MAHEEN RASHID

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EDUCATION

University of California at Davis - Computer Science Department 2015-Present
PhD. Advisor: Dr. Yong Jae Lee. Expected December 2020

Carnegie Mellon University - Robotics Institute 2012-2014
Masters in Robotics. Advisor: Dr. Martial Hebert

Lahore University of Management Sciences. School of Science and Engineering 2007-2011
BSc (Hons) in Computer Science. Advisor: Dr. Sohaib Khan

WORK EXPERIENCE

UC Davis - Computer Science Department Sep 2015 - Present
Graduate Student Researcher Davis, CA, USA
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.
Using horse pain videos for viewpoint invariant unsupervised gross pain behavior discovery.
Facial action unit detection with capsules. Preprint 2018.
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.

Amazon - Vision/ML Team Fall 2020
Research Intern Berlin, Germany
Will research sparse 2D to 3D reconstruction. Delayed due to COVID-19.

Swedish University of Agricultural Sciences July 2019
Visiting Researcher Uppsala, Sweden
Advisor: Dr. Pia Haubro Andersen
Investigated correlations between equine facial action units and modalities of expression.
Under Review PLOS One. Accepted Measuring Behavior 2020.

KTH Royal Institute of Technology Fall 2018
Visiting Researcher Stockholm, Sweden
Advisor: Dr. Hedvig Kjellström
Weakly supervised action localization through graph based networks. Published at WACV 2020.
Co-Supervised two Masters students on horse lameness detection through 3D SMAL model fitting to 2D video.

Yahoo - Flickr Vision/ML Team July 2017 - Sep 2017
Research Intern San Francisco, CA, USA
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.

UC Davis - Computer Science Department Summer 2018 Spring 2018, Spring 2016, Fall 2016
Teaching Assistant Davis, CA, USA
Teaching Assistant for Introduction to Programming ECS 30, Computer Vision ECS 177, Theory of Computation ECS 120, and Introduction to Computers ECS 15.

Mint Solutions August 2015 - August 2016
Software Developer Kopavogur, Iceland
Improved the core machine learning engine of MedEye - a pill scanner that uses computer vision to prevent drug errors. Developed in Python with a MySQL backend.

Carnegie Mellon University - Robotics Institute August 2013 - May 2014
Graduate Student Researcher Pittsburgh, PA, USA
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

LUMS - Computer Science Department October 2011 - June 2012
Research Assistant Lahore, Pakistan
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.

Koc University, Summer Research Program July 2011 - August 2011
Research Assistant Istanbul, Turkey
Advisor: Dr. Seda Ertac
Developed software to be used in lab experiments on auction behaviour

Computer Science Department- LUMS Spring 2011, Fall 2009
Teaching Assistant Lahore, Pakistan
Was Teaching Assistant for the courses Design and Analysis of Algorithms, Discrete Mathematics and Introduction to Computer Science.

LUMS - Computer Science Department Summer 2010, Summer 2009
Research Assistant Lahore, Pakistan
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

PUBLICATIONS

Equine Facial Action Coding System for determination of pain-related facial responses in videos of horses
bioRxiv. 2020.03.31.018374, 2020. Under review PLOS One
Maheen Rashid, Alina Silventoinen, Karina B. Gleerup, Pia H. Andersen

Using EquiFACS annotation of video recordings "in the wild" to describe facial expressions of emotionally stressed horses
Measuring Behavior, 2020
Johan Lundblad, **Maheen Rashid**, Camilla Frisk, Alina Silventoinen, Marie Rhodin, Pia H. Andersen

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. Gleerup, 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 PRESENTATIONS

Winter Conference on Applications of Computer Vision March 2020
Aspen, CO, USA

AFB Christmas Seminar, Swedish University of Agricultural Sciences December 2018
Uppsala, Sweden

Invited Talk, KTH Royal Institute of Technology October 2018
Stockholm, Sweden

Measuring Behavior Conference, Manchester Metropolitan University May 2018
Manchester, UK

Animal Behavior Student Conference, UC Davis April 2018
Davis, CA, USA

Invited Talk, Snapchat August 2017
San Francisco, CA, USA

Invited Talk, Yahoo July 2017
San Francisco, CA, USA

Horses in Pain Symposium, UC Davis May 2017
Davis, CA, USA

Invited Talk, Information Technology University January 2017
Lahore, Pakistan

Horses in Pain Symposium, UC Davis June 2016
Davis, CA, USA

HONORS

Doctoral Consortium, Winter Conference on Applications of Computer Vision 2020

Keller Pathway Fellowship 2019

Outstanding Reviewer CVPR 2019

Fulbright Scholarship 2012 - 2014

Graduated on Dean's Honour List 2011

SERVICE

Reviewer for ACM TIST, CVPR, ICCV, ACII

Co-Superviser Masters Thesis 2019
KTH Royal Institute of Technology. Students: Ci Li, Mukund Seethamraju

Lead Women in Computer Science Graduate Group 2017 - 2019

College of Engineering Dean's Graduate Student Adviosry Committee Member 2017 - 2018

Graduate Student Association Computer Science Representative 2016 - Present

Graduate Student Mentor (First Friend Program) 2016 - 2017

SELECTED COURSE PROJECTS

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.

IN MEDIA

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

UC Entrepreneurship Academy September 2019

Facial Action Unit Coding Trained by Erika Rosenberg June 2016

Selected Course work: Visual Recognition Through Deep Learning. Advanced Visualization. Computer Architecture. Machine Learning. Learning Based Methods in Computer Vision. Geometry Based Methods in Computer Vision

Programming: PyTorch, Torch, Tensorflow, Caffe, Python, Java, C/C++, MATLAB, OpenGL, OpenCV