

Soumyaratna Debnath

Final Year Postgraduate (M.Tech)
Department of Computer Science and Engineering
Indian Institute of Technology (IIT) Gandhinagar

debnathsoumyaratna@iitgn.ac.in
+91 8436216585

[Homepage](#) | [Google Scholar](#) | [LinkedIn](#)

Educational Qualification

DEGREE	INSTITUTION	CPI / CGPA	YEAR
M.Tech W&S (CSE)	IIT Gandhinagar, Gandhinagar, India	9.67 / 10	2022-2025
B.Tech (CSE)	CGEC, West Bengal, India	9.34 / 10	2018-2022
Class XII	APS Binnaguri, West Bengal, India	92.6 %	2018
Class X	APS Binnaguri, West Bengal, India	10 / 10	2016

Experiences

- Researcher at CVIG Lab, IIT Gandhinagar** Mar 2024 – Present
Serving as a *Project Fellow* at the Computer Vision, Imaging, and Graphics (CVIG) Lab, IIT Gandhinagar, under the mentorship of [Dr. Shanmuganathan Raman](#). I have contributed to the *Smart Farming* project with Larsen & Toubro Technology Services and the *Smart City Initiative* under the AI Centre of Excellence (AICoE), Ministry of Education, Government of India.
- Software Developer at IMS, IIT Gandhinagar** Aug 2022 – Feb 2024
Developed and maintained modules of the Institute Management System (IMS), an ERP solution for IIT Gandhinagar, to streamline operations across departments and facilities.
- Research Intern, Department of CSE, CGEC, West Bengal** Sept 2020 – Feb 2022
Conducted research on soft computing and meta-heuristics-based algorithms for multi-level image segmentation and thresholding. These works were concluded in two conference publications and a book chapter.

Publications and Projects

- RASP: Revisiting 3D Anamorphic Art for Shadow-Guided Packing of Irregular Objects**
[Conference on Computer Vision and Pattern Recognition \(CVPR\) 2025](#)
Soumyaratna Debnath, Ashish Tiwari, Kaustubh Sadekar and Shanmuganathan Raman
- ScribGen: Generating Scribble Art through Metaheuristics**
[ACM SIGGRAPH Asia 2024 Art Papers](#)
Soumyaratna Debnath, Ashish Tiwari and Shanmuganathan Raman
- L3D-Pose: Lifting Pose for 3D Avatars from a Single Camera in the Wild**
[IEEE International Conference on Acoustics, Speech, and Signal Processing \(ICASSP\) 2025](#)
Soumyaratna Debnath, Shashikant Verma, Harish Khatti, and Shanmuganathan Raman
- STEP: Simultaneous Tracking and Estimation of Pose for Animals and Humans**
[Under proceedings of Transactions on Pattern Analysis and Machine Intelligence \(TPAMI\)](#)
Shashikant Verma, Harish Khatti, **Soumyaratna Debnath**, Yamuna Swami and Shanmuganathan Raman
- Modified Harris Hawk Optimization Algorithm for Multi-level Image Thresholding**
[Published as a Chapter in Hybrid Computational Intelligent Systems](#)
Soumyaratna Debnath, Abhirup Deb, Sourav De, Sandip Dey
- A New Modified Red Deer Algorithm for Multi-level Image Thresholding**
[2020 Fifth International Conference on Research in Computational Intelligence and Communication Networks](#)
Sourav De, Sandip Dey, **Soumyaratna Debnath**, Abhirup Deb

Research and Projects

1. **Shadow Guided Optimal Packing and Assembly of General 3D Shapes.** Developed a differentiable rendering based novel approach for optimizing the packing of arbitrarily shaped objects by analyzing shadows cast from different angles and extending this technique to guide the precise assembly of broken objects.
2. **AI-powered Traffic Management Solutions for Sustainable Cities.** Worked on an AI-powered traffic management solution, *IndAI*Nagar, to monitor urban traffic using CCTV in Indian settings. The project was undertaken by the AI Centre of Excellence (AICoE) under the Ministry of Education, Government of India.
3. **Analysis of Cotton Crop Fields using Aerial Imagery.** Leveraged drone-captured imagery to monitor and analyse cotton crops in agricultural fields. The initiative was carried out in collaboration with L&T Technology Services.
4. **Simultaneous Tracking and Estimation of Pose for Animals and Humans.** Conducted research to develop a novel transformer-based architecture for simultaneously tracking and estimating poses in primates for wildlife monitoring and behavioural studies. The research was in collaboration with [Dr. Harish Katti](#) from the Laboratory of Neuropsychology (LN), National Institute of Mental Health (NIMH), United States.
5. **L3D-Pose.** The research involved lifting 2D poses to 3D using an Attention-driven MLP architecture and accurately retargeting them onto 3D avatars; in collaboration with [Dr. Harish Katti](#), NIMH, United States.

Achievements

1. Offered the Director's Fellowship at IIT Gandhinagar – the most prestigious fellowship awarded to a master's student continuing into a PhD at the institute.
2. Finalist for the [Qualcomm Innovation Fellowship India 2024-25](#) for the project proposal titled “*Shadow Guided Optimal Packing and Assembly of General 3D Shapes*”.
3. Granted a Copyright from the Government of India for the software project “*Picrypt It*”, which introduces an innovative method for embedding password-protected texts within colour images.
4. Qualified National Eligibility Test (NET) 2024 (96.43 percentile) and GATE 2022 (96.11 percentile)
5. Awarded the Chairman Medal of Excellence for extraordinary academic performance from APS Binnaguri – 2018.
6. Awarded Certificate of Merit from the Central Board of Secondary Education for outstanding academic performance (a perfect 10 CGPA) in the All-India Secondary School Examination 2016.