vivekananda Merit Cum Means (SVMCM) Scholarship, Government of West Bengal, India (2017 – 2021)
- Summer Research Grant, Xavier Institute of Social Service (2019)
- OASIS Scholarship, Government of West Bengal, India (2017 – 2018)
- Summer Research Grant, Jalpaiguri Government Engineering College (2018)
- Post-matric Scholarship, Government of West Bengal, India (2015 – 2016)

PUBLICATIONS:

1. Monika Singh, **Shouvik Paul**, Jyoti Singh, “A Review of ITS (Intelligent Transportation Systems) Using AI and IoT”, Urban computing with Artificial Intelligence and IoT, River Publishers, 2021 (Accepted).
2. Sandip Dey, Sourav De, **Shouvik Paul**, “A New Approach of Data Clustering Using Quantum Inspired Particle Swarm Optimization Based Fuzzy c-means”, International Conference on Cloud Computing, Data Science & Engineering, IEEE CONFLUENCE 2021. [DOI: 10.1109/Confluence51648.2021.9377105](#). Invited to publish in ASTES Journal.
3. **Shouvik Paul**, Sourav De, Sandip Dey, “Neighbourhood Based Bi-Level Contrast Adjustment for Underwater Image Enhancement Using Modified Particle Swarm Optimization”, International Conference on Communication, Computing and for Industry 4.0, IEEE C2I4 2020. [DOI: 10.1109/C2I451079.2020.9368902](#).
4. **Shouvik Paul**, Sourav De, Sandip Dey, “A Novel Approach of Data Clustering Using an Improved Particle Swarm Optimization Based K-Means Clustering Algorithm”, International Conference on Electronics, Computing and Communication Technologies, IEEE CONECCT 2020. [DOI:10.1109/CONECCT50063.2020.9198685](#). Invited to publish in ASTES Journal (ICEST) Special Issue.
5. Sourav De, Sandip Dey, **Shouvik Paul**, “Underwater Image Enhancement Using Neighbourhood Based Two Level Contrast Stretching and Modified Artificial Bee Colony”, International Conference on Electronics, Computing and Communication Technologies, IEEE UPCON 2020. [DOI: 10.1109/UPCON50219.2020.9376405](#). Invited to publish in Journal.
6. **Shouvik Paul**, Sourav De, “Multi-level Image Segmentation using Black Widow Optimization Algorithm” (In Progress).
7. **Shouvik Paul**, Sourav De, “Performance of Modified Inertia Weight Based PSO Algorithm on Benchmark IEEE CEC 2017 And Multi-Dimensional Dataset”. (In Progress)
8. **Shouvik Paul**, Sourav De, “Image Enhancement Based on Multi-Level Contrast Stretching Via Bio-Inspired Algorithm” (In Progress).
9. **Shouvik Paul**, Sourav De, “Data Analysis and Image Clustering Using an Quantum Based Hybrid PSO-Kmeans” (In Progress).

RESEARCH EXPERIENCE:

1. Research Intern at Xu Lab, Carnegie Mellon University (CMU), Pennsylvania, USA with Prof. Dr. Debanjan Konar (Ongoing)
 - Topic: Self-supervised/Semi-supervised/Weakly supervised Deep Neural Networks-based Segmentation in Cyro-Electron Tomography.
2. Undergraduate Research Assistant at CGEC, WB, India with Prof. Dr. Sourav De (Ongoing, started Spring 2018)
 - Research Topic: Machine Learning, Data Science, Artificial Intelligence and Deep Learning. Along with that developed various nature inspired evolutionary algorithms to perform data clustering, image processing and other engineering optimization tasks.

- 3. Software Engineer (Computer Vision) Intern** at Ogive Technology LLP, TS, India (Winter 2021 – Spring 2021)
 - Topic: **Various Live Projects in Computer Vision and Machine Learning.** Facial Recognition System; AI based security and surveillance system for attendance monitoring, visitor management, intruder detection using IP camera.
- 4. Data Science and Machine Learning Intern** at Xavier Institute of Social Service, JH, India with *Prof. Rik Das* (Summer 2019)
 - Title: **Multi-dimensional Clustering Using Modified Particle Swarm Optimization.** (Index Terms : Data Mining, ML, Soft Computing, Clustering, Metaheuristic, PSO)
- 5. Deep Learning Research Intern** at Indian Institute of Technology Patna, Bihar, India with *Prof. Sriparna Saha* (Winter 2019)
 - Title: **Attention Based Convolutional Neural Network to Predict Protein–Protein Interactions.** (Index Terms : DL, PyTorch, Theano, Attention, PPI, CNN)
- 6. Deep Learning Research Intern** at Jalpaiguri Government Engineering College, WB, India with *Prof. Chinmoy Ghosh* (Summer 2018)
 - Title: **Iris Flower Data and Image Classification using Convolution Neural Network.** (Index Terms : Classification, DL, Tensorflow, Keras, NN, ANN, CNN)

