Argha Sen

Department of CSE, IIT Kharagpur | arghasen10@gmail.com | +91-9733909220

https://arghasen10.github.io/ | https://www.linkedin.com/in/arghasen10/ | github.com/arghasen10

Research Experiences

- Skilled in **FMCW signal processing** and **mmWave sensing** in automotive and human-centric environments.

- Skilled in **Hardware prototyping** & **UAV systems** including circuit design, control, RF communication.

- Skilled in **5G network optimization** & **Energy Modeling** using ns-3 for energy-efficient cellular systems.

Education

1. **Indian Institute of Technology Kharagpur**   *Jan 2021 – Dec 2025*
   Doctor of Philosophy (Ph.D.), Dept. of CSE, Ph.D. Advisor: Dr. Sandip Chakraborty

2. **National Institute of Technology Durgapur**   *Aug 2016 – Jun 2020*
   Bachelor of Technology (BTech), Department of Electronics and Communication Engineering, CGPA: 8.97

3. **Jawahar Navodaya Vidyalaya, Birbhum**   *2016*
   Higher Secondary School, Central Board of Secondary Education (CBSE), Percentage: 95.4

4. **Jawahar Navodaya Vidyalaya, Birbhum**   *2014*
   Secondary School, Central Board of Secondary Education (CBSE), CGPA: 9.8

Internships and Student Exchange

Research Intern, Nokia bell Labs, Cambridge, UK   Jun 2025 - Aug 2025
- Worked with the Device Forms team in the Pervasive Systems Department at Nokia Bell Labs in Cambridge, UK. The objective of the internship was to design an earable platform for hearing loss assessment.

DAAD-DST Research Exchange Programme, University of Bremen, Germany   Dec 2024 - Jan 2025
- Visited the Computer Architecture research Group at the University of Bremen, Germany as part of an Indo-German DST-DAAD project under Prof. Rolf Drechsler.

Visiting Postgraduate Research Student, SMU, Singapore   Aug 2023 - Feb 2024
- Visited the School of Computing and Information Systems, SMU, under Prof. Archan Misra. The objective of the internship was to develop a biometric authentication system using high-frequency eye movement features captured by an event camera.

Summer Research Intern, Integrated Test Range, Chandipur, DRDO, Govt. of India   May 2019 - July 2019
- The objective of the internship was to develop 3D tracking and geo-localization of a target using UAVs.

Summer Intern, Criotam Technologies PVT LTD, Bangalore   May 2018 - July 2018
- Designed three IoT prototypes for Sports Authority of India. (Starting Block, Force Plate, Timing Gates).

Publications

Patents

1. Soham Chakraborty, Soham Tripathy, Anamika Tiwari, **Argha Sen**, Sandip Chakraborty. "**A hand-held device for navigation of visually impaired individuals.**". India Patent Application: 202531074243A, filed 4th August 2025.

2. **Argha Sen**, Anirban Das, Sandip Chakraborty "**A system for in-vehicle passive monitoring of driver behaviors.**". India Patent Application: 202431015618, filed 2nd February 2024.

Peer-Reviewed Journals

1. **Argha Sen**, Nuwan Bandara, Ila Gokarn, Thivya Kandappu, Archan Misra. "**EyeTrAES: Fine-grained, Low-Latency Eye Tracking via Adaptive Event Slicing.**" *ACM IMWUT*, Vol. 8, No. 4, Article 150, December 2024 **(Q1 Journal)**.

2. **Argha Sen**, Avijit Mandal, Prasenjit Karmakar, Anirban Das, Sandip Chakraborty. "**Passive Monitoring of Dangerous Driving Behaviors Using mmWave Radar.**" *Elsevier Pervasive and Mobile Computing (PMC)*, Vol. 103, Article 101949, October 2024 **(Q1 Journal)**.

3. Basabdatta Palit, **Argha Sen**, Abhijit Mondal, Ayan Zunaid, Jay Jayatheerthan, Sandip Chakraborty. "**Improving UE Energy Efficiency through Network-aware Video Streaming over 5G.**" *IEEE Transactions on Network and Service Management (TNSM)*, Vol. 20, No. 3, September 2023 **(Q1 Journal)**.

4. Praveen Kumar Sharma, Bidyut Dalal, Ananya Mondal, **Argha Sen**, Amartya Banerjee, Sandip Mondal, Tanmay De, Sujoy Saha. "**Indoor Air Sensing: A Study in Cost, Energy, Reliability and Fidelity in Sensing.**" *Sensing and Imaging*, Springer, Vol. 24, Article 7, 2023 **(Q3 Journal)**.

