ASHISH GOYAL

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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

Indian Institute of Technology, Bombay, India (MH) 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 for presentation in the proceedings of ICVGIP 2016.
- 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.

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

- Developed technologies for remote eye health care, created screening tests for visual acuity and perimetery using a virtual reality (VR) headset. Paper accepted in the proceedings of EMBC 2018.
- Invented a mechanism for changing accommodation depth in common VR headsets without complex optical instruments and used it for measuring spherical refractive power of adult human eye.
- Developed methods for contact free human-device interaction without invading privacy using ultra-wide band (UWB) radar. Created real-time algorithms for detecting human proximity and identifying gestures from reflected UWB signals using wavelet analysis.
- Two international patents (one as primary inventor, co-author in other), Samsung Best Paper Award, Samsung Spot Award and professional software designer certification.

SINAPSE Laboratory May - July 2015
National University of Singapore (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," 40^{th} International Engineering in Medicine and Biology Conference 2018
- "Hierarchical Deep Network for Group Discovery and Multi-level Activity Recognition," 11^{th} Indian Conference on Computer Vision, Graphics and Image Processing 2018
- "Real-Time robot tracking and following with neuromorphic vision sensor," 6^{th} IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics - BioRob 2016

COMPUTING SKILLS

C, C++, Python, TensorFlow, Keras, Assembly, Verilog, Java, Django, LTspice, Arduino, LaTeX

HONORS

Department Academic Mentor, IIT Bombay 2016
Special mention, inter-hostel technical competitions, IIT Bombay 2014
Spot award, Samsung 2020
Professional software design certification, Samsung 2018

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.