Curriculum Vitae

Personal information

First name(s) / Surname(s)	**M. Sc. Tolga Birdal**
Address	Acibadem Mah. Emin Bey Sok. Yasam Sitesi No 14C Kadikoy/Istanbul
Telephone(s)	+90 532 3030198
E-mail(s)	tolga@gravi.com.tr / tbirdal@gmail.com
Web Page	http://www.tbirdal.me
Nationality	TURKISH
Date of birth	17/12/1983
Gender	Male

Desired employment / Occupational field	**Image Processing, Computer Vision, Machine Vision, Pattern Recognition, HPC Researcher & Developer**

Work experience

Dates	2010 - TODAY
Occupation or position held	CoFounder & CEO
Main activities and responsibilities	Gravi is the one and only research oriented machine vision company in Turkey, who is doing its own research and developing machine vision libraries. I am managing the company and the research on machine vision and computer vision. For this reason, I am actively developing practical real-time algorithms to be utilized in industry and other markets.
Name and address of employer	**Gravi Information Technologies & Consultancy Ltd.** (http://www.gravi.com.tr/) Bogazici University, Kuzey Kampus KARE Blok KOSGEB Tekmer No 4 Istanbul/Turkey
Type of business or sector	Machine Vision, Computer Vision & Augmented Reality
Dates	2008 – 2011
Occupation or position held	Chief Engineer / CoFounder
Main activities and responsibilities	Together with my three colleagues, I have founded BeFunky.com, 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)
Name and address of employer	**BeFunky** (http://www.befunky.com/), Keskin Kalem Sok. No 45, 34394 Istanbul
Type of business or sector	Internet Imaging
Dates	2009-2010
Occupation or position held	Intern
Main activities and responsibilities	I had an internship under supervision of **Dr. Fatih Porikli**. I designed breathing simulation systems, implemented Random Walks algorithm in C, and optimized several filters such as the fastest Bilateral Filtering
Name and address of employer	**Mitsubishi Electric Research Labs (MERL)**, 201 Broadway, 02139 Cambridge, MA
Type of business or sector	Computer Vision Research
Dates	2007
Occupation or position held	Intern
Main activities and responsibilities	I had my summer internship under supervision of **Prof. Martial Hebert**. I worked in a joint research with **Intel**. The project was developing a shape matching algorithm using spatial segmentation data.
Name and address of employer	**Carnegie Mellon University**, 5000 Forbes Avenue, Pittsburgh, PA, 15213
Type of business or sector	Academic Research
Dates	2006-2008
Occupation or position held	Teaching Assistant
Main activities and responsibilities	Teaching Assistant in Computer Vision & Pattern Recognition Courses

Name and address of employer	**Sabanci University**, Orhanli/Tuzla, Istanbul
Type of business or sector	Teaching
Dates	2005-2007
Occupation or position held	Application Developer
Main activities and responsibilities	Development of industrial computer vision systems on OCR/OCV, Barcode Reading, Robot Control, Object Classification. I also designed complete systems using **Halcon** framework.
Name and address of employer	**VISTEK (Isra Vision)**
Type of business or sector	Computer Vision Development

Education and training

Dates	2012-2016 (expected)
Title of qualification awarded	Doctor Rerum Naturalium (PhD)
Program / Department	Computer Vision at CAMP Chair
Organization	**Technische Universitat Muenchen**
Dates	2008 - 2011
Title of qualification awarded	M. Sc.
Program / Department	Computational Science & Engineering
Organization	**Technische Universitat Muenchen**
Dates	2004 - 2008
Title of qualification awarded	Electronics Engineer
Program / Department	Electronics
Organization	**Sabanci University**
Dates	1999 - 2004
Title of qualification awarded	Diploma of Science
Program / Department	Science
Organization	**Robert College**

Honors, Achievements & Awards

<u>2009</u>
 Best Widget Award to BeFunky, Motorolla Best Widget

<u>2007</u>
 Ranked 2nd with robot ROBO112 in ITURO Robot Competetion at Istanbul Technical University
 Ranked 1st with robot ROBO112 in Projistor Robot Competetion at Dogus University

<u>2004</u>
- *Merit Scholarship*, Sabanci University for success in University Entrance Exam
- *Ranked 80th in Istanbul and ~600th in Turkey* in University Entrance Exam, among 1500000 applicants
- *Robert College Sait Halman Computer Honor Prize* (Given to one who has great achievements in Computer Science)

<u>1999</u>
 Ranked 10th in Agean Chess Tournament / Izmir

Projects Include

MultiCamera 3D Measurement: A multiview system which is used for 3D reconstruction of industrial parts. It relies on triangulation fundamentals, while exploiting camera calibration in local and global coordinate spaces (@Gravi)

FrozenTime: A multicamera system for realtime synchronized image capture (@Gravi)

MASTER Thesis: 3D Deformable Surface Recovery Using RGB-D Cameras (@CAMP/TUM). My thesis involves constrained recovery of 3D Surfaces from commodity 3D Cameras, specifically Kinect.

Fastest Bilateral Filtering on GPU: Implementation of Fatih Porikli's Bilateral Filtering algorithm on GPU. Runs in around 2ms per image.