Conferences (Main Track)

1. Tirthankar Halder*, **Argha Sen***, Swadhin Pradhan, Rijurekha Sen, Sandip Chakraborty. "**MIRO: Multi-radar Identity and Ranging for Occupational safety.**" Accepted in *ACM/IEEE SenSys*, 2026. **(*Equal Contribution, Core A*)**

2. **Argha Sen**, Soham Chakraborty, Soham Tripathy, Sandip Chakraborty. "**RadarTrack: Enhancing Ego-Vehicle Speed Estimation with Single-chip mmWave Radar.**" *IEEE SmartComp*, 2025, Cork, Ireland. [GitHub] [Teaser] [Blog]

3. Rajib Sarkar, **Argha Sen**, Sandip Chakraborty. "**CarVision: Vehicle Ranging and Tracking Using mmWave Radar for Enhanced Driver Safety.**" *IEEE PerCom*, 2025, Washington DC, USA. [GitHub] [Teaser] [Blog] **(Core A*)**

4. **Argha Sen**, Bhupendra Pal, Seemanth Achari. "**SmartMME: Implementation of Base Station Switching Off Strategy in ns-3.**" *IEEE ANTS*, 2024, Guwahati, India. [GitHub] [Blog]

5. Nuwan Bandara, Thivya Kandappu, **Argha Sen**, Ila Gokarn, Archan Misra. "**EyeGraph: Modularity-aware Spatio Temporal Graph Clustering for Continuous Event-based Eye Tracking.**" *NeurIPS Datasets and Benchmarks Track*, 2024, British Columbia, Canada. [GitHub] [Blog] **(Core A*)**

6. **Argha Sen**, Anirban Das, Swadhin Pradhan, Sandip Chakraborty. "**Continuous Multi-user Activity Tracking via Room-Scale mmWave Sensing.**" *ACM/IEEE IPSN*, 2024, Hong Kong. [GitHub] [Teaser] [Blog] **(Core A*)**

7. **Argha Sen**, Avijit Mandal, Prasenjit Karmakar, Anirban Das, Sandip Chakraborty. "**mmdrive: mmWave Sensing for Live Monitoring and On-Device Inference of Dangerous Driving.**" *IEEE PerCom*, 2023, Atlanta, USA. [GitHub] [Teaser] [Blog] **(Core A*)**

8. **Argha Sen**, Anirban Das, Prasenjit Karmakar, Sandip Chakraborty. "**mmAssist: Passive Monitoring of Driver's Attentiveness Using mmWave Sensors.**" *IEEE COMSNETS*, 2023, Bangalore, India. [GitHub]

9. **Argha Sen**, Ayan Zunaid, Soumyajit Chatterjee, Basabdatta Palit, Sandip Chakraborty. "**Revisiting Cellular Throughput Prediction: Learning *in-situ* for Multi-device and Multi-network Considerations for 5G.**" *EWSN*, 2023, Rende, Italy. [GitHub] [Blog] **(Core B)**

Conferences (Posters/Workshops/Demos)

1. Arup Sau, **Argha Sen**, Sandip Chakraborty. "**Sparse-to-Dense Wall Mapping with Beamsteered mmWave Sensing and GAN Upsampling**". Accepted in *IEEE PerCom WIP*, 2026, Pisa, Italy **(Core A*)**.

2. **Argha Sen**, Soham Chakraborty, Soham Tripathy, Sandip Chakraborty. "**Beyond Doppler: Demonstrating Phase-Based Ego-Speed Estimation on Embedded mmWave Radar**". *IEEE SmartComp Demos*, 2025, Cork, Ireland.

3. Rajib Sarkar, **Argha Sen**, Sandip Chakraborty. "**mmTraffic : Live In-car Traffic Monitoring using mmWave Sensing**". *IEEE PerCom WIP*, 2025, Washington DC, USA **(Core A*)**.

4. Deepraj Das, Soumik Mandal, Ashutosh Golande, **Argha Sen**, Sandip Chakraborty. "**mmWave Based User Identification using Gait Signatures**". *COMSNETS Posters*, 2025, Bangalore, India.

5. **Argha Sen**, Amrta Chaurasia, Avijit Mandal, Sandip Chakraborty. "**Capturing Human Emotion Pervasively using COTS mmWave Radar**". *ACM COMPASS Posters*, 2024, Delhi, India.

