

CURRICULUM VITAE

PERSONAL INFORMATION

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| Name | TOLGA BIRDAL, M.Sc. |
| Address | Georgenschwaigstrasse 11 80807, Muenchen, Deutschland |
| Telephone | +49-176 80898287 |
| E-Mail | tolga.birdal@tum.de tbirdal@gmail.com |
| Nationality | Turkish |
| Date of birth | 17.12.1983 |
| Webpage | http://tbirdal.me , https://linkedin.com/in/tbirdal , http://campar.in.tum.de/Main/TolgaBirdal |
| Interests | 3D Computer Vision, Machine Vision, Pattern Recognition, High Performance Computing |



EDUCATION

- | | |
|---------------------------|---|
| ▷ Period | 2014–Present |
| ◦ Acquired qualifications | Dr. Rer. Nat. (Expected) |
| ◦ Institute | Technical University of Munich |
| ◦ Principal subjects | Informatics |
| ◦ Thesis subject | Large Scale 3D Object Reconstruction |
| ▷ Period | 2008–2011 |
| ◦ Acquired qualifications | Master of Science |
| ◦ Institute | Technical University of Munich |
| ◦ Principal subjects | Computational Science and Engineering |
| ◦ Thesis subject | 3D Deformable Surface Recovery Using RGBD Cameras |
| ▷ Period | 2004–2008 |
| ◦ Acquired qualifications | Bachelor of Science |
| ◦ Institute | Sabanci University |
| ◦ Principal subjects | Electronics Engineering |
| ▷ Period | 1999–2004 |
| ◦ Graduate school | Robert College |
| ◦ Principal subjects | Science |

PROFESSION

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| ▷ Period | 2014–Present |
| ◦ Employer | Siemens Corporate Technology |
| ◦ Position | Otto Hahn Ring 6, 81739, Muenchen, Deutschland Research Scientist |

- Projects

I have started to contribute in Siemens' machine vision research as a byproduct of my Doctoral studies on large scale 3d reconstruction, where the presence of clutter and occlusion is inevitable. We expect our research to impact Autonomous Systems and Quality Assurance.

- ▷ Period

2014–2014

- Employer

Google Summer of Code

Mountain View, CA, USA

- Position

Student

- Supervisor

Dr. Vincent Rabaud

- Projects

Implementation of surface matching algorithms into OpenCV

- ▷ Period

2010–2014

- Employer

Gravi Information Technologies

Istanbul, Turkey

- Position

CEO & Co-Founder

- Projects

Gravi is a research oriented machine vision company in Turkey, developing industry oriented vision libraries. I was responsible in the management and the direction of the research on 3D machine vision.

- ▷ Period

2008–2011

- Employer

BeFunky Inc.

San Francisco, CA, USA

- Position

Chief Engineer & Co-Founder

- Projects

I have co-founded BeFunky, an online digital art engine, which utilizes state of the art computer vision algorithms. Besides being the co-founder I have developed the entire system and most of the basis for the algorithms running on BeFunky (www.befunky.com)

- ▷ Period

2009–2010

- Employer

Mitsubishi Electric Research Labs

Cambridge, MA, USA

- Position

Intern

- Supervisor

Prof. Fatih Porikli

- Projects

At MERL, I worked on simulating human breathing in 4D. This included the implementation of Random Walks for image segmentation, 3D CT processing on CUDA, and real-time Bilateral Filtering.

- ▷ Period

2007

- Employer

Carnegie Mellon University

Pittsburgh, PA, USA

- Position

Intern

- Supervisor

Prof. Martial Hebert & Dr. Yan. Ke

- Project

Shape Matching Algorithm using Spatial Segmentation Data

- ▷ Period

2005–2007

- Employer

Vistek Isra Vision

Teknokent, Gebze, Turkey

- Position

Application Developer

- Supervisor

Prof. Aytul Ercil

- Projects

Development of industrial computer vision systems on OCR/OCV, Bar-code Reading, Robot Control, Object Classification based on Halcon.

PUBLICATIONS

► International Conferences

Tolga Birdal, Umut Simsekli, Onur Eken & Slobodan Ilic: *Bayesian Pose Graph Optimization via Bingham Distributions and Tempered Geodesic MCMC*, NIPS 2018, Montréal, Quebec

Haowen Deng, **Tolga Birdal** & Slobodan Ilic: *PPF-FoldNet: Unsupervised Learning of Rotation Invariant 3D Local Descriptors*, ECCV 2018, Munich

Adrian Haarbach, **Tolga Birdal** & Slobodan Ilic: *Survey of Higher Order Rigid Body Motion Interpolation Methods for Keyframe Animation and Continuous-Time Trajectory Estimation*, 3DV 2018, Verona

Tolga Birdal, Benjamin Busam, Nassir Navab, Slobodan Ilic & Peter Sturm: *A Minimalist Approach to Type-Agnostic Detection of Quadrics in Point Clouds*, CVPR 2018, Salt Lake City

Haowen Deng, **Tolga Birdal** & Slobodan Ilic: *PPFNet: Global Context Aware Local Features for Robust 3D Point Matching* CVPR 2018 (Spotlight), Salt Lake City

Tolga Birdal & Slobodan Ilic: *CAD Priors for Accurate and Flexible 3D Reconstruction*, ICCV 2017, Venice

Benjamin Busam, **Tolga Birdal** & Nassir Navab: *Camera Pose Filtering with Local Regression Geodesics on the Riemannian Manifold of Dual Quaternions*, ICCVW 2017, Venice

