## Ali Osman Ulusoy

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**Current position**

**Senior Scientist**, Microsoft HoloLens — 2017 - present

**Education**

**Post-doctoral researcher**, MPI for Intelligent Systems — 2014-2017

- Advisors: Michael J. Black and Andreas Geiger

**Ph.D.** in Engineering, Brown University — 2008-2014

- Advisor: Joseph Mundy
- Thesis: Probabilistic and Volumetric Reconstruction of Time-Varying 3-d Scenes from Multi-view Images
- Thesis committee: Joseph Mundy, Gabriel Taubin, James Hays

**Sc.M.** in Applied Mathematics, Brown University — 2008-2011

**B.S.** in Computer Engineering, Bilkent University — 2004-2008

**Industry Experience**

**Senior scientist** at Microsoft (Redmond, WA). Products I work on include Hololens and Azure Spatial Anchors. I've worked at Microsoft since July 2017.

**Research scientist** at Vision Systems Inc. (Providence, RI), a start-up company lead by Prof. Joseph Mundy. My research focused on 3D reconstruction of reflective materials. Summer 2014.

**Research intern** at Vistek (Istanbul, Turkey), a spin-off machine vision company led by Prof. Aytül Erçil from Sabanci University, Turkey. I worked on OCR for automated quality control. Summer 2007.

**Software engineering intern** at Siemens (Istanbul, Turkey). Summer 2006.

**Honors and Awards**

International Conf. on 3D Vision (3DV) Best Paper Award — 2015

Outstanding Reviewer Awards

- Computer Vision and Pattern Recognition (CVPR) — 2017, 2018, 2019
- European Conference on Computer Vision (ECCV) — 2016

NVIDIA Hardware Donation - A Nvidia Tesla K20c graphics card — 2013

Brown University Graduate Fellowship — 2008

Bilkent University Undergraduate Fellowship — 2005-2008

**Publications**

Superquadrics Revisited: Learning 3D Shape Parsing beyond Cuboids
Despoina Paschalidou, **Ali Osman Ulusoy**, Andreas Geiger
*IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* — 2019

RayNet: Learning Volumetric 3D Reconstruction with Ray Potentials
Despoina Paschalidou, **Ali Osman Ulusoy**, Carolin Schmitt, Luc Van Gool, Andreas Geiger

*IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* 2018
(Spotlight Presentation)

OctNetFusion: Learning Depth Fusion from Data
Gernot Riegler, **Ali Osman Ulusoy**, Andreas Geiger
*International Conf. on 3D Vision (3DV)* 2017
(Oral Presentation)

Compression of Probabilistic Volumetric Models Using Multi-Resolution Scene Flow
Octavian Biris, **Ali Osman Ulusoy**, Joseph L. Mundy
*Image and Vision Computing* 2017

OctNet: Learning Deep 3D Representations at High Resolutions
Gernot Riegler, **Ali Osman Ulusoy**, Andreas Geiger
*IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* 2017
(Oral Presentation)

Semantic Multi-view Stereo: Jointly Estimating Objects and Voxels
**Ali Osman Ulusoy**, Michael J. Black, Andreas Geiger
*IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* 2017

Patches, Planes and Probabilities: A Non-local Prior for Volumetric 3D Reconstruction
**Ali Osman Ulusoy**, Michael J. Black, Andreas Geiger
*IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* 2016

Towards Probabilistic Volumetric Reconstruction using Ray Potentials
**Ali Osman Ulusoy**, Andreas Geiger, Michael J. Black
*International Conf. on 3D Vision (3DV)*
(Oral Presentation, Best Paper Award) 2015

Evaluation of Feature-Based 3-d Registration of Probabilistic Volumetric Scenes
Maria I. Restrepo,, **Ali Osman Ulusoy**, Joseph L. Mundy
*ISPRS Journal of Photogrammetry and Remote Sensing* 2014

TrueClick: Automatically Distinguishing Trick Banners from Genuine Download Links
Sevtap Duman, Kaan Onarlioglu, **Ali Osman Ulusoy**, William Robertson, Engin Kirda
*Proceedings of the Annual Computer Security Applications Conference (ACSAC)* 2014

Image-based 4-d Modeling Using 3-d Change Detection
**Ali Osman Ulusoy**, Joseph L. Mundy
*European Conf. on Computer Vision (ECCV)* 2014

Dynamic Probabilistic Volumetric Models
**Ali Osman Ulusoy**, Octavian Biris, Joseph L. Mundy
*International Conf. on Computer Vision (ICCV)* 2013

High Resolution Surface Reconstruction from Multi-view Aerial Imagery
Fatih Calakli, **Ali Osman Ulusoy**, Maria Restrepo, Gabriel Taubin, Joseph L. Mundy
*3DIMPVT*
(Oral Presentation) 2012

Characterization of 3-D Volumetric Probabilistic Scenes for Object Recognition
Maria I Restrepo, Brandon A Mayer, **Ali Osman Ulusoy**, Joseph L Mundy
*IEEE Journal of Selected Topics in Signal Processing* 2012

Robust One-Shot 3-d Scanning using Loopy Belief Propagation
**Ali Osman Ulusoy**, Fatih Calakli and Gabriel Taubin
*Applications of Computer Vision in Archaeology workshop in conjunction with IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*
(Oral Presentation) 2010

One-Shot Scanning using De Bruijn Spaced Grids
**Ali Osman Ulusoy**, Fatih Calakli and Gabriel Taubin
*3-D Digital Imaging and Modeling (3DIM) workshop in conjunction with International Conf. on Computer Vision* 2009

## Academic Service

Thesis committee

- Kumar Shaurya Shankar - Robotics Institute, Carnegie Mellon University 2020

Reviewer

- Conf. on Computer Vision and Pattern Recognition (CVPR) 2016 - present
- European Conference on Computer Vision (ECCV) 2016
- Conf. on 3D Vision (3DV) 2017, 2018
- ACM SIGGRAPH ASIA 2016
- International Journal of Computer Vision (IJCV) 2015, 2018, 2019
- Transactions on Pattern Recognition and Machine Intelligence 2018, 2020
- Workshop on Multiview Relationships in 3D Data (in conj. with ICCV) 2017
- Image and Vision Computing (IVC) 2013, 2014

Organizer, Workshop on Computer Vision Applications for Mixed Reality Headsets, held in conjunction with Conf. on Computer Vision and Pattern Recognition (CVPR) 2019

## Invited Talks and Posters

Patches, Planes and Probabilities: A Non-local Prior for Volumetric 3D Reconstruction

- Lines, Planes and Manhattan Models for 3-D Mapping Workshop at IROS 2017

Towards Probabilistic Volumetric Reconstruction using Ray Potentials

- Microsoft 2017
- International Workshop on Computer Vision 2016
- University of North Carolina at Chapel Hill 2015

Probabilistic and Volumetric Reconstruction of Time-Varying 3-d Scenes

- MPI Intelligent Systems - ETH Learning Systems Workshop 2015
- Harvard University 2015
- GE Global Research Center 2014

Image-based 4-d Modeling Using 3-d Change Detection

- MIT 2014
- Vision Systems Inc. 2013

Probabilistic and Volumetric Framework for Reconstructing General Dynamic 3-d Scenes (Poster),

- Greater New York Area Multimedia and Vision Meeting 2013