

# MAHEEN RASHID

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## EDUCATION

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<b>University of California at Davis - Computer Science Department</b> PhD. Advisor: Dr. Yong Jae Lee	2015-Present
<b>Carnegie Mellon University - Robotics Institute</b> Masters in Robotics. Advisor: Dr. Martial Hebert	2012-2014
<b>Lahore University of Management Sciences. School of Science and Engineering</b> BSc (Hons) in Computer Science. Advisor: Dr. Sohaib Khan	2007-2011

## WORK EXPERIENCE

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<b>Swedish University of Agricultural Sciences</b> Visiting Researcher Advisor: Dr. Pia Haubro Andersen Researching correlations between equine facial action units and modalities of expression. To be submitted to PLOS One. Using horse pain videos for viewpoint invariant unsupervised gross pain behavior discovery. To be submitted to BMVC 2020.	July 2019 Uppsala, Sweden
<b>KTH Royal Institute of Technology</b> Visiting Researcher Advisor: Dr. Hedvig Kjellström Weakly supervised action localization through graph based networks. Published at WACV 2020. Supervising two Masters students on horse lameness detection through 3D SMAL model fitting to 2D video.	Fall 2018 Stockholm, Sweden
<b>UC Davis - Computer Science Department</b> Graduate Student Researcher Advisor: Dr. Yong Jae Lee Researching automatic pain detection in horses as part of large interdisciplinary project. Involves data collection and annotation, facial action unit coding, and deep learning on animal and human expressions. Facial action unit detection with capsules. Preprint. Interspecies knowledge transfer for facial keypoint detection. Published at CVPR 2017. YOLO based horse head finder to assist EquiFACS annotators. Published at Measuring Behavior 2018.	Sep 2015 - Present Davis, CA, USA
<b>Yahoo - Flickr Vision/ML Team</b> Research Intern Improved face detection accuracy for personal photo collections. Developed 3D informed spatial transformer network for face recognition. Developed frontalization and occlusion methods for assisting in face recognition. Developed in Tensorflow.	July 2017 - Sep 2017 San Francisco, CA, USA
<b>UC Davis - Computer Science Department</b> Teaching Assistant Teaching Assistant for Introduction to Programming ECS 30, Computer Vision ECS 177, Theory of Computation ECS 120, and Introduction to Computers ECS 15.	Spring 2018, Spring 2016, Fall 2016 Davis, CA, USA
<b>Mint Solutions</b> Software Developer Improved the core machine learning engine of MedEye - a pill scanner that uses computer vision to prevent drug errors.	August 2015 - August 2016 Kopavogur, Iceland

Developed in Python with a MySQL backend.

**Carnegie Mellon University - Robotics Institute**

Graduate Student Researcher

Advisor: Dr. Martial Hebert

Researched understanding the geometry, layout and composition of indoor scenes through the aid of geometry based features, Google Warehouse 3D models, and 2D object detectors. Written in C/C++ and MATLAB.

Published in 3DV 2014 and IJCV 2014

August 2013 - May 2014

Pittsburgh, PA, USA

**LUMS - Computer Science Department**

Research Assistant

Advisor: Dr. Sohaib Khan

Researched angle regularity as a cue for 2D to 3D reconstruction of man-made scenes.

Published in CVIU 2018 and ECCV 2012. Developed in MATLAB.

October 2011 - June 2012

Lahore, Pakistan

**Koc University, Summer Research Program**

Research Assistant

Advisor: Dr. Seda Ertac

Developed software to be used in lab experiments on auction behaviour

July 2011 - August 2011

Istanbul, Turkey

**Computer Science Department- LUMS**

Teaching Assistant

Was Teaching Assistant for the courses Design and Analysis of Algorithms, Discrete Mathematics and Introduction to Computer Science.

Spring 2011, Fall 2009

Lahore, Pakistan

**LUMS - Computer Science Department**

Research Assistant

Advisor: Dr. Nabil Mustafa

Worked on the project "Regression Depth Conjecture in 3D Space".

