

## Gurkirt Singh

Web: <http://gurkirt.github.io/>, Email: [gurkirt.singh-2015@brookes.ac.uk](mailto:gurkirt.singh-2015@brookes.ac.uk), Tel: +447424653155

INTERESTS	Computer Vision and Machine learning
EDUCATION	<p><b>PhD</b> in Computing and Maths <span style="float: right;">Sept'15 - present</span> <b>Artificial Intelligence and Vision research group</b>, Oxford Brookes University Proposed thesis direction: <i>Action predication in streaming videos</i>. Supervisors: Professor Fabio Cuzzolin</p> <p><b>Research Master</b>, Specialization: <i>Graphics Vision and Robotics</i> <span style="float: right;">2012 - 2013</span> <b>ENSIMAG - Grenoble INP, France</b> Grades: 13.74/20.00 Max Grades in class: 16.12/20.00 Thesis: <i>Frame-wise representations of depth videos for action recognition</i>. Supervisors: Professor. Radu Horaud and Dr. Georgios Evangelidis</p> <p><b>B.Tech.</b> in <b>Electronics and Instrumentation Engineering.</b> <span style="float: right;">2006 - 2010</span> VIT University, Vellore, India; CGPA: 8.33/10.00 Thesis: <i>Categorising the Abnormal Behaviour from an Indoor Overhead Camera</i>. Supervisor: Professor Bob Fisher from University of Edinburgh, UK</p>
CONTESTS	<p>Charades-2017: Acton Recognition and Segmentation tasks (Rank: <b>2</b>/10 and 3/6) 2016 ActivityNet-2017: Classification tasks (Rank 3/29) 2016 ActivityNet-2016: Classification and Detection tasks (Rank 10/24 and <b>2</b>/6) 2016 Chalearn Looking at People Challenge (Gesture Detection Task Rank 7/17) 2014 Chalearn Multi-Modal Gesture Recognition Challenge (Rank 17/54) 2013</p>
EXPERIENCE	<p><b>Disney Research Pittsburgh, USA</b> <span style="float: right;">Feb'17 - July'17</span> Research Intern, Computer Vision <i>Temporal Activity Detection in untrimmed videos of TV-episodes</i>. Supervisors: Leonid Sigal and Andreas Lehrmann</p> <p><b>Siemens Corporate Research and Technology, India</b> <span style="float: right;">Oct'13 - Aug'15</span> Research Engineer, Imaging and Computer Vision group <i>Multiple Object detection and tracking for video surveillance applications</i> Collaborator: Siemens Corporate Research, Princeton, USA</p> <p><b>Perception team, INRIA Grenoble, France</b> Research Engineer: <i>Multi-modal gesture recognition.</i> <span style="float: right;">June'13 - Sept'13</span> Master thesis: <i>Frame-wise representations of depth videos.</i> <span style="float: right;">Jan'13 - May'13</span> Supervisors: Dr. Radu Horaud and Dr. Georgios Evangelidis</p> <p><b>Vision and Graphics lab IIT Delhi, India</b> <span style="float: right;">May'11 - March'12</span> Project Associate, <i>Implementation of Interactive Single View Image Based Model Re-construction.</i> AND. <i>Moving object detection with moving camera.</i> Supervisors: Dr. Subhashis Banerjee</p> <p><b>SMSS lab, IIT Kanpur, India</b> <span style="float: right;">June'10 - March'11</span> Project Associate, <i>Control of Reconfigurable Parabolic Antenna using SMA actuators.</i> Supervisors: Dr. Bishakh Bhattacharya</p>

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, Michael Sapienza, Philip Torr and Fabio Cuzzolin, *Online Real-time Multiple Spatiotemporal Action Localisation and Prediction*, ICCV, 2017. **2** citations.

Suman Saha, **Gurkirt Singh** and Fabio Cuzzolin, *AMTnet: Action-Micro-Tube Regression by end-to-end Trainable Deep Architecture*, ICCV, 2017.

Harkirat Behl, Michael Sapienza **Gurkirt Singh**, Suman Saha, Fabio Cuzzolin and Philip Torr, *Incremental Tube Construction for Human Action Detection*, arXiv, 2017.

Suman Saha, **Gurkirt Singh**, Michael Sapienza, Philip Torr and Fabio Cuzzolin, *Spatio-temporal human action localisation and instance segmentation in temporally untrimmed videos*, arXiv, 2017.

Suman Saha, **Gurkirt Singh**, Michael Sapienza, Philip Torr and Fabio Cuzzolin, *Deep Learning for Detecting Multiple Space-Time Action Tubes in Videos*, in BMVC 2016. **22** citations.

**Gurkirt Singh** and Fabio Cuzzolin, *Untrimmed Video Classification for Activity Detection: Submission to ActivityNet Challenge*, arXiv 2016, **2nd** position in Activity Detection challenge at ActivityNet workshop CVPR 2016. **10** citations.

Georgios Evangelidis, **Gurkirt Singh**, Radu Horaud, *Continuous Gesture Recognition from Articulated Poses*, in ChalearnLAP2014 workshop at ECCV 2014. **27** citations.

Georgios Evangelidis, **Gurkirt Singh**, Radu Horaud, *Skeletal Quads: Human action recognition using joint quadruples*, in ICPR 2014 Stockholm. **79** 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 of using an overhead camera to detect the anomalous events based on the trajectories of moving objects with and EER (Equal Error rate) of only 1.2%. I contributed 65000 trajectories to *Edinburgh Informatics Forum Pedestrian Database*.

## SKILLS

**Programming:** Python, Matlab, C/C++, Lua.

**Deep Learning Platforms:** Torch, PyTorch, Theano, Caffe.

**Libraries:** OpenCV, Eigen, Scikit-Learn, Numpy, Scipy, Kinect SDK, OpenNI.

**Operating Systems:** Linux and Windows.

**Development Environments:** Visual Studio, Eclipse, GCC, Spyder.

## LANGUAGES

Punjabi (Maternal), Hindi (Fluent), English (Fluent), French (Elementary)

**REFEREES**

Professor Fabio Cuzzolin, Oxford Brookes University, UK.  
Professor Philip Torr, University of Oxford, UK.  
Professor Bob Fisher, University of Edinburgh, UK.  
Professor Radu Patrice HORAUD, INRIA, Grenoble, France.  
Dr. Leonid Sigal, Disney Research Pittsburgh, USA.  
Dr. Andreas Lehrmann, Disney Research Pittsburgh, USA.  
Dr. Georgios EVANGELIDIS; Daqri, USA.  
Dr. Amit Kale, Bosch, India.

**MISC**

Attended International Computer Vision Summer school, Sicily, 2016, was part of winning reading group.