Michail Kalaitzakis

Résumé

800 State St, Apt 259
West Columbia, SC 29169
(+1) 803-463-1478
mike.kalaitzakis@gmail.com
mikek4y.github.io

Profile

Research Engineer with 8+ years of experience in autonomous and intelligent systems. My background as a Mechanical Engineer and my work experience in software and system development allow me to have a wide perspective on engineering projects. Extensive experience in Unmanned Aircraft Systems and computer vision, strong communications skills and ability to work in multidisciplinary teams.

Education

2018–present **Ph.D., Mechanical Engineering**, *University of South Carolina*, Columbia, SC.

Dissertation

Title *Unmanned Aircraft Systems for Autonomous Infrastructure Inspection*

Advisor Dr. Nikolaos Vitzilaios

Description The main focus of my research is to leverage the advantages of Unmanned Aircraft Systems to enable a safer and more cost effective infrastructure inspection. Towards this goal, I have explored ideas to increase the limited range of UAS and to allow UAS to capture high quality quantitative data. This includes the design of a marsupial robotic system, robust and adaptive state estimation and controller design that allows the safe operation of the UAS even in challenging conditions.

2007–2011 **Dipl., Mechanical Engineering**, *National Technical University of Athens*, Athens.
GPA – 7.89 / 10.0 (top 10%)

Thesis

Title *Communication and Visual Servoing control of a Quadrotor UAV*

Supervisor Professor Konstantinos Kyriakopoulos

Description For my thesis, I enabled a commercial quadrotor UAS to autonomously follow targets and land on specific markers using visual queues. I used C++ and LabView to developed the software that retrieved and decoded data from the onboard sensors and cameras. Using computer vision algorithms, the feed from the cameras was processed to identify targets and H-shaped landing markers. Finally, I designed a controller that used the visual queues in order to navigate the UAS to follow a target and land on a predefined mark. Part of the software developed was made publicly available as a LabView library.

Awards

Christina Ganioti - Papageorgi Scholarship

Experience

01/2019–present **Teaching Assistant**, *University of South Carolina, Department of Mechanical Engineering.*

- EMCH-972, Optimal State Estimation. Spring 2022
- EMCH-535, Robotics in Mechanical Engineering. Spring 2021, Spring 2020
- EMCH-516, Control Theory in Mechanical Engineering. Spring 2019

01/2018–present **Research Assistant**, *University of South Carolina*, Unmanned Systems and Robotics Lab.
As the first graduate student in the lab, I was involved in all aspects of setting up the lab as well as mentoring undergraduate and new graduate students. Apart from my dissertation work, I am involved in many other projects that include aerial systems design, underwater robot navigation, path planning and marker based pose estimation.

10/2013–12/2017 **Research Engineer**, Medotics.
Design and development of robotic systems. Detailed achievements:

- Design and development of a remote Eye-tracker for use as a screening test for Dyslexia and other learning difficulties. Responsible for hardware and software design. I used C++ and OpenCV to develop the software to track the subjects eyes, estimate the gaze points and calculate the characteristics of the fixations and saccadic movements. I used Qt to create a graphical user interface. I was also involved in the initial data collection and analysis that was used to create a database and assess the proposed method.
- Head of prototyping lab. Product design and prototyping using 3D CAD software, 3D printing and laser cutting. Preliminary design of a modular UAV.

Languages

Greek	Native User	
English	Proficient User (C2)	*IELTS Overall Band Score 7.5, University of Michigan Proficiency(2015)*
German	Independent User (B1)	*Goethe Institut Zertifikat Deutsch(2004)*
Italian	Basic User (A2)	

Computer Skills

Advanced	C++, Python, Matlab, OpenCV, ROS, SolidWorks
Intermediate	C, LaTeX
Basic	Qt, LabView

Selected Publications

04/2021 **Michail Kalaitzakis**, Nikolaos Vitzilaios, Dimitrios C. Rizos, Michael A. Sutton. *Drone-Based StereoDIC: System Development, Experimental Validation and Infrastructure Application.* Experimental Mechanics. doi:10.1007/s11340-021-00710-z

03/2021 **Michail Kalaitzakis**, Brennan Cain, Sabrina Carroll, Anand Ambrosi, Camden Whitehead, Nikolaos Vitzilaios. *Fiducial Markers for Pose Estimation.* Journal of Intelligent & Robotic Systems. doi:10.1007/s10846-020-01307-9

05/2020 **Michail Kalaitzakis**, Brennan Cain, Nikolaos Vitzilaios, Ioannis Rekleitis, Jason Moulton. *A Marsupial Robotic System for Surveying and Inspection of Freshwater Ecosystems.* Journal of Field Robotics. doi:10.1002/rob.21957

08/2017 Ioannis Smyrnakis, Vassilios Andreadakis, Vassilios Selimis, **Michail Kalaitzakis**, Theodora Bachourou, Georgios Kaloutsakis, George D. Kymionis, Stelios Smirnakis and Ioannis M. Aslanides. *RADAR: A Novel Fast-Screening Method for Reading Difficulties with Special Focus on Dyslexia.* PLoS One. doi:10.1371/journal.pone.0182597