KONSTANTINOS PAPOUTSAKIS

Ph.D. Computer Science
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Residence: Heraklion, Greece
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Nationalities: Greek
Marital Status: married
Greek army service: Fulfilled (2011)

My research interests are in the areas of Computer Vision, Machine/Deep Learning, Human-Robot Interaction and Robotics. I am particularly interested in approaches for modelling and analysis of the human motion using visual data, human-object interaction recognition, action recognition and prediction, vision for robotics, deep neural networks, gestural human-robot interaction, video/image segmentation and object tracking.

Education

2014 – 2019 PhD (Computer Vision), Computer Science Department, University of Crete
Computer Science Department, University of Crete (UOC), Greece
Advisor: Prof. Antonis Argyros

Title: "Unsupervised co-segmentation of actions in motion capture data and videos".

Τίτλος: «Μη-εποπτευόμενη συν-τμηματοποίηση δράσεων σε ακολουθίες δεδομένων κίνησης και εικόνων»
Κείμενο **Διδακτορικής Διατριβής από** Εθνικό Αρχείο Διδακτορικών Διατριβών του Εθνικού Κέντρου Τεκμηρίωσης (ΕΚΤ), **Σύνδεσμος**

2008 – 2010. Master of Science, Computer Science Department, University of Crete, Greece
Computer Science Department, University of Crete (UOC), Greece
Title: "Vision-based object tracking and segmentation in a closed loop".
Advisor: Prof. Antonis Argyros.
Diploma score: 9.5/10

2002 – 2007. Diploma in Computer Engineering & Informatics, School of Engineering, University of Patras
Diploma Thesis: New Algorithms for Mining Order Preserving Association Rules using Markov Models & Applications. Advisor: Prof. Christos Makris, Diploma score: 7.78/10

Work Experience

2/2020 – now Postdoctoral Researcher at the Computational Vision & Robotics Lab – ICS, FORTH, Greece.
Working on Computer Vision methodology for Action recognition, Postural ergonomic risk assessment

2014 – 2019. Postgraduate scholar/Research Assistant as a Ph.D. candidate at the Computational Vision & Robotics Lab - ICS, FORTH, Greece.

2012– 2014. Software Research Engineer at the Computational Vision & Robotics Lab - ICS, FORTH, Greece.

2008 – 2010. Junior Postgraduate scholar/Research Assistant as a M.Sc. student at the Computational Vision & Robotics Lab - ICS, FORTH, Greece.

Contribution to EU and National-funded research projects:

- **HFRI (ΕΛΙΔΕΚ) 2021. I.C.HUMANS National Project:** "UnobtrusIve Capturing of HUman Motion ArticulatioN and Semantics". **"**Μη-επεμβατική εκτίμηση και ερμηνεία της αρθρωτής ανθρώπινης κίνησης." PI: Antonis Argyros

- **H2020-SC1-DTH-2018-1 sustAGE (https://www.sustage.eu)**
  Smart environments for person-centered sustainable work and well-being. PO: Maria Pateraki (FORTH). 2019-2022

- **H2020-ICT-2016-2017 Co4Robots**
  Achieving Complex Collaborative Missions via Decentralized Control and Coordination of Interacting Robots, 01/01/2017 - 30/06/2020.
  PI for FORTH: Antonis Argyros

- **FP7-IP-288533 Robohow.Cog** (http://www.co4robots.eu/)
  Achieving Complex Collaborative Missions via Decentralized Control and Coordination of Interacting Robots,
  01/02/2012 - 31/07/2016
  PI for FORTH: Antonis Argyros

- **FP7-ICT-2011 WEARHAP (***http://www.wearhap.eu)*
  Project WEARHAP, aims at laying the scientific and technological foundations for wearable haptics, a novel concept for the systematic exploration of haptics in advanced cognitive systems and robotics .
  01/03/2013 - 31/08/2017
  PI for FORTH: Antonis Argyros

- **FP7-288146 HOBBIT- The Mutual Care Robot** *http://hobbit.acin.tuwien.ac.at/*
  Development of a vision-based system for the human robot interaction, including human detection and tracking using RGB-D sensors mounted onboard the robotic platform, gesture recognition towards a vision-based gestural user interface, vision-based fall detection system for elderly users, a vision-based physical exercise system.
  01/11/2011 - 31/08/2015
  PI for FORTH: Antonis Argyros

Scientific Publications

Stats based on Google Scholar profile (9/2021): **487 citations, h-index 9, i10-index 9.**
Total peer-reviewed scientific publications: 11 conference papers, 7 journal papers.