6. **Argha Sen**, Soham Chakraborty, Soham Tripathy, Sandip Chakraborty. "**Poster: Dynamic Ego-Velocity estimation Using Moving mmWave Radar: A Phase-Based Approach**". *ACM MobiSys Posters*, 2024, Tokyo, Japan **(Core A*)**.

7. **Argha Sen**, Anirban Das, Swadhin Pradhan, Sandip Chakraborty. "**Demo Abstract: *MARS* -An mmWave-based Multi-user Activity Tracking Solution**". *ACM/IEEE IPSN Demos*, 2024, Hong Kong **(Core A*)**.

8. **Argha Sen**, Sashank Bonda, Jay Jayatheerthan, Sandip Chakraborty. "**Implementation of mmWave-energy Module and Power Saving Schemes in ns-3**". *WNS3 2022*.

9. **Argha Sen**, Sashank Bonda, Jay Jayatheerthan, Sandip Chakraborty. "**An ns3-based Energy Module for 5G mmWave Base Stations**" *IEEE INFOCOM Posters*, 2022 **(Core A*)**.

10. **Argha Sen**, Abhijit Mondal, Basabdatta Palit, Jay Jayatheerthan, Krishna Paul, Sandip Chakraborty. "**An ns3-based Energy Module of 5G NR User Equipments for Millimeter Wave Networks**" *IEEE INFOCOM Posters*, 2021 **(Core A*)**.

Technical Skills

1. **Hardware Platforms** - Raspberry Pi, Jetson Nano, ESP32, Arduino, UDOO Neo, TI mmWave Radars.

2. **Languages** - Python, C/C++, RUST, Java, Javascript.

3. **Tools and Frameworks** - Tensorflow, PyTorch, Matlab, Git, Android Studio, MmWave Studio, ns-3, Mininet.

Awards and Recognitions

- Recipient of DAAD-DST Joint Project hosted by Prof Rolf Drechsler at the University of Bremen.

- Secured $15,883$ Rank in JEE Main 2016, out of $12,07,058$ applicants all over India (98.68 percentile).

- District Topper in Central Board of Higher Secondary Examination (CBHSE).

- 1st Position in multiple IoT Hackathons organized in NIT Durgapur Techincal Fests such as Aarohan, Aavishkar.

- Received the Best Project Award at ITR Chandipur, DRDO, during the Summer Internship 2019.

- Recipient of the Samsung Star Scholarship, awarded during B.Tech based on CBSE Class XII performance (JNV).

Travel Grants

- Recipient of COMSNETS Student Travel Grant for attending COMSNETS 2025.

- Recipient of ACM COMPASS Travel Grant for attending ACM COMPASS 2024, ACM MobiSys Student Travel Grant for ACM MobiSys 2024 and ACM IARCS Travel Grant 2024 for attending ACM/IEEE IPSN 2024.

- Recipient of COMSNETS LRN Travel Grant and ACM IARCS Travel Grant for attending IEEE PerCom 2023 and COMSNETS Student Travel Grant for attending COMSNETS 2023.

- Recipient of IEEE INFOCOM Travel Grant for attending IEEE INFOCOM 2021.

Teaching Assistanship

1. **Ubiquitous Computing** - Autumn 2024-25 (Instructor: Dr. Sandip Chakraborty).

2. **Computer Networks** - Spring 2024-25, Spring 2022-23 (Instructors: Dr. Sandip Chakraborty, Prof. Aurobinda Gupta)

3. **Advances in Operating Systems** - Autumn 2022-23 (Instructor: Dr. Sandip Chakraborty)

4. **Programming and Data Structures** - Autumn 2021-22, Spring 2021-22 (Instructors: Dr. Sandip Chakraborty, Dr. Debasish Samanta)

Student Mentoring

1. **Soham Chakraborty and Soham Tripathy (IIT Kharagpur);** Phase-based ego-velocity estimating using mmWave radar. Co-authored publications in *ACM MobiSys Posters 2024, IEEE SmartComp 2025*.

2. **Bhupendra Pal and Seemant Achari (IIT Kharagpur);** Implementation of Energy Efficient Base Station Switching Off in next-generation BS using ns-3. Co-authored publications in *IEEE ANTS 2024*.

3. **Avijit Mandal and Amrta Chaurasia (IIT Kharagpur);** Capturing Human Emotion Pervasively using COTS mmWave Radar. Co-authored publication in *ACM COMPASS Posters 2024*.

4. **Sashank Bonda (IIT Kharagpur);** Application aware power state switching for 5G mmWave gNodeBs. Co-authored publication in *WNS-3 2022*.