

CIRRICULUM VITAE

DR. ANIRBAN DASGUPTA

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Personal Information

Date of Birth: 18th February, 1988

Gender: Male

Marital Status: Married

Permanent Address: C/o Mr. Asoke Kumar Dasgupta, Holding no. 139, Ward 01, Inda, near Sarbani Apartment, Kharagpur, West Midnapore, West Bengal, India, 721305

Research Areas

Machine Learning, Signal Processing, Image Processing

Academic Qualification

Degree	Year	Discipline	University/Institution/Board	% of marks/ CGPA
PhD	2019	Electrical Engineering	Indian Institute of Technology (IIT) Kharagpur	
MS	2014	Electrical Engineering	IIT Kharagpur	9.14
BTech	2010	Electrical Engineering	National Institute of Technology (NIT) Rourkela	8.21
12 th	2006	Science	Indian School Certificate (ISC)	89.75%
10 th	2004	General	Indian Certificate of Secondary Education (ICSE)	92.2%

Work Experience

S.No.	Positions held	Name of the Institute	From	To	Remarks
1	Assistant Professor Grade II	EEE Dept, IIT Guwahati	27-12-2021	Present day	
2	Experienced Data Scientist	Boeing India Private Limited	19-07-2021	16-11-2021	
3	Director and Chief Technical Officer	Humosys Technologies Private Limited	01-08-2017	16-07-2021	It is a start-up incubated at STEP, IIT Kharagpur, where I have worked as a cofounder, mainly as an R&D expert for product development

Teaching Experience

Regular (at IIT Guwahati):

1. Data Structures and Algorithms (Theory)
2. Data Structures and Algorithms (Laboratory)

Guest Lectures:

1. Guest Lecture on the topic, "Signal Processing and Machine Learning Approaches for Electrooculography Signals" at NIT Rourkela, 2021

2. Speaker on the topic "The Correct Approach to Machine Learning" in the Faculty Development Programme "Ability and Inability of AI" conducted by AICTE, 2021
3. Keynote speaker for impact lecture sessions on the areas of "Frugal Engineering and Social Enterprise" under the MHRD Innovation Cell Forum, 2020.
4. "Indexing and Impact Factor Analysis" in AICTE sponsored online short-term training programme on "Research Paper Writing and Publication", organized by Gandhi Institute for Technology, Bhubaneswar, 2020.
5. "Introduction to Smart Sensors" in AICTE sponsored online Faculty Development Programme, organized by the Dept. of Electrical Engineering, Gandhi Institute for Technology, Bhubaneswar, 2020.
6. Speaker on the topic "Role of Artificial Intelligence in Geriatrics" at the Indian Ageing Congress, GERICON, at All India Institute of Medical Sciences (AIIMS), New Delhi, 2017.
7. "Embedded Systems" organized by the Advanced VLSI Design Laboratory, IIT Kharagpur, 2015
8. "Professional Workshop on MATLAB" organized by the Electrical Engineering Society, IIT Kharagpur, 2015-16.

List of Journal Publications:

1. **Anirban Dasgupta**, Daleef Rehman, and Aurobinda Routray, "A Smartphone-Based Drowsiness Detection and Warning System for Automotive Drivers", IEEE Transactions on Intelligent Transportation Systems vol. 20, no. 11, pp. 4045 - 4054, 2018. [doi: 10.1109/TITS.2018.2879609]
2. Anushree Basu, **Anirban Dasgupta**, Anirud Thyagarajan, Aurobinda Routray, Rajlakshmi Guha, and Pabitra Mitra, "A Portable Personality Recognizer Based on Affective State Classification Using Spectral Fusion of Features", IEEE Transactions on Affective Computing, vol. 9, no. 3, pp. 330-342, 2018. [doi: 10.1109/TAFFC.2018.2828845]
3. Anwasha Sengupta, **Anirban Dasgupta**, Aritra Chaudhuri, Anjith George, Aurobinda Routray, and Rajlakshmi Guha, "A Multimodal System for Assessing Alertness Levels due to Cognitive Loading", IEEE in Transactions on Neural Systems and Rehabilitation Engineering, vol. 25, no. 7, pp. 1037 - 1046, 2017. [doi: 10.1109/TNSRE.2017.2672080]
4. **Anirban Dasgupta**, Anjith George, S L Happy, Aurobinda Routray, "A Vision Based System for Monitoring the Loss of Attention in Automotive Drivers," IEEE Transactions on Intelligent Transportation Systems, vol. 14, no. 4, pp. 1825-1838, 2013. [doi: 10.1109/TITS.2013.2271052]
5. **Anirban Dasgupta**, and Aurobinda Routray, "Piecewise empirical mode Bayesian estimation- A new method to denoise electrooculograms.", Biomedical Signal Processing and Control, vol. 70, pp. 102-109, 2021. [doi: 10.1016/j.bspc.2021.102945]
6. Suvodip Chakraborty, **Anirban Dasgupta**, and Aurobinda Routray, "Localization of Eye Saccadic Signatures in Electrooculograms using Sparse Representations with Data driven Dictionaries", Pattern Recognition Letters, Elsevier, vol. 139, pp. 104-111, 2020. [doi: 10.1016/j.patrec.2017.11.001]
7. Shubhobrata Bhattacharya, **Anirban Dasgupta**, and Aurobinda Routray. "Multi-directional local adjacency descriptors (MDLAD) for heterogeneous face recognition", IET Image Processing, vol. 14, no. 5, pp. 982-994, 2019.[doi: 10.1049/iet-ipr.2019.0199]
8. **Anirban Dasgupta**, Som Madhab Bhattacharya, and Aurobinda Routray, "A System for Non-contact Estimation of Cognitive Load Using Ocular Parameters based on a Serio-Parallel Computing Framework", IEEE Transactions on Cognitive and Developmental Systems, vol. 11, no. 3, pp. 450-459, 2019.[doi: 10.1109/TCDS.2019.2901024]
9. **Anirban Dasgupta**, Suvodip Chakraborty, and Aurobinda Routray, "A two-stage framework for denoising electrooculography signals", Biomedical Signal Processing and Control, Elsevier, vol. 31, pp. 231-237, 2017. [doi: 10.1016/j.bspc.2016.08.012]