Tolga Birdal & Slobodan Ilic: *A Point Sampling Algorithm for 3D Matching of Irregular Geometries*, IROS 2017, Vancouver

Tolga Birdal, Ievgeniia Dobryden & Slobodan Ilic: *X-Tag: A Fiducial Tag for Flexible and Accurate Bundle Adjustment*, 3DV 2016, Stanford University

Tolga Birdal, Emrah Bala, Tolga Eren & Slobodan Ilic: *Online Inspection of 3D Parts via a Locally Overlapping Camera Network*, WACV 2016, Lake Placid

Tolga Birdal & Slobodan Ilic: *Point Pair Features Based Object Detection and Pose Estimation Revisited*, 3DV 2015, Lyon

Umut Simsekli & **Tolga Birdal**: *A Unified Probabilistic Framework For Robust Decoding Of Linear Barcodes*, ICASSP 2015, Brisbane

Tolga Birdal, Diana Mateus & Slobodan Ilic: *Towards A Complete Framework For Deformable Surface Recovery Using RGBD Cameras*, IROS 2012, Vilamoura/Portugal

Tolga Birdal & Aytul Ercil: *Real-time Automated Road, Lane and Car Detection for Autonomous Driving*, DSPincars, 2007, Istanbul

▷ National Conferences

Tolga Birdal & Slobodan Ilic: *Task Oriented 3D Sampling via Genetic Algorithms*, SIU 2018, Izmir, Turkey

Umut Simsekli, **Tolga Birdal**, Emre Koc & Taylan Cemgil: *A Factorization Based Recommender System for Online Services*, SIU 2013, Cyprus

▷ Patents

Tolga Birdal, Mehmet Ozkanoglu, Abdi Tekin Tatar: *METHOD AND SYSTEM FOR GENERATING ONLINE CARTOON OUTPUTS* Patent application number: 20090219298.

Tolga Birdal, Emrah Bala, Emre Koc, Mehmet Ozkanoglu, Abdi Tekin Tatar: *METHOD AND SYSTEM FOR PROVIDING AN IMAGE EFFECTS INTERFACE* Patent application number: 20100223565.

CONFERENCES

▷ Academic conferences

ICCV 2017, IROS 2017, CVPR 2017, 3DV 2016, WACV 2016, 3DV 2015, SIU 2013, IROS 2012, SIU 2008, DSPInCars 2007, SIU 2006

▷ Summer schools

2013, IPAM Computer Vision Graduate Summer School, UCLA with **NSF Scholarship**

2012, 2015 & 2016 International Computer Vision Summer School, Sicily - Successful Completion Certificates

▷ Industrial conferences

2016, EMVA Business Conference - Edinburgh

2012 / 2013, World of Industry, Exhibitor - Istanbul

2008, TechCunch 50, Alumni & Exhibitor - San Francisco

2008, NVISION - San Jose

2008, ARCS - Dresden

2007, TechCunch 40, Presenter - San Francisco

2007, Hannover Industrial Fair, Exhibitor - Hannover

2007, ARIF Innovation Festival, Exhibitor - Istanbul

2007, MVTec, Siemens and Intel Training and Workshops - Munich, Nuremberg, Ankara

AWARDS

▷ Personal awards

2016, **EMVA Young Professional Award**. Given to young professionals and novel works with great industrial impact

2014, **Ernst von Siemens Scholarship**, Siemens AG. Given to talented PhD candidates in industry, showing high academic potential
2004, **Merit Scholarship**, Sabanci University for success in University Entrance Exam

2004, Ranked 81st in Istanbul and ~ 600th in Turkey in University Entrance Exam, among ~ 1.7M applicants

2004, Received Robert College **Sait Halman Computer Honor Prize** (Given to one who has great achievements in Computer Science)

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| ▷ Publication awards | Best Student Paper Award at International Conference on Computer Vision (ICCV) 2017 Workshop on Multiview Relationships in 3D Data (MVR3D) Alper Atalay Best Paper Award at SIU 2013 Ranked 3 rd |
| ▷ Entrepreneurial Awards | 2011, Hottest iPhone App in Photo & Video Category on Apple iTunes Store 2009, Motorola Worldwide Mobile Widget Competition - Winner 2009, GTS Tech Start-up Competition - Finalist , Presenter 2007, TechCrunch40 Tech Start-up Competition - Finalist |
| ▷ Awards in other competitions | 2008, Ranked 1 st with robot ROBO112 in Projistor Robot Competition at Dogus University 2008, Ranked 2 nd with robot ROBO112 in ITURO Robot Competition at Istanbul Technical University 2000, Ranked 10 th in Izmir Aegean Chess Tournament |

LANGUAGES

NATIVE LANGUAGE
OTHER LANGUAGES

Turkish
English (Proficient), German (Intermediate)

ABILITIES

PROGRAMMING SKILLS

C/C++, Assembler (SSE, SSE2, SSE3, SSSE3, AVX), CUDA, Matlab, LaTeX, OpenCV, Halcon, C#, QT, OpenGL, Maple, Python and overall, the ability to adapt to different languages.

HARDWARE SKILLS

Camera Systems (Basler, IDS, Sony, JAI, The Imaging Source etc), Siemens 3D Imaging Sensors, Lighting Systems (Falcon, RVSI, SmartVision), PIC, FPGA, I/O Control Modules, PLCs, Smart Cameras, Framegrabbers and other similar hardware.

HOBBIES

One Frequent Jazz Drummer
A Cook in the Evenings
Occasional Chess Player
A Former Point Guard on Basketball Fields

Muenchen, September 8, 2018

Birdal, Tolga