Sabri Bolkar

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Professional Interests

Develop robust, fast and elegant machine/deep learning and computer vision algorithms solving real-world problems
Design efficient pipelines for analysis of data in any form

Honors & Awards

Neuro-electronics Research Flanders MSc Thesis Scholarship	Spring 2018
EU Mundus Joint Master Degree Full Scholarship	2016 - 2018
Best Research Poster Award in METU Undergraduate Research Fair	May 2015
Erasmus Summer Internship Grant	Summer 2014
Scholarship of METU Alumni Association	2014 - 2016
Scholarship of Prime Ministry of Turkey	2010 - 2015
Ranked at the top 0.5% in National University Entrance Examination	2010

Experience

Delft University of Technology — Delft, Netherlands
PhD Researcher — *September 2018 -*

3D Point Cloud Registration. Responsible for the research that aims to increase the spatial resolution of super-resolution microscopy by registering heavily under-labeled 3d point sets.

- Carried out an exhaustive review of current state-of-the-art and designed the probabilistic model
- Developed an expectation-maximization based registration framework that resulted in better reconstruction than the state-of-the-art even for 70% incomplete data

Neuro-electronics Research Flanders, KU Leuven & IMEC — Leuven, Belgium
Computer Vision Engineer (MSc Thesis) — *January - July 2018*

Reconstruction of Overlapping Cells from Image Stacks. Responsible for the full cycle of denoising, segmentation and reconstruction of very thin dendrites from 3d image stacks.

- Managed big 3d image datasets
- Studied deep learning for unsupervised image segmentation
- Designed denoising and L1-TV based smoothing algorithms
- Developed a segmentation algorithm that is able to handle occluded objects by computing per-pixel transparency for each class using L-BFGS-B based optimization

KU Leuven — Leuven, Belgium
Visiting Scholar — *July - August 2017*

Image Memorability Using Convolutional Neural Networks. Carried out a research to gain better understanding on memorability of images and image organization.

- Analyzed deep image and video memorability models
- Applied deep transfer learning to reproduce the state-of-the-art

Mikro-Tasarm Electronics Inc. — Ankara, Turkey
IC Design Intern — *August - September 2015*

Digital Circuit Design. Responsible for the design of digital oscilloscope and tunable clock management circuits. Developed and tested successful FPGA prototypes using Verilog.

KocSistem Inc. — Ankara, Turkey
Computer Networking Intern — *June - August 2015*

Network Design. Designed and simulated network architecture of a company with multiple branches on Cisco hardware and software.

Technical University of Denmark Lyngby, Denmark
Neuroengineering Intern *June - September 2014*

Neurorehabilitation. Responsible for the mining of relevant features that can be used in a brain computer interface based computer game for rehabilitation of children with ADHD.

- Collected EEG data from volunteers
- Designed a SSVEP based control algorithm

Education

Norwegian University of Science and Technology Gjovik, Norway
MSc in Applied Computer Science, Grade: B *2016 – 2018*
Joint Mundus Master Degree with University of Lyon & University of Granada

Middle East Technical University Ankara, Turkey
BSc in Electrical and Electronics Engineering *2012 – 2016*

Publications

Real-time Videos Enhancement Using Deep Learning (Peer Reviewed)
S. Bolkar, C. Wang, F. Cheikh, S. Yildirim *Deep Smoke Removal From Minimally Invasive Surgery Videos,* in Proceedings of the IEEE International Conference on Image Processing (ICIP), 2018.

Image Segmentation and Reconstruction
S. Bolkar, *Soft Segmentation of Viral Labeled Neurons*, MSc Thesis, KU Leuven (Neuro-electronics Flanders) and Norwegian University of Science and Technology, 2018.

Spectral Imaging Literature Review
S. Bolkar & O. Ozcelik, *Bio-Spectral Imaging,* Research Report, 2015

Relevant Projects

Photorealistic Cloth Rendering Fall 2017
A procedural processing pipeline for reverse engineering of fabric structure from a single image by utilizing both spatial and frequency domain features is developed

Autoencoder Networks for Spectral Reflectance Estimation Fall 2017
An autoencoder neural network for estimation of diffuse reflectance from camera tristimulus values is designed

3D Scene Reconstruction Using RGB-D Sensors Spring 2017
A practical course project where volumetric reconstruction using Kinect sensor is implemented

Designing an Autonomous Robot Playing Ping-Pong Game Spring 2016
Bachelors graduation project that aims to create an autonomous robot playing ping pong game

Teaching

TA for Signals and Systems course, TU Delft Fall 2018
TA for Medical Imaging and Image Processing course, TU Delft Fall 2018

Skills

Language: Turkish (native), English (IELTS-7.5/9), French (ele.), Bokmal (ele.)
Programming: Python (adv.), Matlab (adv.), C/C++ (int.), R (int.), Verilog (ele.), Assembly-68HC11, LaTeX
Libraries: Caffe, Tensorflow, OpenCV, LIBSVM/LIBLINEAR, Numpy, Scipy, Scikit-Learn, Scikit-Image
Computer Programs: KeyCreator, Cadence Virtuoso, Agilent VEE, Altera Quartus, Xilinx ISE, LTspice, Office Suites, Adobe Photoshop and Illustrator

Activities & Hobbies

Columnist in the Morsk Magazine
Amateur Artist (Drawing)
Volunteer for children with leukemia, autism, Down syndrome and CP at the Lodos (2012-2016)
Professional Basketball Player (2008-2016)