10. **Anirban Dasgupta**, Anjith George, S L Happy, Aurobinda Routray, Tara Shanker "An on-board vision-based system for drowsiness detection in automotive drivers", International Journal of Advances in Engineering Sciences and Applied Mathematics, Springer, Special Issue on Advanced Traffic and Transportation Systems, vol. 5, no. 2-3, pp. 94-103, 2013. [doi: 10.1007/s12572-013-0086-2]

List of Patents

1. **Anirban Dasgupta**, Aurobinda Routray, "System and Method for Monitoring Drowsiness of One or More Operator Individuals of Industrial Equipments/Means/Process and Like", Filing No.: 201831004156 A, Filing Date: 03/02/2018, Publication Date: 09/08/2019, International classification: B60K28/00.
2. Aurobinda Routray, **Anirban Dasgupta**, Suvodip Chakraborty, Chandrasekhar Sakpal, "An apparatus for classifying the state of alertness of a locomotive pilot", Filing No.: 201831003743A, Filing Date: 01/03/2018, Publication Date: 06/09/2019, International classification: B60K28/00.
3. Aurobinda Routray, **Anirban Dasgupta**, Anjith George, S L Happy, "A System for Real Time Assessment of Level of Alertness", Filing No.: 634/KOL/2013 A, Filing Date: 30/05/2013, Publication Date: 05/12/2014, International classification: B60K28/00.

Conference Proceedings

1. Shubhobrata Bhattacharya, **Anirban Dasgupta**, Anwasha Sengupta, and Aurobinda Routray, "Interest Indices for Human Computer Interaction Applications based on Facial Image Sequences ", in the 16th IEEE India Council International Conference (INDICON), pp. 1-4, 2019.
2. **Anirban Dasgupta**, Suvodip Chakraborty, Anwasha Sengupta, and Aurobinda Routray, "Active Sensors for the Acquisition of Physiological Signals," in the 26th IEEE Sensors Conference, New Delhi, pp. 1-3, 2018.
3. Suvodip Chakraborty, **Anirban Dasgupta**, Punyashlok Dash, and Aurobinda Routray, "Development of a wireless wearable electrooculogram recorder for IoT based applications," in IEEE 26th International Symposium on Industrial Electronics (ISIE), IEEE, pp. 1991-1995, 2017.
4. **Anirban Dasgupta**, Suvodip Chakraborty, Pritam Mondal and Aurobinda Routray, "Identification of Eye Saccadic Signatures in Electrooculography Data Using Time-Series Motifs," in IEEE INDICON, pp. 1-5, 2016.
5. **Anirban Dasgupta**, Shubhobrata Bhattacharya and Aurobinda Routray, "SPECFACE - A Dataset of Human Faces Wearing Spectacles," in IEEE Students Technology Symposium, pp. 289-293, 2016.
6. Shubhobrata Bhattacharya, **Anirban Dasgupta**, Aurobinda Routray, "Robust Face Recognition of Inferior Quality Images Using Local Gabor Phase Quantization," in IEEE Students Technology Symposium, pp. 294-298, 2016.
7. **Anirban Dasgupta**, Anshit Mandloi, Anjith George and Aurobinda Routray "An Improved Algorithm for Eye Corner Detection" in IEEE International Conference on Signal Processing and Communications, pp. 1-4, 2016.
8. **Anirban Dasgupta**, Suvodip Chakraborty, Aritra Chaudhuri, Aurobinda Routray, "Evaluation of Denoising Techniques for EOG signals based on SNR Estimation", IEEE International Conference on Systems in Medicine and Biology, pp. 152-156, 2016.
9. Suvodip Chakraborty, Aritra Chaudhuri, **Anirban Dasgupta**, Aurobinda Routray, "Determining ocular gaze point fixation captured during triggered full saccades using EOG", IEEE International Conference on Systems in Medicine and Biology, pp. 102-105, 2016.
10. Aritra Chaudhuri, **Anirban Dasgupta**, Aurobinda Routray, Suvodip Chakraborty, "A Low-Cost, Wearable, Portable EOG Recording System", IEEE International Conference on Systems in Medicine and Biology, 2016

