# Gurkirt Singh

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**Contact Information:**
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**RESEARCH INTERESTS**

- Computer Vision and Machine learning

**EDUCATION**

**PhD** in Computing and Maths                                                 Sept'15 - present
**Artificial Intelligence and Vision research group**, Oxford Brookes University
Proposed thesis direction: *Action predication in streaming videos.*
Supervisors: Dr. Fabio Cuzzolin

**Research Master**, Specialization: *Graphics Vision and Robotics*        2012 - 2013
**ENSIMAG - Grenoble INP, France**
Grades: 13.74/20.00   Max Grades in class: 16.12/20.00
Thesis: *Frame-wise representations of depth videos for action recognition.* Supervisors:
Dr. Radu Horaud and Dr. Georgios Evangelidis

**B.Tech.** in **Electronics and Instrumentation Engineering.**        2006 - 2010
VIT University, Vellore, India
CGPA: 8.33/10.00   Max CGPA in class: 9.69/10.00
Thesis: Categorising the Abnormal Behaviour from an Indoor Overhead Camera. Supervisor: Dr. Bob Fisher

**EXPERIENCE**

**Siemens Corporate Research and Technology, India**        Oct'13 - Aug'15
Research Engineer, Imaging and Computer Vision group
*Multiple Object detection and tracking for video surveillance applications*
Collaborator: Siemens Corporate Research, Princeton, USA

**Perception team, Inria Grenoble, France**
Research Engineer: *Multi-modal gesture recognition.*        June'13 - Sept'13
Master thesis:*Frame-wise representations of depth videos.*        Jan'13 - May'13
Supervisors: Dr. Radu Horaud and Dr. Georgios Evangelidis

**Vision and Graphics lab IIT Delhi, India**        May'11 - March'12
Project Associate, *Implementation of Interactive Single View Image Based Model Reconstruction.* AND. *Moving object detection with moving camera.*
Supervisors: Dr. Subhashis Banerjee

**SMSS lab, IIT Kanpur, India**        June'10 - March'11
Project Associate, *Control of Reconfigurable Parabolic Antenna using SMA actuators.*
Supervisors: Dr. Bishakh Bhattacharya

**University of Edinburgh, UK**        Jan'10 - May'10
Intern at Institute of Perception, Action and Behaviour
Title: *Categorising the Abnormal Behaviour from an Indoor Overhead Camera.*

Supervisor: Dr. Bob Fisher

**PUBLICATIONS**  **Gurkirt Singh**[*] Suman Saha[*] and Fabio Cuzzolin, *Towards real-time action detection and prediction*, submitted in ACCV 2016, Taipei.

**Gurkirt Singh**[*] Suman Saha[*], Michael Sapienza, Philip Torr and Fabio Cuzzolin, *Deep Learning for Detecting Multiple Space-Time Action Tubes in Videos*, in BMVC 2016, York.

**Gurkirt Singh** and Fabio Cuzzolin, *Untrimmed Video Classification for Activity Detection: submission to ActivityNet Challenge*, arXiv preprint arXiv:1607.01979 (2016), **2nd** position in Activity Detection challenge at ActivityNet workshop CVPR 2016.

Georgios Evangelidis, **Gurkirt Singh**, Radu Horaud, *Continuous Gesture Recognition from Articulated Poses*, in ChalearnLAP2014 workshop at EECV 2014, Zurich. **13** citations

Georgios Evangelidis, **Gurkirt Singh**, Radu Horaud, *Skeletal Quads: Human action recognition using joint quadruples*, in ICPR 2014 Stockholm. **31** citations

**THESIS**  **Master's thesis**, *Frame-wise Representations of Depth Videos for Action Recognition.* We investigate the of problem continuous action recognition from depth images. Three types of depth frame data representation are proposed. Further, we investigate the frame-wise classification as a solution for the continuous action detection problem.

**Bachelor's thesis** *Categorising the Abnormal Behaviour from an Indoor Overhead Camera.* We propose an approach using an overhead camera to detect the moving objects (Persons). A tracker is used to track their trajectories. Spline fitting is used to represent the trajectories with equal number of attributes. Finally abnormal trajectories are detected with Gaussian mixture model based classification. The system detects the anomalous events with EER (Equal Error rate) of only 1.2%. Contribution of 65000 pedestrian trajectories to *Edinburgh Informatics Forum Pedestrian Database*.

**CONTESTS**  ActivityNet, classification and detection challenge (Rank 10/24 and Rank **2**/6)  2016
Chalearn Looking at People Challenge (Gesture Detection Task Rank 7/17)  2014
Chalearn Multi-Modal Gesture Recognition Challenge (Rank 17/54)  2013

**SKILLS**
- **Programming Languages:** Python, Matlab, C/C++.
- **Libraries:** OpenCV, Eigen, Scikit-Learn, Numpy, Scipy, Theano, Tensorflow, Caffe, Kinect SDK, OpenNI.
- **Operating Systems:** Linux and Windows.
- **Development Environments:** Visual Studio, Eclipse, GCC, Spyder.