BURAK KAKILLIOGLU

Ph.D. Candidate / Research Assistant

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RESEARCH PROJECTS

Ph.D. Student / Research Assistant

Smart Vision Systems Lab, Syracuse University

Interests: 3D computer vision, deep learning, embedded systems design, machine intelligence.

October 2015 - Ongoing

♀ Svracuse, NY

- 3D patch localization on large-scale point clouds
- 3D object detection via multi-modal sensor fusion from autonomous **UAVs**
- Heat leakage detection from thermal images of the buildings captured by
- 3D vision-based autonomous drone guidance framework
 - Doorway detection based on 3D point cloud data and color images
 - Accurate and real altitude measurement and autonomous safe landing location detection

EDUCATION

Ph.D. in Electrical and Computer Engineering - GPA: 3.89

Syracuse University

Aug 2015 - May 2020 ♥ Syracuse, NY, USA

- Thesis: 3D computer vision applications and autonomous UAV guidance by 3D computer vision
- Advisor: Dr. Senem Velipasalar

B.S. in Electrical and Electronics **Engineering**

Bilkent University

₩ June 2015

Ankara, Turkev

PROFESSIONAL EXPERIENCE

3D autonomous UAV guidance algorithm development.

Visiting Researcher

Automodality Inc.

SRI International

Algorithm and software developement for 'Automatic Wood Log Measurement' project using 2D and 3D vision sensors.

June 2019 - August 2019

Princeton, NJ, USA

San Rafael, CA, USA

TECHNICAL SKILLS

Computer Vision Machine Learning

Deep Learning ΙoΤ **SLAM**

Signal Processing

SW Engineering

Python, C/C++, Matlab

Java, C#, Android, Assembly

Bash, VHDL, JS, CSS, SQL

Intern

Intern

ASELSAN Inc.

₩ July 2018

Underwater Communication System: BPF Design Using FPGA and MATLAB, Interfacing with 24-Bit ADC and DAC, communication protocol.

₩ July 2014

Ankara, Turkey

TensorFlow PyTorch OpenCV PCL PX4/Mavlink Numpy Raspberry Pi Jetson Arduino Pixhawk **FPGA**

Linux, Windows

OSX

Continuous Integration

Intern

Arcelik Inc.

R&D TV Design Application intern. RC-5 Com. Protocol, DC-DC Converter Topologies, LVDS Technology, PCB Design with Altium Desginer.

August 2013

PUBLICATIONS

Journal Articles

- M. Cornacchia, **B. Kakillioglu**, Y. Zheng, and S. Velipasalar (2018). "Deep Learning-Based Obstacle Detection and Classification With Portable Uncalibrated Patterned Light". In: IEEE Sensors Journal, 18.20, pp. 8416–8425.
- T. Rakha, A. Liberty, A. Gorodetsky, **B. Kakillioglu**, and S. Velipasalar (2018). "Heat Mapping Drones: An Autonomous Computer-Vision-Based Procedure for Building Envelope Inspection Using Unmanned Aerial Systems (UAS)". in:*Technology*|Architecture+Design 2.1, pp. 30–44.

Conference Proceedings

- B. Kakillioglu, A. Janani, S. Velipasalar, and E. Koch (2019). "3D Sensor-Based UAV Localization for Bridge Inspection". In: (Accepted) 2019 Asilomar Conference. IEEE.
- B. Kakillioglu, A. Ahmad, and S. Velipasalar (2018). "Object Classification from 3D Volumetric Data with 3D Capsule Networks". In: 2018 IEEE Global Conference on Signal and Information Processing (GlobalSIP). IEEE.
- B. Kakillioglu, S. Velipasalar, and T. Rakha (2018). "Autonomous Heat Leakage Detection from Unmanned Aerial Vehicle-Mounted Thermal Cameras". In: *Proceedings of the 12th International Conference on Distributed Smart Cameras*. ACM, p. 11.
- M. Cornacchia, Y. Zheng, **B. Kakillioglu**, and S. Velipasalar (2018). "Obstacle Detection and Identification with Portable Uncalibrated Patterned Light", In: 2018 Asilomar Conference. IEEE.
- B. Kakillioglu and S. Velipasalar (2016). "Autonomous altitude measurement and landing area detection for indoor UAV applications". In: Advanced Video and Signal Based Surveillance (AVSS), 2016 13th IEEE International Conference on. IEEE, pp. 166–172.
- **B. Kakillioglu**, K. Ozcan, and S. Velipasalar (2016). "Doorway detection for autonomous indoor navigation of unmanned vehicles". In: 2016 IEEE International Conference on Image Processing. IEEE, pp. 3837–3841.

PROJECTS

Graduate Projects

Syracuse University

Several projects of program related courses taken.

Aug 2015 - May 2018

- Syracuse, NY, USA
- Continual Learning with Representation Sets
- Study: Playing Atari With Deep Reinforcement Learning
- Embedded autonomous speaker (person of interest) tracker system
- C# .NET based Test Harness server and client
- C++ Dependency Analyzer with online code publisher server and repository, user client
- Classification of Body Postures and Movements using PUC-Rio Data Set

Undergraduate Projects

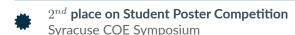
Bilkent University

Several projects in electrical engineering, signal processing, digital design, analog design, software design, and networking.

Sept 2011 - June 2015

Ankara, Turkey

HONORS & AWARDS





Bilkent University Electrical Engineering Department

Tuition ScholarshipBilkent University

Top 0.07%

National University Entrance Exam among 1.5m+ candidates

SERVICE & OUTREACH



Turkish Student Association at Syracuse University

VP, Executive board secretary, Officer. (2015 - Ongoing)



Bilkent IEEE Student Branch

E-board mentor, E-board treasurer, Webmaster, Member (2010 – 2015). Involved in organization of 100+ technical/career/social events.



Bilkent Robotics Club

Chair (2015). Organization of hobby electronics workshops.



Road to University

Organization Team (2011 – 2014). An educational program for high schools organized by student volunteers.

Reference: Dr. Senem Velipasalar

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