

KONSTANTINOS BACHARIDIS

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EDUCATION

- **PhD in Computer Science** (4-year program)
Department of Computer Science, University of Crete, Heraklion, Greece.
(February 2017 - Expected Graduation: end of 2023)¹
Thesis: "Segmentation, tracking and recognition of human activities in interaction with robotic systems."
Thesis Supervisor: Prof. Antonis Argyros
Committee: Prof. Panos Trachanias, Dr Xenophon Zabulis
- **MSc in Electrical and Computer Engineering** (2-year program)
School of Electrical and Computer Engineering, Technical University of Crete, Chania, Greece.
(March 2014 - October 2016)
Thesis: "Motion structure analysis in Rivers for evaluation of dangerous events"
Thesis Supervisor: Prof. Michalis Zervakis
Committee: Associate Prof. Y. Papaefstathiou, Associate Prof. Michail G. Lagoudakis
GPA: 9.76/10.0
- **Diploma in Electronic and Computer Engineering** (5-year program)
Department of Electronic and Computer Engineering², Technical University of Crete, Chania, Greece.
(September 2007 - September 2013)
Thesis: "Fluid Flow Motion Estimation using Video Data"
Thesis Supervisor: Prof. Michalis Zervakis
Committee: Prof. Euripides G.M Petrakis, Associate Prof. Michail G. Lagoudakis
GPA: 7.50/10.0

PUBLICATIONS

Conferences:

1. **Bacharidis K**, Moirogiorgou K, Sibetheros I, Savakis A, Zervakis M., "River Flow Estimation Using Video Data", (2014) IEEE International Conference on Imaging Systems and Techniques (IST2014). Santorini Island, Greece, pp 173–178, DOI: 10.1109/IST.2014.6958468. *Best Student Paper Award*
2. Paravolidakis, V., **Bacharidis, K.**, Sarri, F., Ragia, L., Zervakis M., "Reduction of Building Façade Model Complexity using Computer Vision", IEEE International Conference on Imaging Systems and Techniques (IST), 2016, DOI: 10.1109/IST.2016.7738269. *Best Student Paper Award*

¹Academic status as PhD Candidate was set in November 2018, 1 year pause of studies (2019-2020) due to military service.

²School was renamed to Electrical and Computer Engineering in 2016

3. **Bacharidis, K.**, Ragia, L., Politis, M., Moirogiorgou, K., & Zervakis, M. E. (2016). "3D Building Reconstruction using Stereo Camera and Edge Detection". In VISIGRAPP (4: VISAPP) (pp. 715-724).
4. **Bacharidis, K.**, Argyros A. "Extracting Action Hierarchies from Action Labels and their Use in Deep Action Recognition", International Conference on Pattern Recognition (ICPR 2020), Milan, Italy.
5. **Bacharidis, K.**, Argyros A. "Improving Deep Learning Approaches for Human Activity Recognition based on Natural Language Processing of Action Labels", IEEE International Joint Conference on Neural Networks (IJCNN), 2020.
6. **Bacharidis, K.**, Argyros A., "Cross-domain Learning in Deep HAR Models via Natural Language Processing on Action Labels", In Advances in Visual Computing (ISVC 2022), Springer, San Diego, USA, October 2022.
7. **Bacharidis, K.**, Argyros A., "Repetition-aware Image Sequence Sampling for Recognizing Repetitive Human Actions", In International Conference on Computer Vision Workshops, ICCVW , Paris 2023.
8. Manousaki, V., **Bacharidis, K.**, Papoutsakis K., Argyros A., "VLMAH: Visual-Linguistic Modeling of Action History for Effective Action Anticipation", In International Conference on Computer Vision Workshops, ICCVW, Paris 2023.

Journal Publications:

1. **Bacharidis K.** , Moirogiorgou, K., Koukiou, G. et al., "Stereo System for Remote Monitoring of River Flows", Multimedia Tools and Applications (2018) 77: 9535. <https://doi.org/10.1007/s11042-017-5148-1>
2. **Bacharidis K.**, Sarri, F., Paravolidakis, V., Ragia, L. and Zervakis, M., "Fusing Georeferenced and Stereoscopic Image Data for 3D Building Façade Reconstruction". ISPRS Int. J. Geo-Inf. 2018, 7, 151, <https://doi.org/10.3390/ijgi7040151>
3. **Bacharidis K.**, Sarri, F., & Ragia, L. (2020). "3D Building Façade Reconstruction Using Deep Learning". ISPRS International Journal of Geo-Information, 9(5), 322. <https://doi.org/10.3390/ijgi9050322>
4. **Bacharidis, K.**, Argyros A. "Exploiting the Nature of Repetitive Actions for their Effective and Efficient Recognition", *Frontiers*, vol 4, 2022.

