Engin Tola

Aurvis Research & Development Co.
engin.tola@aurvis.com
http://www.aurvis.com

phone:+90 505 640 2534
engin.tola@gmail.com
http://www.engintola.com

Education

2005–2010, Ph.D. in Computer Vision
École Polytechnique Fédérale de Lausanne, Computer Vision Laboratory, Switzerland
Advisor: Prof. Dr. Pascal Fua

2003–2005, M.Sc. in Electrical and Electronics Engineering
Middle East Technical University, Multimedia Research Group, Turkey
Advisor: Prof. Dr. A. Aydın Alatan

1999–2003, B.Sc. in Electrical and Electronics Engineering
Middle East Technical University (METU), Turkey
Specialization: Telecommunications

Experience

Aurvis Research & Development Co. – Ankara, Turkey
Founder & CEO
2011 - current

Aurvis is an R&D company specializing in computer vision and machine learning based software development. The main focus of the company is to develop automated 3D modeling solutions that are used to compute accurate and detailed models of real-world objects using only photographs without any user intervention. Aurvis also provides consultancy and project development services for other companies related on topics including but not limited to computer vision, machine learning, image processing, real-time processing, sensor fusion and photogrammetry.

Notable Projects: PixelScanner (*A fully automated, complete chain for calibration and multiple view stereo pipeline for extracting 3D models from photographs*), Focalyz (*A fast depth map estimation algorithm for mobile devices*), SteCamSim (*Stereo Camera Accuracy Simulator for Hardware evaluation*), ImageStitcher (*Photometric and Geometric Stitcher for Panoramic Image Generation*), StarGazer (*A star-tracker prototype for providing real-time high accuracy orientation information for Earth-orbiting satellites*).

Webpage: http://www.aurvis.com

Tubitak UZAY Space Technologies Research Institute – Ankara, Turkey
Consultant
2013 - current

Consulting TUBITAK UZAY for the development of space related vision technologies - most notably for the development of a fully autonomous high accuracy Star Tracker. A star tracker is a celestial reference device that recognizes star patterns and detects the orientation of the spacecraft. Responsible for the algorithm development and determination of hardware specs.

Argutek Research & Development Co. – İzmir, Turkey
Co-Founder
2011 - 2013
Argutek focused on developing mobile augmented reality applications. Contributed in algorithm design and development.

Computer Vision Laboratory – EPFL, Switzerland
Researcher
2005 – 2010
Participated in the European Union FP6 project DYVINE (Dynamical Visual Networks) on building recognition and localization. Developed algorithms for recognizing buildings and estimating the orientation of the observer from image or video streams.

Microsoft Research - Redmond, USA
Intern
September 2008 – December 2008
Studied on Hybrid Multicamera arrays within the Communications and Collaborations System Group with Cha Zhang and Zhengyou Zhang. Developed a free viewpoint rendering algorithm for a tele-communications application using a time-of-flight depth camera and a four-camera linear array.

Middle East Technical University, Turkey
Researcher
August 2004 – October 2005
Participated in the 3DTV NoE funded by the EU FP6 IST and studied on 3D scene reconstruction for mobile monocular camera systems. Developed structure-from-motion based camera calibration algorithms.

Multimedia Systems Group, Turkish Council of Research & Technology, Turkey
Researcher
July 2003 - August 2004
Studied on automated target recognition and identification from satellite images. Developed algorithms for automated detection of warships from meter resolution imagery.

Teaching & Academic

Teaching Assistant for
– Introduction to Computer Vision (3 semesters)
– Foundation of Image Science (3 semesters)

Reviewer for:
IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), International Journal of Computer Vision (IJCV), Machine Vision and Applications (MVA), Journal of Applied Remote Sensing (JARS), Geoscience and Remote Sensing (GRS), Computer Vision and Image Understanding (CVIU), Transactions on Multimedia (MM), Neurocomputing (NEU), Public Library of Science (PLOS One), Signal Processing: Image Communication (SPIC), IEEE Trans. on Circuits and Systems for Video Technology (TCSVT), Sinyal Isleme ve Iletisim Uygulamalari (SIU), Transactions on Image Processing (TIP), European Conference on Computer Vision (ECCV), Computer Vision and Pattern Recognition (CVPR), Asian Conference on Computer Vision (ACCV)

Publications

Thesis

DAISY: A Fast Descriptor for Dense Wide Baseline Stereo and Multiview Reconstruction
Engin Tola, *PhD Thesis, École Polytechnique Fédérale de Lausanne, 2010.*

Multiview 3d Reconstruction of a Scene Containing Independently Moving Objects
Engin Tola, *Master's Thesis, Middle East Technical University, 2005.*