Researched on bounding the maximum number of edges in a Gabriel Graph

Summer 2010, Summer 2009

Lahore, Pakistan

## PUBLICATIONS

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**Action Graphs: Weakly Supervised Action Localization with Graph Convolution Networks**

Winter Conf. on Applications of Computer Vision, 2020

**Maheen Rashid**, Hedvig Kjellström, Yong Jae Lee

**Analyzing horse facial expressions of pain with Equine FACS**

Pain in Animals Workshop, 2019

**Maheen Rashid**, Alina Silventoinen, Karina B. Gleerup, Pia Haubro Andersen

**Facial Action Unit Detection With Capsules**

Preprint, 2018

**Maheen Rashid**, Yong Jae Lee

**What should I annotate? An automatic tool for finding video segments for EquiFACS annotation**

Measuring Behavior, 2018

**Maheen Rashid**, Sofia Broomé, Pia H. Andersen, Karina B. Gleerup, Yong Jae Lee

**Can a Machine Learn to See Horse Pain? An Interdisciplinary Approach Towards Automated Decoding of Facial Expressions of Pain in the Horse**

Measuring Behavior, 2018

Pia Andersen, Karina B. Glerup, Jennifer Wathan, Britt Coles, Hedvig Kjellström, Sofia Broomé, Yong Jae Lee, **Maheen Rashid**, Claudia Sonder, Erika Rosenberger, Deborah Forster

**Single-View Reconstruction using Orthogonal Line-pairs**

Computer Vision and Image Understanding, 2018

Aamer Zaheer, **Maheen Rashid**, Muhammad A Riaz, Sohaib Khan

**Interspecies Knowledge Transfer for Facial Keypoint Prediction**

Computer Vision and Pattern Recognition, 2017

**Maheen Rashid**, Xiuye Gu, Yong Jae Lee

**Detailed 3D Model Driven Single View Scene Understanding**

International Conference on 3D Vision, 2014

**Maheen Rashid**, Martial Hebert

**3DNN: Viewpoint Invariant 3D Geometry Matching for Scene Understanding**

International Journal of Computer Vision, 2014

Scott Satkin, **Maheen Rashid**, Jason Lin, Martial Hebert

**Shape From Angle Regularity**

European Conference of Computer Vision, 2012

Aamer Zaheer, **Maheen Rashid**, Sohaib Khan

## SELECTED COURSE PROJECTS

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**Visualizing Capsule Network Features**

Spring 2017

Used reconstruction and deep dreaming to visualize features learned by capsule networks trained to do action unit and expression classification. Written in Pytorch/Python.

**Higher-order polynomial schemes for visualization**

Spring 2017

Implemented Levoy's method for ray casting with trilinear and tricubic interpolation. Written in C.

**Blind Convolutional Neural Networks Performance**

Fall 2015

Trained and tested convolutional neural networks with varying levels of familiarity with certain image classes to establish CNN's applicability for unsupervised object discovery.

**Automatic Extraction of Goal Events from Soccer Videos**

Fall 2013

Used visual and audio cues in soccer matches to learn and predict goal events in soccer matches.

**Object Swapping in Data Driven Scene Understanding**

Spring 2013

Used intelligent insertion and replacement of 3D models of indoor scenes and furniture to refine and improve the 3D understanding of indoor scenes from single images.

**Single View Reconstruction Using TILT**

Spring 2013

Used Transform Invariant Low rank Textures as cue for single view reconstruction.

**Geometric Refinement using MCMC in Data Driven Scene Understanding**

Fall 2012

Developed a Markov Chain Monte Carlo based approach to geometric refinement of 3D models matched to indoor scenes.

## SERVICE AND HONORS

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Keller Pathway Fellowship	2019
Outstanding Reviewer CVPR	2019
Reviewer for ACM TIST, CVPR, ICCV, ACII	
Lead Women in Computer Science Graduate Group	September 2017 - February 2019
COE Dean's Graduate Student Adviosry Committee Member	September 2017 - June 2018
Graduate Student Association Computer Science Representative	October 2016 - Present
Graduate Student Mentor (First Friend Program)	August 2016 - June 2017
Fulbright Scholar	August 2012 - May 2014
Graduated on Dean's Honour List	June 2011

## IN MEDIA

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ABC 10	December 2017
Veterinarians at UC Davis Using Facial Recognition to Identify Pain in Animals	
The California Aggie	August 2017
First Step in Recognizing Pain in Horses	
Veterinary Practice News	July 2017
Mapping Equine Pain	

## SKILLS

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PyTorch, Torch, Tensorflow, Caffe, Python, Java, C/C++, MATLAB, LaTeX, Bash. Experience in: OpenGL, OpenCV  
Selected Course work: Visual Recognition Through Deep Learning, Advanced Visualization, Computer Architecture,  
Machine Learning, Learning and Geometry Based Methods in Computer Vision