Dr. Gourav SIDDHAD

Postdoctoral Fellow (Science Tokyo)

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Research Interests: Brain-Computer Interface (BCI) | Electroencephalography (EEG) | Cancelable Biometrics | Deep Learning | Image Processing

Educational Qualifications

April 2025 – August 2020 — **Ph.D. (CSE), Indian Institute of Technology, Roorkee**
- Thesis - Towards Human Behavior Prediction using EEG: Analyzing Cognitive Workload and Emotional Responses
- Supervisor - Dr. Partha Pratim Roy (Associate Professor, IIT Roorkee)

Brain-Computer Interface | Deep Learning | EEG | Image Processing | Python

August 2020 – July 2018 — **M.Tech. (CSE), PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur**
- Thesis - Cancelable Biometric Templates for Low-End Devices
- Supervisor - Dr. Pritee Khanna (Professor, PDPM IIITDM Jabalpur)

Cancelable Biometrics | Deep Learning | Image Processing | Python

May 2017 – July 2013 — **B.Tech. (CSE), Hansraj College, University of Delhi, Delhi**

C++ | Java | Android

April 2013 – July 2012 — **AISSCE, CBSE, Emerald Heights International School, Indore**
- Certificate of Excellence (Best in Computer Science)

C | C++

Experience

Present – July 2026 — **Postdoctoral Fellow, Yoshimura Lab, Institute of Science Tokyo, Japan (NICT International Exchange Fellowship)**
PDF under Prof. Natsue Yoshimura and Dr. Laura Alejandra Martinez-Tejada

Brain-Computer Interface

July 2026 – January 2026 — **Postdoctoral Fellow, HAIx Lab, IIT, Gandhinagar**
PDF under Dr. Yogesh Kumar Meena (Assistant Professor, CSE, IIT Gandhinagar)

Brain-Computer Interface

Teaching

September 2024 – August 2020 — **Teaching Assistant, IIT, Roorkee**
- Faculty TA & Subject Courses (SQL, AI, Data Science, Data Structure, Algorithms, Compiler)
- Certificate Course on Big Data Analytics for ITS Officers | Apr'24
- Certificate Program in Machine Learning (CPML) [Times TSW] | Dec'21 - Mar'22

Machine Learning | Deep Learning

July 2020 – July 2018 — **Teaching Assistant, PDPM IIITDM, Jabalpur**

Algorithms | C | Data Structures | DBMS | HTML | Java | SQL

Publications

6 journal articles (4 Q1) · 6 conference papers · 1 preprint

Preprint — **Gourav Siddhad**, Juhi Singh, and Partha Pratim Roy. **MECASA: Motor Execution Classification using Additive Self-Attention for Hybrid EEG-fNIRS Data.** arXiv preprint, 2025. 10.48550/arXiv.2501.05525

Conference [Core B] — **Gourav Siddhad** and Yogesh Kumar Meena. **SwitchBraidNet: Quantisation-Aware Lightweight Architecture for Hybrid Brain-Computer Interface.** IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2026 (Accepted).

Journal [Q1] — **Gourav Siddhad**, Anurag Singh, Rajkumar Saini, and Partha Pratim Roy. **Modified TSception for Analyzing Driver Drowsiness and Mental Workload from EEG.** Springer Neural Computing and Applications, 2026. 10.1007/s00521-026-12086-z

Journal [Q1—IF:6.7] — **Gourav Siddhad**, Masakazu Iwamura, and Partha Pratim Roy. **Enhancing EEG Signal-based Emotion Recognition with Synthetic Data: Diffusion Model Approach**. IEEE Transactions on Artificial Intelligence, 2025. 10.1109/TAI.2025.3641576

Conference [Core B] — **Gourav Siddhad**, Sayantan Dey, and Partha Pratim Roy. **DrowzEE-G-Mamba: Leveraging EEG and State Space Models for Driver Drowsiness Detection**, 27th International Conference on Pattern Recognition (ICPR), 2024. 10.1007/978-3-031-78398-2_19

Conference [Core B] — **Gourav Siddhad**, Sayantan Dey, Partha Pratim Roy, and Masakazu Iwamura. **Awake at the Wheel: Enhancing Automotive Safety through EEG-Based Fatigue Detection**, 27th International Conference on Pattern Recognition (ICPR), 2024. 10.1007/978-3-031-78195-7_23

