

Heng Wang

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Summary

- 8+ years of combined research and engineering experience in computer vision and machine learning.
- Strong focus on solving real world problems for better image/video representation and understanding; lead and collaborate with hardware/software engineers and deliver results for production systems.
- Invent the most effective and widely used video features namely “Dense Trajectories” for action recognition, event detection, large scale video classification, *etc.*
- Winner of THUMOS action recognition challenge in 2013 and TRECVID Multimedia Event Detection challenge in 2012 and 2013.

Education

- **Chinese Academy of Sciences** Beijing, China
National Laboratory of Pattern Recognition 2006 - 2012
 - **PhD** in Pattern Recognition and Intelligent Systems
 - **Advisor:** Cheng-Lin Liu & Cordelia Schmid
- **Harbin Institute of Technology** Harbin, China
School of Electrical Engineering and Automation 2002 - 2006
 - **BSc** in Electrical Engineering

Research Experience

- **Amazon Research** Seattle, WA
Research Scientist II November 2014 - Now
 - Work on a brand new project where computer vision and machine learning play a central role.
- **LEAR Team, INRIA Rhône-Alpes** Grenoble, France
Postdoc Researcher July 2012 - April 2014
 - **Advisor:** Cordelia Schmid
 - Improve the “dense trajectories” features to better handle camera motion. Demonstrate the advantages of Fisher vector encoding and further push the performance of action recognition system. Win two major video classification competitions: THUMOS action recognition challenge and TRECVID Multimedia Event Detection challenge. Source code available on [project page](#), which is currently the best video features and generates the state of the art results for action recognition, event detection, video classification, *etc.*
- **LEAR Team, INRIA Rhône-Alpes** Grenoble, France
Research Intern March - December 2010
 - **Advisor:** Cordelia Schmid
 - Invent the “dense trajectories” features which achieve groundbreaking results in action recognition. On the most challenging dataset HMDB51, the accuracy is improved from 26.9% to 48.3%. The original paper is the third mostly cited among all 438 papers of CVPR 2011 and results in over 1300 citations combined with the extended journal paper. Source code available on [project page](#), which is the most widely used video features for action recognition.

- **LEAR Team, INRIA Rhône-Alpes**
Research Intern

Grenoble, France
February - August 2009

- **Advisor:** Cordelia Schmid
- First extensive evaluation of different video feature detectors/descriptors and their combinations for action recognition. Propose “dense sampling” instead of sparse feature detector and demonstrate its superior performance. Establish a new state of the art in the literature and publish a paper in BMVC 2009, which is highly considered as a standard benchmark for comparison and has been cited over 900 times.

Honors and Awards

1st Prize, China Undergraduate Mathematical Contest in Modeling 2004
PanDeng Scholarship, Chinese Academy of Sciences 2011
Winner of TRECVID Multimedia Event Detection 2012 and 2013
Winner of action recognition, THUMOS workshop with ICCV 2013

Professional Services

- Conference Reviewer: CVPR’13-16, ICCV’13-15, ECCV’14, ICPR’12.
- Journal Reviewer: T-PAMI, IJCV, T-IP, CVIU, T-NNLS, PR, T-CSVT, IVC, PRL, SPL, *etc.*
- PhD Thesis Examiner: Modelling human behaviour and event detection from videos, Ramana Oruganti, University of Canberra.

Publications

2800+ citations according to [Google Scholar](#)

- **Heng Wang**, Dan Oneata, Jakob Verbeek, Cordelia Schmid. A Robust and Efficient Video Representation for Action Recognition. International Journal of Computer Vision (**IJCV**), 2015
- Matthijs Douze, Zaid Harchaoui, Dan Oneata, Danila Potapov, Jérôme Revaud, Cordelia Schmid, Jochen Schwenninger, Jakob Verbeek, **Heng Wang**. The AXES submissions at TrecVid 2013. TRECVID Workshop, 2013. **Authors sorted by name**
- **Heng Wang**, Cordelia Schmid. Action Recognition with Improved Trajectories. International Conference on Computer Vision (**ICCV**), 2013. **1st mostly cited paper (468 citations)**
- **Heng Wang**, Alexander Kläser, Cordelia Schmid, Cheng-Lin Liu. Dense Trajectories and Motion Boundary Descriptors for Action Recognition. International Journal of Computer Vision (**IJCV**), 2013. **443 citations**
- Dan Oneata, Matthijs Douze, Jérôme Revaud, Jochen Schwenninger, Danila Potapov, **Heng Wang**, Zaid Harchaoui, Jakob Verbeek, Cordelia Schmid. AXES at TRECVID 2012: KIS, INS, and MED. TRECVID Workshop, 2012.
- **Heng Wang**, Alexander Kläser, Cordelia Schmid, Cheng-Lin Liu. Action Recognition by Dense Trajectories. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2011. **3rd mostly cited paper (874 citations)**

- **Heng Wang**, Xinwen Hou, Cheng-Lin Liu. Boosting Incremental Semi-supervised Discriminant Analysis for Tracking. International Conference on Pattern Recognition (**ICPR**), 2010. **Oral**
- **Heng Wang**, Muhammad Muneeb Ullah, Alexander Kläser, Ivan Laptev, Cordelia Schmid. Evaluation of Local Spatio-temporal Features for Action Recognition. British Machine Vision Conference (**BMVC**), 2009. **Oral, 1st mostly cited paper (925 citations)**
- **Heng Wang**, Xinwen Hou, Cheng-Lin Liu. Object Tracking by Bidirectional Learning with Feature Selection. International Conference on Image Processing (**ICIP**), 2009.

Coding skills

- C/C++, Python, Linux(bash), OpenCV, Matlab, OpenMP, Lapack, *etc.*