

ASHISH GOYAL

Permanent Address

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OBJECTIVE

A PhD position in Department of Electrical Engineering and Computer Science utilizing skills in machine learning, signal processing and statistics.

EDUCATION

Bachelor and Master of Technology (Integrated) in Electrical Engineering
Specialization in Communication and Signal Processing
Indian Institute of Technology, Bombay, India (MH) 400076 GPA 9.08 / 10 2012 - 2017
Thesis - Deep Networks for Analyzing Group Activity

RESEARCH EXPERIENCE

Samsung Research Institute, Bangalore, India August 2017 - Present
Advanced Technology Labs (Lead Research Engineer)

- Samsung EYELIKE™ - Developed multiple technologies for remote eye health care reusing old Galaxy smartphones that are no longer of use.
 - Designed screening tests for visual acuity and perimetry using a virtual reality (VR) headset.
 - Invented a mechanism for changing accommodation depth in common VR headsets without complex optical instruments and used it for measuring refractive power of adult human eye.
 - Contributed to ML algorithms for diagnosis of ophthalmic diseases using fundus images captured by smartphones and a lens attachment.
 - Paper accepted for oral presentation in the proceedings of EMBC 2018, and international patent granted both as primary author.
- Ultra-Wide Band (UWB) - Developed methods for contact free human-device interaction without invading privacy using reflected signals from UWB impulse radar.
 - Created real-time algorithms for detecting human presence and distance using wavelet analysis.
 - Trained deep learning algorithms for tracking human activity level and identifying hand gestures.
- Hyper-spectral Imaging - Managed a team of four engineers towards development of algorithms for analysing skin pigments such as haemoglobin and melanin using hyper-spectral images. Patent granted and a full paper submitted for review.
- Two international patents published, one paper accepted in conference, multiple spot awards and professional software designer certification.

Indian Institute of Technology, Bombay, India July 2016 - July 2017
Department of Electrical Engineering (Master thesis)

- Developed deep networks trained to analyze surveillance videos and detect potentially anomalous scenarios. Paper accepted in the proceedings of ICVGIP 2018 as primary author.
- Tracked individual persons and activities - standing and walking. Discovered groups of people in crowd and their collective activities - walking, crossing a road, talking and waiting in a queue together.

National University of Singapore
SINAPSE Laboratory

May - July 2015
(Internship)

- Developed a real-time algorithm to track and follow moving objects using dynamic vision sensor (DVS) mounted on a hexapod in a swarm robotics scenario. Paper accepted in EMBS BioRob 2016.
- Algorithm involved cluster initialization using k-means and an on-line method for assigning subsequent sensor data to moving and static clusters using time series analysis.

PUBLICATIONS

- "Estimation of Spherical Refractive Errors Using Virtual Reality Headset," 40th International Engineering in Medicine and Biology Conference 2018
- "Hierarchical Deep Network for Group Discovery and Multi-level Activity Recognition," 11th Indian Conference on Computer Vision, Graphics and Image Processing 2018
- "Real-Time robot tracking and following with neuromorphic vision sensor," 6th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics - BioRob 2016

PATENTS

- "Method For Determining Refractory Power Of Eye Using Immersive System And Electronic Device Thereof" WO2019156485 [SAMSUNG ELECTRONICS CO., LTD.] 07 February 2019
- "Method And Apparatus For Measuring Body Temperature Using A Camera" WO2020171554 [SAMSUNG ELECTRONICS CO., LTD.] 18 February 2020

COMPUTING SKILLS

Proficient - C, C++, Python, Matlab, Java, TensorFlow, PyTorch, Keras, L^AT_EX
Basic - Assembly, Verilog, Django, LTspice, Arduino, Bash

HONORS

Regional Jury, Smart India Hackathon 2020
Multiple Spot Awards, Samsung
Software Professional Certification, Samsung 2018
Department Academic Mentor, IIT Bombay 2016
Special mention, inter-hostel technical competitions, IIT Bombay 2014

OTHER INTERESTS

Playing music - classical, bass and electric guitar, drums and piano. Mountaineering - completed 5 day expedition to Kedarkantha (4000 meters, -20 degree Celsius). Trekking. Photography.