ALEKSANDRS ECINS

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EDUCATION

University of Maryland College Park — July 2017
Ph.D. in Computer Science — Overall GPA: 3.79/4.00

University of Maryland College Park — May 2014
M.Sc. in Computer Science — Overall GPA: 3.79/4.00

Imperial College London — May 2010
M. Eng. in Electrical and Electronic Engineering — First Class Honours

RESEARCH INTERESTS

I am interested in the problem of visual perception in the context of robotic manipulation.
Computer Vision | Robotics | Artificial Intelligence | Machine Learning

WORK EXPERIENCE

Zoox Inc — October 2017 - Present
Research Engineer, Calibration Localization and Mapping team — Foster City, CA

ACADEMIC RESEARCH EXPERIENCE

University of Maryland — January 2011 - July 2017
Graduate Research Assistant — College Park, MD
Advisor: Prof. Yiannis Aloimonos
Co-advisor: Dr. Cornelia Fermüller

- Developed an algorithm for fast reflectional and rotational symmetry detection in 3D pointcloud data.
- Designed an approach to bottom up object segmentation in cluttered tabletop scenes containing multiple objects that uses symmetry as a prior.
- Developed a procedure for complete calibration of a Kinect sensor (intrinsics, extrinsics, depth distortion).
- Developed an image preprocessing technique that increases illumination invariance of filterbank based texture descriptors.
- Applied a shadow boundary classification algorithm to improve figure ground segmentation results in still images.

Robot Training Academy — June - August 2016
Perception Lead — College Park, MD

- Developed a pipeline for automatic collection of pointclouds from multiple viewpoints using a depth sensor mounted on mobile manipulator.
- Developed an algorithm for detecting objects in pointcloud data and fitting them with shape primitives that were later used for grasp planning.

Bosch North America   May - August 2015
Robotics Research Intern   Palo Alto, CA

    · Developed an algorithm for extracting building 3D floor plans from pointcloud scans.

PUBLICATIONS

"Seeing Behing the Scene: Using Symmetry To Reason About Objects in Cluterred Environments."
    Aleksandrs Ecins, Cornelia Fermüller, Yiannis Aloimonos.
    International Conference on Intelligent Robots (IROS), 2018.

"Detecting Reflectional Symmetries in 3D Data Through Symmetrical Fitting."
    Aleksandrs Ecins, Cornelia Fermüller, Yiannis Aloimonos.
    Detecting Symmetry in the Wild Workshop (ICCV), 2017.

"Cluttered Scene Segmentation Using the Symmetry Constraint."
    Aleksandrs Ecins, Cornelia Fermüller, Yiannis Aloimonos.
    International Conference on Robotics and Automation (ICRA), 2016.

"Shadow Free Segmentation in Still Images Using Local Density Measure."
    Aleksandrs Ecins, Cornelia Fermüller, Yiannis Aloimonos.
    International Conference on Computational Photography (ICCP), 2014.

"Shadow Free Segmentation in Still Images Using Local Density Measure."
    Aleksandrs Ecins, Cornelia Fermüller, Yiannis Aloimonos.
    Perceptual Organization Workshsop (CVPR), 2014.

"Towards a Robotic Hand Rehabilitation Exoskeleton for Stroke Therapy."
    Yeongjin Kim, Shing Shin Cheng, **Aleksandrs Ecins**, Cornelia Fermüller, Kelly P Westlake, Jaydev P Desai.
    ASME Dynamic Systems and Control Conference, 2014.

PROFESSIONAL ACTIVITIES

Open Source Contributions
    Contributions to pointcloud processing library (PCL) and 3D occupancy mapping library (OctoMap).

RELEVANT COURSEWORK

Computer Vision	Image Segmentation
Machine Learning	Scientific Computing
Computational Geometry	High Performance Computing
Differential Geometry of Curves and Surfaces	Computational Linguistics

AWARDS AND PRIZES

First place for 3D categories in Detecting Symmetry in the Wild challenge, ICCV 2017	2017
Deans PhD Fellowship, University of Maryland College Park	2010, 2011
Todd's prize, top of the class first year student, University of York	2007
Best first year project prize, University of York	2007

TECHNICAL SKILLS

Languages: C/C++, Python, CUDA, Matlab
Libraries: OpenCV, PCL, ROS, Ceres, Tensorflow