


Gourav SIDDHAD

Research Scholar | Computer Science | IIT Roorkee


 [linkedin.com/in/gsidhdad](https://www.linkedin.com/in/gsidhdad)

 github.com/gsidhdad

 <http://gsidhdad.in>

 Indore, Madhya Pradesh, India

 g_siddhad@cs.iitr.ac.in

 +91 988-988-1607



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

EDUCATIONAL QUALIFICATIONS

Present August 2020	Ph.D., INDIAN INSTITUTE OF TECHNOLOGY, Roorkee <ul style="list-style-type: none">> Computer Science 8.57/10> Thesis - Human Behavior Prediction using EEG> 15 Days visit to Japan under Sakura Science Program 2022, sponsored by the Japan Science and Technology Agency (JST), BCI Deep Learning EEG Image Processing Python
August 2020 July 2018	M.Tech., PDPM INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DESIGN AND MANUFACTURING, Jabalpur <ul style="list-style-type: none">> Computer Science 8.3/10 CPI> Thesis - Cancelable Biometric Templates for Low-End Devices> IIITDMJ Proficiency Prize (Silver Medal for the Best Thesis among PG Students of CSE) Cancelable Biometrics Deep Learning Image Processing Python
May 2017 July 2013	B.Tech., HANSRAJ COLLEGE, University of Delhi, Delhi <ul style="list-style-type: none">> Computer Science 69.02 % C++ Java Android
April 2013 July 2012	AISSCE, CBSE, EMERALD HEIGHTS INTERNATIONAL SCHOOL, Indore <ul style="list-style-type: none">> PCM + CS 91.4 %> Certificate of Excellence (Best in Computer Science) C C++
April 2011 July 2010	AISSCE, CBSE, EMERALD HEIGHTS INTERNATIONAL SCHOOL, Indore <ul style="list-style-type: none">> 8.8/10 CGPA

DOCTORAL DISSERTATION

HUMAN BEHAVIOR PREDICTION USING EEG

AUGUST 2020 - PRESENT

IIT Roorkee

The dissertation being carried out is based on Human Behavior Estimation on EEG data using machine learning based methods. The work also includes rigorous analysis of the methods formulated and implementation of state-of-the-art work done in the field. This work is done under the guidance of Dr. Partha Pratim Roy (Associate Professor, IIT Roorkee).

BCI EEG Deep Learning

MASTER'S DISSERTATION

CANCELABLE BIOMETRIC TEMPLATES FOR LOW-END DEVICES

DEC 2018 - AUGUST 2020

PDPM IIITDM Jabalpur

The dissertation carried out is summarized as cancelable biometric template generation for unimodal and multimodal biometric authentication using traditional as well as deep learning based methods for low-end devices. The work also includes rigorous analysis of the cancelable biometric schemes formulated and implementation of state-of-the-art work done in the field. This work is done under the guidance of Dr. Pritee Khanna (Professor, PDPM IIITDM Jabalpur).

Cancelable Biometrics Cryptography Image Processing Deep Learning

SKILLS

Programming	Python, C++, Java, Android, Matlab
Frameworks	PyTorch, Keras, Tensorflow, EEG-Lab
Development Tools	Visual Studio Code, IntelliJ Idea, Eclipse, git
Operating Systems	Mac OS, Windows, Linux
Other Skills	Raspberry Pi

PUBLICATIONS

Journal Submitted	Gourav Siddhad, Masakazu Iwamura, and Partha Pratim Roy. Enhancing EEG Signal-based Emotion Recognition with Synthetic Data: Diffusion Model Approach. 10.48550/arXiv.2401.16878
Conference Accepted	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. 10.48550/arXiv.2408.16145
Conference Accepted	Gourav Siddhad, Sayantan Dey, Partha Pratim Roy, and Masakuza Iwamura. Awake at the Wheel: Enhancing Automotive Safety through EEG-Based Fatigue Detection , 27th International Conference on Pattern Recognition (ICPR), 2024. 10.48550/arXiv.2408.13929
Conference Accepted	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. 10.48550/arXiv.2408.13930
Journal [Q1—IF:5.1]	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
Journal [Q2—IF:1.1]	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:3.9]	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