Random Walks: Implementation of Leo Grady's famous algorithm in C. (@MERL)

Breathing Simulation on GPU: Generating 4D CT breathing data. (@MERL)

BeFunky*: An online platform where users can recreate their images using various photo effects, and

editing tools. Day by day BeFunky evolves into a big platform.

T Vision Library: Core Library of all Gravi Industrial Vision algorithms (more thatn 900 operations)

T Effects Library*:* Core Library of all BeFunky effects/editing. Many low level image processing & vision algorithms are implemented (more thatn 600 operations). For more information visit my webpage.

Workflow Analysis using 4D Data*:* Using 3D Reconstruction environment, I started developing a 4D data analysis framework. (@ CAMP/TUM)

3D Stereo Reconstruction & 3D Adaptive Space Carving*:* Coded state of the art 3D reconstruction algorithms in MATLAB

RoboChess*:* A Chess Playing Robot. It uses vision techniques to detect pieces. (@ SU)

3D Talking Avatar: Automatically generate your 3D Avatar and let it say what you say. (@ SU)

Template Matching on CUDA: Pyramidal Normalized Cross Correlation matching on CUDA. (@ SU)

Robo112: Autonomous, helper robot. It can read text, follow signs, and grab pieces. (@ SU)

Climbing Robot using Wireless CAMs: Obstacle avoidance for hill climbing robots. Sensor data and decisions are transmitted over wireless network. (@CMU)

Spatio-Temporal Shape Matching: Invariant shape matching using segmentation maps (@CMU)

Active Contours on GPU: An active contour framework running on GPU. (@SU)

Painting Classification: Classification of paintings according to Genre with high accuracy. (@SU)

And many many more...

Seminars, Conferences and Other Related Activities	IPAM GSS 2013 @UCLA (Computer Vision Graduate Summer School) – NSF Scholarship ICVSS 2012 (International Computer Vision Summer School) – Successful Completion SIU 2013 Alper Atalay Best Paper Award Ranked 3rd World of Industry 2012 Exhibitor, World of Industry 2013 Exhibitor Stuttgart Vision Fair 2011 GTS Pitch Competition (@Stanford University, Finalist, Presenter) TechCunch 50 (As Alumni - Exhibitor), TechCrunch40 (As Finalist - Presenter) NVISION 2008, SIU 2008, ARCS 2008 MVTec Halcon 8.0 Training – Munich Hannover Industrial Fair (both Exhibitor & Visitor) ARIF Innovation Festival @ Sabanci Univesity (Exhibitor) SIU - Signal Processing and Communications Conference - Antalya Siemens Simatic Machine Vision Workshop Intel Multi Core Programming - Ankara

Technical Skills

Programming Languages

C/C++, Assembler (SSE, SSE2, SSE3, SSSE3, AVX), Matlab, Maple, OpenCV, MVTec Halcon, CUDA, FANN, LibSVM,

Vision Hardware

Camera Systems (Basler, IDS, Sony, JAI, The Imaging Source etc), Lighting Systems (FALCON, RVSI, SmartVision), PIC, FPGA, I/O Control Modules, PLCs, Smart Cameras, Framegrabbers, etc.

Publications

Umut Şimşekli, Tolga Birdal, Emre Koç, Taylan Cemgil (2012) *A Factorization Based Recommender System for Online Services.* SIU 2013, Cyprus

Tolga Birdal, Diana Mateus, Slobodan Ilic (2012) *Towards A Complete Framework For Deformable Surface Recovery Using RGBD Cameras.* IROS 2012, Vila Moura/Portugal

Master Thesis: *3D Deformable Surface Recovery Using RGB-D Cameras*

Tolga Birdal, Emrah Bala (2010) *Flow Enhancing Line Integral Convolution Filter*. In International Conference On Image Processing *(*ICIP 2010)

Birdal, Tolga and Erçil, Aytül (2007) *Real-time automated road, lane and car detection for autonomous driving.* In: DSPincars 2007, Istanbul

Patents

METHOD AND SYSTEM FOR GENERATING ONLINE CARTOON OUTPUTS
IPC8 Class: AG09G502FI
USPC Class: 345594
Patent application number: 20090219298

METHOD AND SYSTEM FOR PROVIDING AN IMAGE EFFECTS INTERFACE
IPC8 Class: AG06F3048FI
USPC Class: 715764
Patent application number: 20100223565

Personal Skills

Playing drums (Last Performance @ Nardis Jazz Club / Istanbul)
Several concerts & theatre plays @ Robert College
Sabanci University KoroSU Concert
SU Radio Club Member
SU Music Club Executive Member
Basketball & Chess since childhood
CIP – Civic Involvement Projects on Math for Children

Language

Turkish (Native)
English (Excellent)
German (Beginner)

References

Prof. Nassir Navab (Technical University of Munich, Professor)
Dr. Slobodan Ilic (Technical University of Munich)
Prof. Martial Hebert (Carnegie Mellon University, Professor)
Dr. Fatih Porikli (Mitsubishi Electric Research Labs)
Prof. Aytul Ercil (Sabanci University, Professor)