Shouvik Paul

B.tech in Computer Science and Engineering
Cooch Behar Government Engineering College

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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.

RESEARCH INTERESTS:

Machine Learning, DL, Computer Vision, Imaging, Signal Processing, Big Data, AI, Robotics, Human-Computer Interaction, Software Development, Data Science.

EDUCATION:

Bachelors Of Technology in Computer Science and Engineering, (Summer 2017 – Summer 2021)
- Cooch Behar Government Engineering College, Maulana Abul Kalam Azad University of Technology (MAKAUT), WB, India
- Formerly, West Bengal University of Technology (WBUT)
- Instruction Medium : English, WHED: IAU-021193, Division : 1st Division, CGPA: 7.85 (till 6th Sem)

Higher Secondary Education (12th Std.), (Spring 2016 - Spring 2017)
- Jodhpur Park Boys School (JPBS), West Bengal Council of Higher Secondary Education, WB, India
- Instruction Medium : English, Division : Distinction, Percentage: 81.80

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), Division : Distinction, Percentage: 90.14 (98.33% in all 3 science subjects, 7th in School)

AWARDS AND HONORS:

- **Research Fellowship**, Ogive Technology LLP, India (2021)
- **Undergraduate Research Grant**, Cooch Behar Government Engineering College, 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. **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.*

2. 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.*

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. 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

5. Shouvik Paul, Sourav De, Sandip Dey, "**Multi-level Image Segmentation using Black Widow Optimization Algorithm**" (In Progress).

6. Shouvik Paul, Sourav De, Sandip Dey, "**Performance of Modified Inertia Weight Based PSO Algorithm on Benchmark IEEE CEC 2017 And Multi- Dimentional Dataset**" (In Progress).

7. Shouvik Paul, Sourav De, Sandip Dey, "**Underwater Image Enhancement Based on Multi-Level Contrast Stretching Via Bio-Inspired Algorithm**" (In Progress).

8. Shouvik Paul, Sourav De, Sandip Dey, "**Image Clustering and Data Analysis Using an Quantum Based PSO-Kmeans Hybrid Algorithm**" (In Progress).

RESEARCH EXPERIENCE:

1. Ogive Technology LLP, Telangana, India (Ongoing, started Winter 2021)
- Software Engineer Intern in *Computer Vision and Image Processing*
- Working On: **Various Live Projects in Computer Vision, Machine Learning, Image and Video Processing. Made a Facial Recognition System which is already deployed to the customer. Developed an AI based security and surveillance system for attendance monitoring, visitor management, intruder detection. Working on AI based Ortho Diagnostic Solution to detect whether a given MRI image-set has a fracture or not. Along with that I have also worked on Virtual Assistance where I have created a complex Query for fetching data from MangoDB and also worked on React JS, Javascript, CSS and HTML.**

2. Cooch Behar Government Engineering College (CGEC), West Bengal, India (Ongoing, started Spring 2018)
- Undergraduate Research Assistant with *Prof. Dr. Sourav De.*
- Research Topic: **Machine Learning, Soft Computing and Deep Learning. Already developed various nature-inspired evolutionary algorithms to perform data clustering, image processing, image enhancement, image segmentation and other engineering optimization tasks.**

3. Xavier Institute of Social Service (XISS), Jharkhand, India (Summer 2019)
- Research Intern with *Prof. Dr. Rik Das.*
- Title: **Multi-dimensional Clustering Using Modified Particle Swarm Optimization.** (Index Terms: ML, Soft Computing, Meta-heuristic, PSO, Clustering, DL etc.)

4. Indian Institute of Technology Patna (IIT Patna), Bihar, India (Winter 2019)

- Research Intern with *Prof. Dr. Sriparna Saha.*
- Title: **Attention Based Convolutional Neural Network to Predict Protein–Protein Interactions.** (Index Terms: DL, PyTorch, Theano, Attention, PPI, CNN etc.)

5. Jalpaiguri Government Engineering College, West Bengal, India (Summer 2018)

- Research Intern with *Prof. Mr. Chinmoy Ghosh.*
- Title: **Iris Flower Data and Image Classification using Convolution Neural Network.** (Index Terms: Classification, DL, Tensorflow, Keras, NN, ANN, CNN etc.)

ACADEMIC PROJECTS:

1: Streaming Data Analysis using PySpark and Apache.
- ***Cooch Behar Government Engineering College****, India, Winter 2021 - Present;* **Supervisor:** *Prof. Mr. Sukhendu Shekhar Mondal*
- This is a team project. Here, we are using Hadoop, PySpark and Apache kafka.