11. Anushree Basu, **Anirban Dasgupta**, Aurobinda Routray, "A Thermographic Method for the Detection of Respiratory Alkalosis", IEEE International Conference on Systems in Medicine and Biology, pp. 26-30, 2016.
12. S L Happy, **Anirban Dasgupta**, Priyadarshi Patnaik, and Aurobinda Routray, "Automated Alertness and Emotion Detection for Empathic Feedback during E-Learning," in IEEE International Conference on Technology for Education, Kharagpur, India, pp. 47-50, 2013.
13. S L Happy, **Anirban Dasgupta**, A. George, Aurobinda Routray, "A Video Database of Human Faces under Near Infra-Red Illumination for Human Computer Interaction Applications," IEEE Proceedings of 4th International Conference on Intelligent Human Computer Interaction, Kharagpur, India, 2012.
14. Aritra Chaudhuri, **Anirban Dasgupta**, Aurobinda Routray, "Video and EOG Based Investigation of Pure Saccades in Human Subjects," IEEE Proceedings of 4th International Conference on Intelligent Human Computer Interaction, Kharagpur, India, 2012.
15. Manish Singhvi, **Anirban Dasgupta**, Aurobinda Routray, "A Real Time Algorithm for Detection of Spectacles Leading to Eye Detection," IEEE Proceedings of 4th International Conference on Intelligent Human Computer Interaction, Kharagpur, India, 2012.
16. Supratim Gupta, **Anirban Dasgupta**, and Aurobinda Routray, "Analysis of Training of Parameters in Haar-like Features to Detect Human Faces, " in IEEE International Conference on Image Information Processing, Shimla, India, 2011.

List of Book Chapters

1. Anwasha Sengupta, Anjith George, **Anirban Dasgupta**, Aritra Chaudhuri, Bibek Kabi, and Aurobinda Routray, "Alertness monitoring system for vehicle drivers using physiological signals," in Handbook of Research on Emerging Innovations in Rail Transportation Engineering, pp. 273-311, IGI Global, 2016.

Awards and Honours:

- Best Poster Award in MS category Department of Electrical Engineering, IIT Kharagpur 2013
- Senior Research Fellowship, SRIC, IIT Kharagpur 2012
- Finalist, Intel IEC Intel India 2012
- Junior Research Fellowship, SRIC, IIT Kharagpur 2010
- First Prize Award in Paper Presentation at Tech Fest (Confluence), NIT Rourkela 2009

Hands-on Experience:

- Microcontroller Boards: ESP32, ESP8266, Arduino UNO, Arduino Lilypad, Arduino Nano, Raspberry Pi, Beagleboard, Intel Atom
- Sensors: Visible Image Sensors (Raspberry Pi 5MP Camera Module, iBall Face2Face webcam), Thermal Image Sensors (FLIR One Pro, FLIR Lepton), EOG electrodes with AD8232, VL53L1X distance sensor, MAX30102 SPO2 and Heart Rate sensor
- Software Development: GUI development with Python (Tkinter, PyQt5), Machine Learning (Tensorflow, Keras, sklearn), Computer Vision (cv2), Data Analytics and Signal Processing (numpy, scipy, pandas), Data communication to server in JSON format through HTTP request (requests), Basic game development (pygame), Multithreading (threading)
- Communication Protocols: I2C, SPI, UART, USB, BLE, WiFi

Additional Information

1. Expert/Mentor in the Gandhi Institute For Technology at National Innovation Startup Policy Cell (MHRD initiative)
2. Departmental Representative in the Research Scholars' Council 2017-18
3. Reviewers of-IEEE Transactions on Signal Processing, Image Processing, Pattern Recognition and Machine Learning, Intelligent Transportation Systems, Affective Computing, etc.
4. Consultancy/Research Projects:

- a. System development for monitoring of the vigilance level of automotive driver through a camera
- b. Development of a camera-based system to monitor the attention, facial expressions and head-movements, and attendance of a student in e-learning
- c. Development of a wearable fatigue monitoring system for pre-screening fatigued pilots
- d. Analysis of the effect of short-term meditation on eye movements parameters as observed through EOG signals and ocular image data
- e. Development of an Android application for instructive meditation with feedback
- f. Design of an IoT-based system for observing the quality of fruits in cold storage reefer

I hereby declare that all the statements made herein are true to the best of my knowledge and belief.

Anirban Dasgupta

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