ACADEMIC PROJECTS:

- 1: Rader Image Classification using Deep Neural Network.**
 - *ISE Department, AMC Engineering College, India(Remote), Spring 2021-Present; Supervisor: Prof. Ganga Holi*
- 2: Artificial Intelligence and Machine Learning applications in 6G Networks.**
 - *Jawaharlal College of Engineering and Technology, India (Remote), Spring 2021-Present; Supervisor: Prof. Reshma V. K.*
- 3: Streaming Data Analysis using PySpark and Apache.**
 - *CGEC, India, Winter 2021-Present; Supervisor: Prof. Sukhendu Shekhar Mondal*
 - Application of Hadoop, PySpark and Apache kafka for streaming data analysis with a team.
- 4: Performance of PDD-IW Based PSO Algorithm on Benchmark IEE CEC 2017, 2018, 2020 And Multi-Dimensional Dataset.**
 - *CGEC, India, Autumn 2020; Supervisor: Prof. Dr. Sourav De and Prof. Sandip Dey*
 - Proposed method has been evaluated over several standard engineering problems, 25 basic benchmark objective functions and CEC'17-20.
- 5: Data Clustering Using Quantum Inspired PSO Based Fuzzy C–Means Clustering Algorithm.**
 - *CGEC, India, Summer 2020; Supervisor: Prof. Dr. Sandip Dey*
 - Addresses the problem regarding pre-mature convergence of solutions due to improper initialization.
- 6: Image Enhancement by Contrast Stretching and Modified Artificial Bee Colony (MABC).**
 - *CGEC, India, Spring 2020-Summer 2020; Supervisor: Prof. Sourav De*
 - Image contrast enhancement (ICE) can be easily treated as an optimization problem where the objective is to improve some measure of image contrast subject to constraints on image pixel intensities or parameters of a transformation function.
- 7: Image Clustering Using Hybrid PSO Algorithm and ABC Algorithm.**
 - *CGEC, India, Winter 2020; Supervisor: Prof. Sandip Dey*
 - The PSO-based and ABC-based image clustering algorithm with the improved fitness function are compared to the K-means clustering.
- 8: Graphical 3D View of Underground Water Level for Better Harvesting.**
 - *CGEC, India, Autumn 2019-Winter 2020; Supervisor: Prof. Somen Mondal*
 - Build a model to predict the underground water level and a graphical 3D view of underground water level.
- 9: Neighbourhood Based Bi-Level Contrast Adjustment for Underwater Image Enhancement Using Modified PSO.**
 - *CGEC, India, Autumn 2019; Supervisor: Prof. Sourav De and Prof. Sandip Dey*
 - Modified Particle Swarm Optimization algorithm has been applied over image datasets to know the most suitable pixel intensity range.
- 10: Image Enhancement using BPSO Algorithm.**
 - *CGEC, India, Summer 2019-Autumn 2019; Supervisor: Prof. Dr. Sourav De*
- 11: Banking Management System.**
 - *CGEC, India, Summer 2019; Supervisor: Prof. Sukhendu Shekhar Mondal*
 - Built a model Banking system which provides employees to perform banking transaction, manage customer accounts in efficient manner.
- 12: Data Clustering by Particle Swarm Optimization Based K–Means Clustering Algorithm.**
 - *CGEC, India, Spring 2019-Summer 2019; Supervisor: Prof. Sourav De and Prof. Sandip Dey*
 - Modification of PSO to reduce the convergence time by the use of a new inertia weight instead of conventional method and the acceleration co-efficients are updated dynamically instead of static values.
- 13: Flight Reservation System: Indiana Aerolinea.**
 - *CGEC, India, Spring 2019; Supervisor: Prof. Sourav De*
 - Built a software which is based on Flight Reservation System.
- 14: Security System Solutions using Web Controlled Home Automation.**
 - *CGEC, India, Winter 2018; Science Exhibition, Inter College level.*
 - Built a model of motion sensor-based web-controlled home automation.

SELF-INITIATED PPROJECTS:

- 1: Blood Cell Identification, blood cell type detection and blood Cell counting using Image Processing (Dataset is taken from Kaggal.com).
- 2: Sentiment Analysis using NLP and machine learning techniques. Simple voice bot using NLU and NLP.
- 3: Various Websites for Events (e.g. seminars, webinars and conferences).