June 2022 January 2023	MLTRI: Multi-Lingual Text Recognition and Interpretation, IIT, Roorkee This project was funded by National Informatics Center (NIC) under the aegis of the Department of Ministry of Electronics and Information Technology, 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
December 2019 July 2019	BW2RGB: Gray to Color Image Conversion, PDPM IIITDM, Jabalpur Converts grayscale images or videos to color and enhances color fidelity using Multi-Resolution Analysis (MRA). Neural Networks Keras Python Multimedia Processing
April 2019 January 2019	Text Classification, PDPM IIITDM, Jabalpur Performed text classification on the Reuters-21768 Newswire dataset. Machine Learning Deep Learning Natural Language Processing Keras Python
April 2017 January 2017	Home of Recipes, HANSRAJ COLLEGE, UNIVERSITY OF DELHI, Delhi Developed an Android cooking recipe app featuring ingredient-based recipe search and other functionalities. Android App Java
March 2016 January 2016	Exam Paper Generator, HANSRAJ COLLEGE, UNIVERSITY OF DELHI, Delhi Develops and manages the question paper generation process, including obtaining necessary approvals from organizational heads and subject matter experts prior to exam printing. Software Engineering
March 2013 January 2013	Final Destination, EMERALD HEIGHTS INTERNATIONAL SCHOOL, Indore Keyboard and mouse-controlled game featuring eight progressively challenging levels. Turbo C++ C/C++ Graphics

EXPERIENCE

Present August 2020	Teaching Assistant, IIT, Roorkee Faculty TA SQL AI Data Science Data Structure Algorithms Compiler
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Present December 2023	Assistant to Associate Editor, IIT ROORKEE, Roorkee Assistant to Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), Machine Learning Deep Learning Review
April 2024 April 2024	Teaching Assistant, IIT ROORKEE, Roorkee Certificate Course on Big Data Analytics for ITS Officers Machine Learning Deep Learning
March 2022 December 2021	Teaching Assistant, TIMES TSW AND IIT ROORKEE, Roorkee Certificate Program in Machine Learning (CPML) Machine Learning
July 2020 July 2018	Teaching Assistant, PDPM IIITDM, Jabalpur Algorithms C Data Structures DBMS HTML Java SQL
March 2018 January 2018	Trainer, INFOZONE INFORMATICS, Indore Taught Students - Programming fundamentals, OOP concepts, and Microsoft Office C C++ Java MS-Office

CERTIFICATIONS

February 2018	GATE Score - 513 AIR - 3605
February 2017	GATE Score - 324 AIR - 14454
Mar-May 2009	Honors Diploma in C and C++
May-July 2005	Honors Diploma in Computer Application

HONORS AND AWARDS

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.
July 2013	Certificate of Merit by Central Board of Secondary Education for outstanding academic performance and being among the top 0.1 % of successful candidates of AISSCE 2013 in Computer Science

LANGUAGES

English ●●●●○
Hindi ●●●●○

STRENGTHS

- > Determined
- > Exuberant
- > Self Motivated

OUTREACH AND VOLUNTEERING

June 2020 July 2019	Student Senate, PDPM IIITDM, Jabalpur > Member of the Student Senate
February 2020	Volunteer, PDPM IIITDM, Jabalpur > ISEC 2020 (Innovations in Software Engineering Conference)
March 2019	Volunteer, PDPM IIITDM, Jabalpur > DeW 2019 (Design Workshop)
July 2012 April 2013	Prefect, THE EMERALD HEIGHTS INTERNATIONAL SCHOOL, Indore > Member of Discipline Team