

Anjith George

POSTDOCTORAL FELLOW · SECURE BIOMETRICS

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PROFILE

Eight years of research experience in computer vision, machine learning and image processing. Have excellent academic record and demonstrated expertise in computer vision, machine learning and biometrics. Passionate to dive into the depths of engineering, to learn and apply new concepts in signal processing, machine learning and pattern recognition.

- **Computer Skills** : C, C++, Python, Git, PyTorch, MATLAB, OpenCV, Unix/Linux/Windows, etc.

RESEARCH INTERESTS

Computer Vision, Pattern Recognition and Machine Learning, Deep learning, Human Computer Interaction, Gaze Tracking and applications, Signal Processing, Biometrics.

WORK PROFILE

- **Post Doctoral Researcher (IDIAP Research Institute, Martigny, Switzerland)** : Secure face recognition, October 2017- Present.
- **Samsung Research Institute Bangalore, India, SAIT**: Technical Lead, Machine Learning, Feb 2017- September 2017.

EDUCATION

Indian Institute of Technology (IIT) Kharagpur, India. PhD, Image based Eye Gaze Tracking and Its Applications, July 2012- 2017.

Indian Institute of Technology (IIT) Kharagpur, India. M. Tech, Instrumentation Engineering, June 2012

N S S College of Engineering (University of Calicut), Kerala, India. B. Tech, Electrical and Electronics Engineering, June 2010

RESEARCH PROFILE

Postdoc, IDIAP

- Development of algorithms for face anti spoofing
- Design of framework and software using multi-channel data
- Reproducible algorithms with open source *Bob* package.

PhD, IIT Kharagpur

- Design and implementation of a low cost eye gaze tracking system for low resolution images
- Development of a novel framework for biometric identification based on eye movements.
- Development of a framework for gaze based activity recognition.

M. Tech, IIT Kharagpur

- **Main Project:** Design and Implementation of Real-time Algorithms for Eye Tracking and PERCLOS Measurement for on board Estimation of Alertness of Drivers

B. Tech, University of Calicut

- PC controlled wireless security robot with video capture using PIC16F73.

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SPONSORED PROJECTS

- **Researcher** : “Biometric Authentication with timeless learner”, Funded by Intelligence Advanced Research Projects Activity (IARPA), 2017-2018.
- **Algorithm Developer** : “Design of an Embedded System for On-board Assessment of the Level of Alertness in Human Driver”, Funded by Department of Electronics and Information Technology (Ministry of Information Technology) Government of India, 2014.
- **Algorithm Developer** : “Fast Fixed Point Algorithms for identifying Alertness and Emotion”, Funded by **Samsung Advanced Institute of Technology (SAIT) Under Global Research Outreach Program (GRO) 2012.**

TEACHING EXPERIENCE

- **Teaching Assistant** (Lab): Control and electronic system design lab (1 term), Embedded Systems Lab (3 terms), Real-time Signal Processing Lab (3 terms).
- **Teaching Assistant** (Theory): Signals and Networks (3 terms), Electrical Technology (4 terms), Digital Signal Processing (1 term), Embedded Systems (1 term).

AWARDS & HONOURS

- **Winner**, BioEye 2015, International Eye Movement based biometrics competition, Organized by IEEE BTAS.
- **Finalist**: Intel India Embedded Challenge 2012.
- **Secured 99.2 and 98.1 percentile** in Electrical engineering GATE 2010 and GATE 2012.
- **MHRD Fellowship** during PhD (2012-2016) AND M Tech (2010-2012)

JOURNAL PUBLICATIONS

- **A. George**, Z. Mostaani, D. Geissenbuhler, O. Nikisins, A. Anjos, S. Marcel. “Biometric Face Presentation Attack Detection with Multi-Channel Convolutional Neural Network”, *IEEE Transactions on Information Forensics and Security*, 2019.
- **A. George**, A. Routray, “Fast and Accurate Eye Localisation Algorithm for Gaze Tracking in Low Resolution Images”, *IET Computer Vision*, vol. 10, no. 7, pp.660-669, 2016.
- **A. George**, A. Routray, “A score level fusion method for eye movement biometrics”, *Pattern Recognition Letters*, Elsevier, vol. 82, pp.207-215, 2016.
- A. Sengupta, A. Dasgupta, A. Chaudhuri, **A. George**, A. Routray, R. Guha, “A Multimodal System for Assessing Alertness Levels due to Cognitive Loading”, in *IEEE in Transactions on Neural Systems & Rehabilitation Engineering*, 2017.
- A. Dasgupta, **A. George**, S. L. Happy, A. Routray, “A Vision Based System for Monitoring the Loss of Attention in Automotive Drivers”, in *IEEE Transactions on Intelligent Transportation Systems*, vol. 14, no. 4, pp.1825-1838, 2013