2: Performance Of PDD-IW Based PSO Algorithm On Benchmark IEEE CEC 2017 And Multi-Dimensional Dataset.
- ***Cooch Behar Government Engineering College****, India, Autumn 2020;* **Supervisor:** *Prof. Dr. Sourav De and Prof. Dr. Sandip Dey*
- A PDD-IW Based PSO Algorithm is proposed and the proposed method has been evaluated over CEC 2017 benchmark functions, 25 basic benchmark objective functions and several standard engineering problems.

3: Data Clustering Using Quantum Inspired PSO Based Fuzzy C–Means Clustering Algorithm.
- ***Cooch Behar Government Engineering College****, India, Summer 2020;* **Supervisor:** *Prof. Dr. Sandip Dey and Prof. Dr. Sourav De*
- Addresses the problem regarding pre-mature convergence of solutions due to improper initialization.
- Modification of Particle Swarm Optimization (PSO) algorithm to enhance the accuracy and to reduce the convergence time. A Quantum Inspired Particle Swarm Optimization Algorithm is proposed to boost the performance of engineering problems.

4: Underwater Image Enhancement by Contrast Stretching and Modified Artificial Bee Colony (MABC).
- ***Cooch Behar Government Engineering College****, India, Spring 2020-Summer 2020;* **Supervisor:** *Prof. Dr. Sourav De and Prof. Dr. Sandip Dey*
- 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.
- Artificial Bee Colony (ABC) algorithm has been modified to enhance the visibility of the underwater images.

5: Image Clustering Using Hybrid PSO Algorithm and ABC Algorithm.
- ***Cooch Behar Government Engineering College****, India, Winter 2020;* **Supervisor:** *Prof. Dr. Sandip Dey*
- These algorithms are directly used for image clustering to achieve the best accuracy.

6: Graphical 3D View of Underground Water Level for Better Harvesting.
- ***Cooch Behar Government Engineering College****, India, Autumn 2019-Winter 2020;* **Supervisor:** *Prof. Mr. Somen Mondal*
- Build a model to predict the underground water level and also built a graphical 3D view of underground water level.

7: Neighbourhood Based Bi-Level Contrast Adjustment for Underwater Image Enhancement Using Modified Particle Swarm Optimization.
- ***Cooch Behar Government Engineering College****, India, Autumn 2019;* **Supervisor:** *Prof. Dr. Sourav De and Prof. Dr. Sandip Dey*
- Modified Particle Swarm Optimization algorithm has been applied over image datasets to know the most suitable pixel intensity range.

8: Image Contrast Enhancement using BPSO Algorithm.
- ***Cooch Behar Government Engineering College****, India, Summer 2019-Autumn 2019;* **Supervisor:** *Prof. Dr. Sourav De*
- Image enhancement via contrast adjustment through Conventional Particle Swarm Optimization (PSO) algorithm.

9: Banking Management System.
- ***Cooch Behar Government Engineering College****, India, Summer 2019;* **Supervisor:** *Prof. Mr. Sukhendu Shekhar Mondal*
- Built a model Banking Application. This application provides employees to perform banking transaction, manage customer accounts in efficient manner.

10: Data Clustering by an Improved Particle Swarm Optimization Based K–Means Clustering Algorithm.
- ***Cooch Behar Government Engineering College****, India, Spring 2019-Summer 2019;* **Supervisor:** *Prof. Dr. Sourav De and Prof. Dr. Sandip Dey*
- Modification of Particle Swarm Optimization (PSO) algorithm 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.

11: Flight Reservation System: Indiana Aerolinea.
- ***Cooch Behar Government Engineering College****, India, Spring 2019;* **Supervisor:** *Prof. Dr. Sourav De*
- Built a software which is based on Flight Reservation System.

12: Security System Solutions using Web Controlled Home Automation.
- ***Cooch Behar Government Engineering College****, 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, Uttar Pradesh, India.
Paper Presentation, Title: *A New Approach of Data Clustering Using Quantum Inspired Particle Swarm Optimization Based 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 Modified Particle Swarm Optimization.*

- **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 Modified Artificial Bee Colony.*

- **International Conference on Electronics, Computing and Communication Technologies, CONECCT 2020**, Bangalore, India.
Paper Presentation, Title: *A Novel Approach of Data Clustering Using an Improved Particle Swarm Optimization Based K-Means Clustering Algorithm.*

- **Seminar,** Autumn 2020, Department of CSE, Cooch Behar Government Engineering College, West Bengal, India.
Talk, Title: *Solution of Engineering Optimization Problems by Black Widow Optimization Algorithm.*

- **Robotics & Internet of Things**, Conducted by Technophilia Solutions, Winter 2018, Indian Institute of Technology Bhubaneswar (IIT BBS), India.

