Michail Kalaitzakis

Curriculum Vitae

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Education

2018–present **Ph.D., Mechanical Engineering**, *University of South Carolina*, Columbia, SC, *GPA – 3.9 / 4.0.*

Dissertation

Title *Autonomous Infrastructure Inspection using Unmanned Aerial Systems*

Advisor Dr. Nikolaos Vitzilaios

Description The focus of my research is *Infrastructure Inspection using Autonomous Aerial Systems*. This includes planning a trajectory that can safely reach an area of interest, controller design that drives the platform there and finally finding the payload that is capable of accurate and quantifiable visual inspections. My work is mostly experimental and all my projects so far include thorough experimental validation.

2007–2011 **Dipl., Mechanical Engineering**, *National Technical University of Athens*, Athens, *GPA – 7.89 / 10.0 (top 10%).*
Specialized in Aerial and Ground Vehicles

Thesis

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

Supervisor Professor Konstantinos Kyriakopoulos

Description For my thesis, I developed software to communicate with and control a commercial quadrotor UAV using visual queues. The communication software retrieved and decoded data from the onboard sensors including the cameras while it was transmitting control commands to the aircraft. Using the feed from the cameras and computer vision, the developed controller was able to navigate the vehicle through various tasks, like following a target and landing on a predefined mark. Part of the software was made publicly available as a LabView library.

Awards

2007 Christina Ganioti - Papageorgi Scholarship

Experience

01/2018–present **Research Assistant**, Unmanned Systems and Robotics Lab, University of South Carolina.
I am involved in projects that include aerial system design and control, visual odometry, collaborative robotics and infrastructure inspection

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

- EMCH-535, Robotics in Mechanical Engineering. Spring 2021, Spring 2020
- EMCH-516, Control Theory in Mechanical Engineering. Spring 2019

10/2013– **Research Engineer**, MEDOTICS.
12/2017 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 including the selection of the components, the design of the custom made parts, the software to detect and track the eye movements and estimate the gaze and fixation positions and also a graphical user interface.
- Head of prototyping lab. Product design and prototyping using 3D CAD software, 3D printing and laser cutting.
- Preliminary design of a modular UAV

Miscellaneous

11/2012– **Field Engineer**, *Eco Solutions*.
3/2013 Installation of solar panel parks in the region of Heraklion, Crete. Main duties included surveying, module installation and electrical wiring.

11/2011– **Private**, *Obligatory Military Service*.
8/2012 Served as a Special Forces soldier at the Greek National Guard in the island of Mytilene. Trained as a special operations radio operator.

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	LaTeX, C

Selected Publications

03/2021 **Michail Kalaitzakis**, Brennan Cain, Sabrina Carroll, Anand Ambrosi, Camden Whitehead, Nikolaos Vitzilaios. Fiducial Markers for Pose Estimation. Journal of Intelligent & Robotic Systems. March 2021. 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. May 2020. doi:10.1002/rob.21957

06/2019 **Michail Kalaitzakis**, Sreehari Rajan Kattil, Nikolaos Vitzilaios, Dimitris Rizos, Michael Sutton. Dynamic Structural Health Monitoring using a DIC-enabled drone. In 2019 International Conference on Unmanned Aircraft Systems (ICUAS), Atlanta, GA

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. August 2017. doi:10.1371/journal.pone.0182597

Interests

- DIY enthusiast
- Scuba Diving
- Playing the Guitar
- Martial Arts