Conference [Core B] — **Gourav Siddhad**, Partha Pratim Roy, and Byung-Gyu Kim. **Neural Network Meet Neural Activity: Utilizing EEG for Mental Workload Estimation**, 27th International Conference on Pattern Recognition (ICPR), 2024. 10.1007/978-3-031-78195-7_22

Journal [Q1—IF:4.9] — **Gourav Siddhad**, Anmol Gupta, Debi Prosad Dogra, and Partha Pratim Roy. **Efficacy of Transformer Networks for Classification of Raw EEG Data**, Biomedical Signal Processing and Control, 87, Part B, 105488, 2024. 10.1016/j.bspc.2023.105488

Conference — Pankaj Bamoriya, **Gourav Siddhad**, Pritee Khanna, and Aparajita Ojha. **Cancelable Template Generation Using Convolutional Autoencoder and RandNet**, International Conference on Computer Vision and Image Processing (CVIP), Springer, 363–374, 2022. 10.1007/978-3-031-11346-8_32

Journal [Q2—IF:3.4] — Pankaj Bamoriya, **Gourav Siddhad**, Harkeerat Kaur, Pritee Khanna, and Aparajita Ojha. **DSB-GAN: Generation of Deep Learning based Synthetic Biometric Data**, Displays, 74, 102267, 2022. 10.1016/j.displa.2022.102267

Journal [Q2—IF:1.0] — **Gourav Siddhad** and Pritee Khanna. **Max-Min Threshold based Cancelable Biometric Templates for Low-end Devices**, Journal of Electronic Imaging, 31(3), 033025, 2022. 10.1117/1.JEI.31.3.033025

Journal [Q1—IF:3.5] — Anmol Gupta, **Gourav Siddhad**, Vishal Pandey, Partha Pratim Roy, and Byung-Gyu Kim. **Subject-Specific Cognitive Workload Classification Using EEG-Based Functional Connectivity and Deep Learning**, MDPI Sensors, 21(20):6710, 2021. 10.3390/s21206710

Conference — **Gourav Siddhad**, Pritee Khanna, and Aparajita Ojha. **Cancelable Biometric Template Generation Using Convolutional Autoencoder**, International Conference on Computer Vision and Image Processing (CVIP), Springer, 303-314, 2021. 10.1007/978-981-16-1086-8_27

Projects

January 2023 – June 2022 — **MLTRI: Multi-Lingual Text Recognition and Interpretation, IIT, Roorkee**
This project was funded by National Informatics Center (NIC) under the aegis of the Ministry of Electronics and Information Technology (MeitY), Government of India.
Python | NLP | Deep Learning

March 2020 – December 2018 — **PERBI: Privacy Enhancing Revocable Biometric Identities, PDPM IIITDM, Jabalpur**
Designed and developed a user-friendly GUI for an identity verification system employing the Random Distance Method (RDM) cancelable biometric scheme proposed by H. Kaur and P. Khanna. Successfully implemented the system on a real device. This project was funded by BRNS (BARC) under the aegis of the Department of Science and Technology, Government of India.
Python | Cancelable Biometrics | Cryptography | Raspberry Pi

Honors and Awards

July 2026 — **NICT International Exchange Fellowship** by the **National Institute of Information and Communications Technology (NICT), Japan** for postdoctoral research at Institute of Science Tokyo.

2022 — **Sakura Science Program** by the **Japan Science and Technology Agency (JST)**, 15-day research visit to Japan.

April 2021 — **IIITDMJ Proficiency Prize (Silver Medal)** during Convocation held at/by **PDPM IIITDM Jabalpur** for Best Thesis among the Post Graduate students of Computer Science and Engineering Discipline in Graduating class of 2020.

Professional Service

December 2025 | **Assistant to Associate Editor, IIT, Roorkee**
December 2023 | Assistant to Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
Machine Learning | Deep Learning | Review

Skills

Programming	**Python**, **C++**, Java, Matlab
Frameworks	**PyTorch**, Keras, Tensorflow, EEG-Lab
Deep Learning	Transformers, State-Space Models (Mamba), Diffusion Models, GANs, Autoencoders
Modalities	**EEG**, fNIRS, Biometric Images
Tools	**Visual Studio Code**, git

Outreach and Volunteering

June 2020 – July 2019 | **Student Senate, PDPM IIITDM, Jabalpur**
- Member of the Student Senate

August 2020 – July 2018 | **Volunteer, PDPM IIITDM, Jabalpur**
- ISEC 2020 (Innovations in Software Engineering Conference) | Feb'20
- DeW 2019 (Design Workshop) | Mar'19