- **Android App Development**, Conducted by Kard India, Autumn 2017, CGEC, West Bengal, India,

- **DST- Inspire Internship Science Camp**, Govt. of India, Winter 2016, University of Engineering and Management (UEM), Kolkata, India.

IMPORTANT COURSES AND SKILLS:

Computer Skills:

Programming Languages: Python, MATLAB, C, C++, Java, PHP, SQL, JavaScript, HTML & CSS, Bootstrap, Visual Basic.NET.
Operating System: Linux and Windows.
Tools: MS Word, MS Excel, PowerPoint, MS Access, LibreOffice, LaTeX, OneNote, Visual Studio, VS Code, PyCharm, GitHub, Git, Jupyter Notebook.
Libraries / Framework: Scikit-learn, TensorFlow, Keras, PyTorch, SciPy, NumPy, Seaborn, Pandas, Matplotlib, Theano, OpenCV, Flask etc.

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 etc.

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, MangoDB, Web Development, CorelDraw, Adobe PhotoShop etc.

Certifications: Programming with Python, Web Development, Artificial Intelligence with Python by CS50, Artificial Intelligence by CrashCourse, Machine Learning, Computer Vision, Image and Video Processing, Neural Networks and Deep Learning, Introduction to Data Science in Python, Fundamentals of Scalable Data Science by IBM, AWS Fundamentals: Going Cloud-Native (Ongoing).

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

MEMBERSHIP:

- International Association of Engineers (IAENG), Membership number: 239123, Since Winter 2019
- Lions Club of Coochbehar Samarpan, Since Summer 2020
- Tech Club (GEEX) -CGEC, Since Summer 2017
- Inter College Sports Society, Debating Society – CGEC, Since Autumn 2017
- ESPERANZA – CGEC's Tech Fest, Since Spring 2018

LEADERSHIP:

- Hostel Head and Mess In Charge at Sukanta Chatrabas, CGEC (Summer 2017- Summer 2021)
- Student Representative at CGEC (Summer 2017- Summer 2021)

ACADEMIC ACHIEVEMENTS:

- Qualified for 10+2 Cadet B. Tech Service Selection Board (SSB) by Indian Navy at Naval Selection Board Coimbatore (NSB Coimbatore), Spring 2018
- Qualified for 10+2 Cadet B. Tech Service Selection Board (SSB) by Indian Navy at Naval Selection Board Visakhapatnam (NSB Visakhapatnam), Autumn 2017
- Qualified for Joint Entrance Examination Main (JEE MAIN) for Engineering Entrance, Spring 2017
- Qualified for West Bengal Joint Entrance Examination (WBJEE) For Engineering Entrance, Spring 2017

COMMUNITY INVOLVEMENT:

Volunteer, Lions Club of Coochbehar Samarpan, Dist. 322F, Coochbehar, India.
• Conducted lecture and tutorial sessions for underprivileged children for Class XII exams and Entrance Exams. Assisted in student transition from lecture-based to peer-to-peer learning model; identified focus areas in academics. Visited terminally ill patients and provided them moral and monetary support through Lions Club of Coochbehar Samarpan.

ADDITIONAL WORK EXPERIENCE:

1. Pouring Pounds India Private Limited, Haryana India, Spring 2018
• Social Media Reach Intern with ***Ms. Tarushi Varma,*** Title: "*Social Media Reach & Followership*", Organised several campaigns on social media to promote several products and to enhance the sales of the company.

2. Frienden Management Services Private Limited, India**,** Winter 2018
• Social Media Intern with ***Mr. Ashish Sehra,*** Title: "*Social Media Influencer*", Influenced many people by organizing several campaigns and promoted several products given by the Frienden Management Services Private Limited on social media platform.

3. CGEC Hostel Student Superintendent, Student Hostel Services, Sukanta Chatrabas, CGEC, West Bengal India (Ongoing, started Autumn 2019)
• Hostel Management : Communicate with new CGEC students from different places prior to their arrival; advise and assist them. Register students/staff/guest online, assign multiple students to hostels, room allocation, repairs & maintenance management etc.
• Mess Management : Create menu items & prices, control the cost & run the mess efficiently. Access student information including mess joining, change & discontinuation, hostel room etc.

LANGUAGES:

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

References Available Upon Request