BOOK CHAPTERS

- **K. Bacharidis** , K. Moirogiorgou, G. Livanos, A. E. Savakis and M. Zervakis, Methods for Estimating the Optical Flow on Fluids and Deformable River Streams: A Critical Survey, In: Smart Water Grids: A Cyber-Physical Systems Approach, CRC Press, 255 - 290, ISBN-10: 1138197939

HONORS AND DISTINCTIONS

- **Best Student Paper awards:**

- *River Flow Estimation Using Video Data*, IEEE International Conference on Imaging Systems and Techniques (IST), 2014, DOI: 10.1109/IST.2014.6958468

- *Reduction of Building Façade Model Complexity using Computer Vision*, IEEE International Conference on Imaging Systems and Techniques (IST), 2016, DOI: 10.1109/IST.2016.7738269

- **Scholarships:**

- 2019-2020: PhD Candidate Scholarship awarded from the Hellenic Foundation for Research and Innovation (HFRI) under the HFRI PhD Fellowship grant (Fellowship Number: 1516)
- 2017-2019, 2020-2021, 2022-2023: Graduate Student Scholarship from the Foundation for Research and Technology - Hellas (FORTH).

ACADEMIC EXPERIENCE

Peer Reviewer

- International Conference on Imaging Systems (IST)
- Computer Animation and Virtual Worlds
- ISPRS International Journal of Geo-Information

Course Teaching Assistant

- *CS-587: Neural Networks and Hierarchical Representation Learning* (2018-2019, 2020-2023), Computer Science Department, University of Crete, Greece. Instructor: Prof. *N. Komondakis*.
- *CS-371: Image Processing* (2021-2022), Computer Science Department, University of Crete, Heraklion, Greece. Course instructor: Prof. *N. Komondakis*.
- *CS-573: Optimization Theory* (2018-2019, 2020-2021), Computer Science Department, University of Crete, Heraklion, Greece. Course instructor: Prof. *N. Komondakis*.
- *CS-119: Linear Algebra* (2017-2018), Computer Science Department, University of Crete, Heraklion, Greece. Course instructor: Prof. *G. Tziritas*.
- *CS-118: Discrete Mathematics* (2017-2018), Computer Science Department, University of Crete, Heraklion, Greece. Course instructor: Prof. *A. Argyros*.
- *TEL-603: Special Topics in Image Processing* (2014-2015), School of Electrical Engineering and Computer Engineering, Technical University of Crete, Chania, Greece. Course instructor: Prof. *M. Zervakis*.

EXPERIENCE

- **Software Developer** (May 2014 - September 2015), in the Signal and Image Processing Laboratory, School of Electrical and Computer Engineering, Technical University of Crete, Chania, for project [Cybersensors](#), under EU and HFRI-funded "Thales" research program.

The aim of the project was to develop an integrated river sampling system using computer vision, telemetry and biochemical fluid analysis technologies. My contribution to the project concerned the investigation and evaluation of the applicability of optical flow estimation algorithms, from image and video data, to the estimation of the surface velocity of river flows and the development in collaboration with the other members of the laboratory of an integrated algorithmic implementation framework on which the optical part of the final system was based.

- **Graduate Student Researcher**, at the [CVRL Group](#) (April 2017 - Present), in Institute of Computer Science (ICS), Heraklion, Crete, Greece. **Participated in the EU and HFRI-funded projects:**
 - [Co4Robots](#): The goal of the project was the investigation and development of methodological structures for communication and cooperation between different types of robotic systems, as well as the interaction with the human factor. Our team's contribution to the project concerned the development of object detection and tracking methods, the digital imaging and 3D reconstruction of the environment and objects.
 - [HealthSign](#): The aim of the project is the implementation of an application of automatic interpretation of Greek Sign Language (GSL) via the Internet with an emphasis on health services. Our team's contribution to the project concerns the development of methodologies for the automatic interpretation of Sign Language using data from optical sensors, through the segmentation of the user's limbs and the extraction of information about their 3D position and movement, and its utilization in machine learning algorithms and pattern recognition for the recognition of each word and expression.
 - [I.C.HUMANS](#): The project is funded by the Hellenic Foundation for Research and Innovation (HFRI). The goal of this project involves the development of vision-centered methods that enable the unobtrusive capturing of human motions and semantics.

TECHNICAL SKILLS

- Programming Languages/Software Development Tools: C, Java, HTML, JavaScript, Python, MySQL, flex, bison, VHDL, Tensorflow, keras, PyTorch, R, SageMath.
- Embedded Systems: Software/Hardware codesign for FPGAs (Xilinx ISE/EDK).
- Application Software: $\text{T}_{\text{E}}\text{X}$ ($\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$, $\text{BIBT}_{\text{E}}\text{X}$), Microsoft Office, Open-office.
- Software Development Tools: Mathworks MATLAB, Microsoft Visual Studio, Eclipse IDE, R Studio.
- Operating Systems: Linux, Microsoft Windows.