Özgün Çiçek

Computer Scientist

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🎓 Özgün Çiçek

Technical Skills

Overview
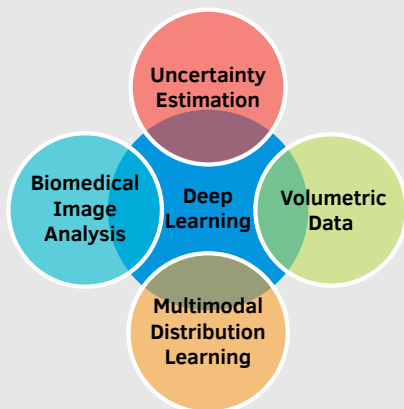
Programming

poor ⟶ *expert*

PyTorch • TensorFlow • Caffe

Python • C++ • MATLAB

Linux • CUDA • LaTeX

Education

PhD., Computer Science
Uncertainty Estimation in Computer Vision
University of Freiburg
2015 - 2020 | Freiburg, Germany

MSc., Computer Science (1.8/1.0)
Image Processing and Computer Vision
Saarland University
2012 - 2014 | Saarbruecken, Germany

BEng., Computer Engineering (GPA: 3.27)
Middle East Technical University
2007 - 2012 | Ankara, Turkey

Experience

April 2015 - Present — **PhD Candidate** — Computer Vision Group Freiburg
- 3D U-Net: Biomedical volume segmentation with deep learning using sparse annotations
- Uncertainty estimation for high dimensional motion estimation
- Utilizing uncertainty estimation to refine segmentations in timeseries data
- Multimodal distribution learning for future prediction
- Many applications of above methods to biomedical collaborations

Sep 2014 - Apr 2015 — **Teaching Assistant** — MIA Group Saarland
- Tutorials and homeworks for Differential Equations in Image Processing and Computer Vision lecture

Apr 2014 - Sep 2014 — **Student Programmer** — MIA Group Saarland
- Revising programming assignments for Image Processing and Computer Vision and Differential Equations in Image Processing and Computer Vision lectures

Sep 2013 - Apr 2014 — **Teaching Assistant** — MIA Group Saarland
- Tutorials and homeworks of Image Processing and Computer Vision lecture

Apr 2013 - Sep 2013 — **Student Programmer** — MIA Group Saarland
- Ground truth generation for optic flow, scene flow and depth map in Blender as a Python plug-in

Jun 2011 - Sep 2011 — **Intern** — MODSIMMER
- Service-oriented architecture

Jun 2010 - Sep 2010 — **Intern** — Kasırga Bilişim Elektronik
- Microprocessor architecture design

Research

2015 - 2020 — **PhD. Computer Science** — Computer Vision Group Freiburg
Thesis: Uncertainty Estimation and Its Applications in Computer Vision
Deep learning has become the common practice for most computer vision tasks due to being state-of-the-art both in accuracy and run-time. However, for safety-critic applications a big challenge remains: estimating uncertainty. Uncertainty estimation enables us to quantify the reliability of a decision coming from a system. Once we have a reasonable estimation for the uncertainty of a subsystem, another challenge is to make good use of this new data modality by propagating it properly through chains of subsystems to improve the final goal. This thesis presents the value of deep learning in medical image segmentation. It looks into equipping modern convolutional neural networks with uncertainty estimation in show cases of optical flow and future localization. It also exploits the deep uncertainty estimation to improve higher level tasks: future captioning and tracking a dynamically localizing protein in cell nuclei.

2012 - 2014 — **MSc. Computer Science** — MIA Group Saarland
Thesis: Efficient Computation and Representation of the Diffusion Echo
The diffusion echo is a good way to visualise diffusion processes. However, it is computationally expensive. This thesis exploits parallel programming on GPU with CUDA and Fast Explicit Diffusion (FED) schemes to compute diffusion echoes in an efficient way.
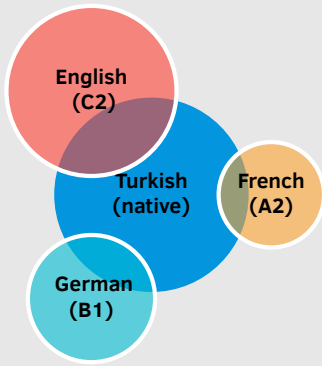
Important Publications

MICCAI 2016:

3D U-Net: Learning Dense Volumetric Segmentation from Sparse Annotation

Özgün Çiçek, Ahmed Abdulkadir, Soeren Lienkamp, Thomas Brox, Olaf Ronneberger

ECCV 2018:

Uncertainty Estimates and Multi-Hypotheses Networks for Optical Flow

Eddy Ilg*, Özgün Çiçek*, Silvio Galesso*, Aaron Klein, Osama Makansi, Frank Hutter, Thomas Brox

(* equal contribution)

MICCAI 2020 submission:

Tracking the Elusive: Quantification of Dynamically Localized Proteins in Cell Nuclei

Özgün Çiçek*, Yassine Marrakchi*, Enoch Antwi, Barbara DiVentura, Thomas Brox

(* equal contribution)

Nature Methods:

U-Net: Deep Learning for Cell Counting, Detection, and Morphometry

Thorsten Falk, Dominic Mai, Robert Bensch, Özgün Çiçek, Ahmed Abdulkadir, Yassine Marrakchi, Anton Böhm, Jan Deubner, Zoe Jaeckel, Katharina Seiwald, Alexander Dovzhenko, Olaf Tietz, Cristina Del Bosco, Sean Walsh, Deniz Saltukoglu, Tuan Leng Tay, Marco Prinz, Klaus Palme, Matias Simons, Ilka Diester, Thomas Brox, Olaf Ronneberger

CVPR 2019:

Overcoming Limitations of Mixture Density Networks: A Sampling and Fitting Framework for Multimodal Future Prediction

Osama Makansi, Eddy Ilg, Özgün Çiçek, Thomas Brox

CVPR 2020:

Multimodal Future Localization and Emergence Prediction for Objects in Egocentric View with a Reachability Prior

Osama Makansi, Özgün Çiçek, Kevin Buchicchio, Thomas Brox

TPAMI 2019 submission:

Learning Representations for Predicting Future Activities

Mohammedreza Zolfaghari, Özgün Çiçek, Syed Mohsin Ali, Farzaneh Mahdisoltani, Can Zhang, Thomas Brox

Reviewing Activities

CVPR (2018,2019) • PAMI (2018,2019) • ICCV (2017) • Pattern Recognition (2016,2017) • MICCAI (2019,2020) • GCPR (2015,2016) • ICASSP (2016) • ISBI (2016,2018,2019) • ICIP (2016) • IJCARS (2018)