Journals

Large Scale Data for Multiple View Stereopsis
Rasmus Jensen, Anders Dahl, George Vogiatzis, Engin Tola, Henrik Aanaes. *International Journal of Computer Vision (IJCV), 2016 - Accepted for publication*

Black-Body SNR Formulation of Astronomical Camera Systems
Engin Tola. *IEEE Sensors Journal, 15(9), 4941-4949, 2015*

Performance Analysis of State-of-the-Art Representation Methods for Geographical Image Retrieval and Categorization
Savas Ozkan, Tayfun Ates, Engin Tola, Medeni Soysal, Ersin Esen. *Geoscience and Remote Sensing Letters, 2014*

Efficient Large Scale Multi-View Stereo for Ultra High Resolution Image Sets
Engin Tola, Christoph Strecha and Pascal Fua. *Machine Vision and Applications, 2012*

DAISY: An Efficient Dense Descriptor Applied to Wide Baseline Stereo
Engin Tola, Vincent Lepetit and Pascal Fua. *IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), 2010.*

Conferences

A Self Calibrating Star Tracker System
Kendi Kalibrasyonunu Yapan Yıldız İzler Sistemi
Engin Tola. *SIU (in Turkish), 2016*

Performance of star centroiding methods under near-real sensor artifact simulation
Savas Ozkan, Engin Tola, Medeni Soysal. Recent Advances in Space Technologies (RAST), 2015

Large Scale Multi-view Stereopsis Evaluation
Rasmus Jensen, Anders Dahl, George Vogiatzis, Engin Tola, Henrik Aanaes . *CVPR, 2014*

Effects of Star Extraction Artifacts on Blind Attitude Determination
Engin Tola, Medeni Soysal. *ICIP, 2014*

Effects of Star Detection Errors on Attitude Determination Performance
Yıldız Çıkarma Hatalarının Uydu Yönelimi Bulma Başarımı Üzerindeki Etkileri
Medeni Soysal, Engin Tola. *SIU (in Turkish), 2014*

Feature Encoding Models for Geographic Image Retrieval and Categorization
Coğrafi Resim Geri Getirme ve Kategorizasyonu için Öznitelik Kodlama Modelleri
Savas Ozkan, Tayfun Ates, Engin Tola, Medeni Soysal, Ersin Esen. *SIU (in Turkish), 2014*

Large Occlusion Completion Using Normal Maps
Engin Tola, Andrea Fossati, Christoph Strecha and Pascal Fua. *ACCV, 2010*

Template-Free Monocular Reconstruction of Deformable Surfaces
Aydın Varol, Mathieu Salzmann, Engin Tola and Pascal Fua. *ICCV, 2009.*

A Fast Local Descriptor for Dense Matching
Engin Tola, Vincent Lepetit and Pascal Fua. *CVPR, 2008.*

Fast Outlier Rejection by Using Parallax-Based Rigidity Constraint for Epipolar Geometry Estimation
Engin Tola and A. Aydın Alatan. *MCRCS, 2006.*

Structure from Motion in Dynamic Scenes with Multiple Motions
Engin Tola, Sebastian Knorr, Evren Imre, A. Aydın Alatan, and Thomas Sikora. *2^{nd} Workshop on ICOB, 2005.*

Solving Fundamental Matrix for Uncalibrated Scene Reconstruction
Ugur Topay, Engin Tola and A. Aydın Alatan. *EUSIPCO, 2005.*

Technical Reports

A Closed-Form Solution for the Uniform Sampling of the Epipolar Line via Non-Uniform Depth Sampling
Engin Tola. *EPFL Technical Report - 150161, 2010.*

Virtual View Generation with a Hybrid Camera Array
Engin Tola, Cha Zhang, Qin Cai, Zhengyou Zhang. *EPFL Technical Report 2009.*

Awards

- ◇ **2011** Techno–Enterprise Capital Support, Ministry of Science, Industry and Technology, Turkey
- ◇ **2005** Scholarship of Doctoral School of Computer, Communication and Information Sciences, EPFL, Switzerland
- ◇ **2003, 2002, 2001** METU Bulent Kerim Altay Award for outstanding GPA

Skills

- ◇ **Programming:** C/C++ (primary language), Matlab, OpenGL, Python (scripting), Bash, Emacs Lisp, Git, SVN, LaTeX
- ◇ **Open Source Contributions:** https://github.com/etola/
- ◇ **Operating Systems:** Linux (Debian based distros), Windows
- ◇ **Language:** Turkish(mother tongue), Fluent spoken/written English(20^{+} years).