- A. Dasgupta, **A. George**, S. L. Happy, A. Routray, Tara Shanker, "An on-board vision based system for drowsiness detection in automotive drivers", in *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.
- A. Sengupta, **A. George**, A. Dasgupta, A. Chaudhuri, B. Kabi, A. Routray, "Alertness monitoring system for vehicle drivers using physiological signals". *Handbook of Research on Emerging Innovations in Rail Transportation Engineering*. Book Chapter. IGI Global, pp. 273-311, 2016.

CONFERENCE PUBLICATIONS

- **A. George**, S. Marcel. "Deep Pixel-wise Binary Supervision for Face Presentation Attack Detection", *ICB, International Conference on Biometrics* 2019, IEEE.
- O. Nikisins, **A. George**, S. Marcel. "Domain Adaptation in Multi-Channel Autoencoder based Features for Robust Face Anti-Spoofing", *ICB, International Conference on Biometrics* 2019, IEEE.
- **A. George**, A. Routray, "Real-time Eye Gaze Direction Classification Using Convolutional Neural Network", *SPCOM, International Conference on Signal Processing and Communications*, IEEE, pp. 1-5, 2016.
- A. Dasgupta, A. Mandloi, **A. George**, A. Routray, "An Improved Algorithm for Eye Corner Detection", *SPCOM, International Conference on Signal Processing and Communications*, IEEE, pp. 1-4, 2016.
- A. Morales, J. Fierrez, M. Gomez-Barrero, J. Ortega-Garcia, R. Daza, J.V. Monaco, J. Montalvão, J. Canuto, **A. George**, "KBOC: Keystroke Biometrics OnGoing Competition", *IEEE Eighth International Conference on Biometrics: Theory, Applications, and Systems*, BTAS, pp. 1-6, 2016.
- Z. Emersic, D. Stepec, V. Struc, P. Peer, **A. George**, A. Ahmad, E. Omar, T. E. Boulton, R. Safdari, Y. Zhou, S. Zafeiriou, D. Yaman, F. I. Eyiokur, H. K. Ekenel. "The Unconstrained Ear Recognition Challenge", (Accepted), *International Joint Conference on Biometrics*, IJCB, 2017.
- G. Banik, P. Patnaik, **A. George**, A. Routray, "Contextual Priming and Perception Manipulation: An Exploration through Eye-Tracking and Audience Response", *NAOP Convention 2016, Allahabad*.
- SL Happy, A. Dasgupta, **A. George**, A. Routray, "A video database of human faces under near Infra-Red illumination for human computer interaction applications", *International Conference on Intelligent Human Computer Interaction (IHCI)*, IEEE, 2012.
- SL Happy, **A. George**, A. Routray, "A real time facial expression classification system using Local Binary Patterns", *International Conference on Intelligent Human Computer Interaction (IHCI)*, IEEE, 2012.

PATENTS

- "A SYSTEM FOR REAL-TIME ASSESSMENT OF ALERTNESS LEVEL OF HUMAN BEINGS", A. Routray, A. Dasgupta, **A. George**, SL Happy, 634/KOL/2013, IN, 2013
- "APPARATUS AND METHODS FOR IDENTIFYING ANOMALY(IES) IN RE-CHARGEABLE BATTERY OF EQUIPMENT AND CONNECTED COMPONENT(S)", Filed, 2018.

PERSONAL PROFILE

- **Nationality**: Indian
- **Marital Status** : Married
- **Passport Details**: Valid till 2025

DECLARATION

I hereby certify that the above mentioned particulars are correct up to the best of my knowledge and I bear the responsibility for the correctness of the above mentioned particulars.

(Anjith George)