CONFERENCE / WORKSHOP ATTENDED:

- **International Conference on Cloud Computing, Data Science & Engineering, IEEE CONFLUENCE 2021**, Amity University, UP, India.
Paper Presentation, Title: *A New Approach of Data Clustering Using Quantum Inspired PSO-Fuzzy c-means*.
- **International Conference on Communication, Computing and for Industry 4.0, IEEE C2I4 2020**, CMRIT, Bangalore, India.
Paper Presentation, Title: *Neighbourhood Based Bi-Level Contrast Adjustment for Underwater Image Enhancement Using MPSO*.
- **International Conference on Electronics, Computing and Communication Technologies, IEEE UPCON 2020**, MNNIT Allahabad, India.
Paper Presentation, Title: *Underwater Image Enhancement Using Neighbourhood Based Two Level Contrast Stretching and MABC*.
- **International Conference on Electronics, Computing and Communication Technologies, CONECCT 2020**, Bangalore, India.
Paper Presentation, Title: *A Novel Approach of Data Clustering Using an Improved PSO Based K-Means Clustering Algorithm*.
- **Seminar**, Delivered Talk, Title: *Solution of Engineering Optimization Problems by BWO Algorithm*. Autumn 2020, CGEC, WB, India.
- **Robotics & Internet of Things**, Winter 2018, Indian Institute of Technology Bhubaneswar (IIT BBS), India.
- **Android App Development**, Conducted by Kard India, Autumn 2017, CGEC, WB, India,

IMPORTANT COURSES AND SKILLS:

Computer Skills:

Programming Languages: Python, MATLAB, C, C++, Java, PHP, SQL, JavaScript, HTML & CSS, Bootstrap, VB.NET.

Operating System: Linux and Windows.

Tools: MS Office, MS Access, LibreOffice, LaTeX, OneNote, VS, VS Code, PyCharm, GitHub, Git, Jupyter Notebook.

Libraries/Framework: Scikit-learn, TensorFlow, Keras, PyTorch, SciPy, NumPy, Seaborn, Pandas, Matplotlib, Theano, Flask, OpenCV.

Courses: Data Structure, Design & Analysis of Algorithm, Digital & Analog Design, Computer Organization, Computer Architecture, Operating Systems, Object Oriented Programming, Networking, DBMS, AI, Mobile Computing, Internet Technology, Software Engineering, Compiler Design, Multimedia, Cryptography and Network Security.

Day to Day Comfort: Optimization, Data Science, Artificial Intelligence, Deep Learning and Neural Networks (ANN, CNN, DNN), Machine Learning Algorithms(Supervised and Unsupervised Learning, Classification problems, Training models for image classification using Tensorflow and Keras, Regression Metrics and Clustering Algorithms), Computer Vision, NLP, Image Processing, Photography, Hadoop, Video Editing, MongoDB, Web Development, CorelDraw, Adobe PhotoShop.

Certifications: Programming with Python, Web Development, Artificial Intelligence with Python, Artificial Intelligence by CrashCourse, Machine Learning, Computer Vision, Image and Video Processing, NN and Deep Learning, Introduction to Data Science in Python, Fundamentals of Scalable Data Science, AWS Fundamentals: Going Cloud-Native (Ongoing).

Non-Technical: Self-starter, Team player, Problem Solver, Perfectionist, Quick Learner.

LEADERSHIP & MEMBERSHIP:

- Hostel Head and Mess in Charge at Sukanta Chatrabas, CGEC (Summer 2017 - Summer 2021)
- Student Representative at CGEC (Summer 2017 - Summer 2021)
- International Association of Engineers (IAENG), Membership number: 239123, (Winter 2019 - Winter 22)
- Lions Club of Coochbehar Samarpan, (Summer 2020 - Summer 2021)
- Tech Club, Inter College Sports Society, Debating Society and ESPERANZA-Tech Fest, CGEC, (Summer 2017 – Summer 2021)

ACADEMIC ACHIEVEMENTS:

- Qualified for 10+2 Cadet B. Tech Service Selection Board by Indian Navy at Naval Selection Board Coimbatore, Spring 2018
- Qualified for 10+2 Cadet B. Tech Service Selection Board by Indian Navy at Naval Selection Board Visakhapatnam, Autumn 2017
- Qualified for Indian and West Bengal Joint Entrance Exam (JEE MAIN & WBEE both) for Engineering Entrance, Spring 2017

ADDITIONAL WORK EXPERIENCE:

1. Social Media Reach Intern at Pouring Pounds India Private Limited, Haryana India with *Ms. Tarushi Varma* (Spring 2018)
2. Social Media Intern at Frienden Management Services Private Limited, India with *Mr. Ashish Sehra* (Winter 2018)

LANGUAGES:

English: Fluent [[Official Language of the University and High School](#)]
Bengali: Mother Tongue

Hindi: Fluent
German: Beginner

French: Beginner

HOBBIES AND OTHER INTERESTS:

Playing Cricket, Chess and Football, Participation in Webinars.

REFEREES:

Dr. Sourav De

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Relation: Research and Project guide

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Relation: Research and Project guide

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Relation: Faculty of 4 Courses