In scientific journals

M. Bajones, D.Fischinger, A.Weiss, D.Wolf, T. Kortner, M. Weninger, K.Papoutsakis et al., **"Results of Field Trials with a Mobile Service Robot for Older Adults in 16 Private Households",** ACM Transactions on Human-Robot Interaction, Vol. 9, No. 2. 2019
https://dl.acm.org/doi/10.1145/3368554

C. Panagiotakis, K. Papoutsakis and A.A. Argyros, "**A Graph-based Approach for Detecting Common Actions in Motion Capture Data and Videos**", ***Pattern Recognition***, Elsevier, vol. 79, pp. 1-11, (July **2018). https://www.sciencedirect.com/science/article/abs/pii/S0031320318300499?via%3Dihub**

M.Bajones, D.Fischinger, A.Weiss, D.Wolf, T.Körtner, M.Weninger, K.Papoutsakis, et.al **"A Year of Field Trials with the Hobbit Robot", Journal at ACM Transactions on Human-Robot Interaction** (THRI) (2018). https://dl.acm.org/doi/10.1145/3368554

M. Bajones, D. Fischinger, A. Weiss, D. Wolf, T. Kortner, K. Papoutsakis, et.al. "**Hobbit - Providing Fall Detection and Prevention for the Elderly in the Real World", *Journal of Robotics***, Hindawi, (2018)**. https://dl.acm.org/doi/10.1155/2018/1754657**

D. Kosmopoulos, K. Papoutsakis and A.A. Argyros, "**A framework for online segmentation and classification of modeled actions performed in the context of unmodeled ones**", IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), IEEE, July **2017.**
https://ieeexplore.ieee.org/document/7508494

D. Fischinger, P. Einramhof, K. Papoutsakis, et.al. "**Hobbit, a care robot supporting independent living at home: First prototype and lessons learned**", **Robotics and Autonomous Systems 2014**.
https://dl.acm.org/doi/10.1016/j.robot.2014.09.029

K. Papoutsakis, A.A. Argyros, "**Integrating tracking with fine object segmentation**", **(IMAVIS) Image and Vision Computing, 2013**, Volume 31, Issue 10, pp. 771-785.
https://dl.acm.org/doi/10.1016/j.imavis.2013.07.008

In proceedings of refereed conferences and workshops

V. Manousaki, **K. Papoutsakis,** A. Argyros**, "Action prediction during human-object interaction based on dtw and early fusion of human and Object representations",** 13th International Conference on Computer Vision Systems (ICVS 2021).

K. Papoutsakis, T. Papadopoulos, M. Maniadakis, M. Lourakis, M. Pateraki, and I. Varlamis. 2021. "**Detection of physical strain and fatigue in industrial environments using visual and non-visual sensors"**. In The 14th PErvasive Technologies Related to Assistive Environments Conference (**PETRA 2021**). Association for Computing Machinery, New York, NY, USA, 270–271.
https://dl.acm.org/doi/fullHtml/10.1145/3453892.3461633

K. Papoutsakis, A.A. Argyros. **"Unsupervised and Explainable Assessment of Video Similarity"**. *British Machine Vision Conference (BMVC 2019)*, Cardif, UK, September 2019.
https://bmvc2019.org/wp-content/uploads/papers/0417-paper.pdf

V. Manousaki, **K. Papoutsakis** and A.A. Argyros, "**Evaluating Method Design Options for Action Classification based on Bags of Visual Words**", In *International Conference on Computer Vision Theory and Applications (**VISAPP 2018**)*, Scitepress, pp. 185-192, Madeira, Portugal, January 2018.
https://www.semanticscholar.org/paper/Evaluating-Method-Design-Options-for-Action-based-Manousaki-Papoutsakis/968459ed2ea0b11de3a1b35a4a1ef9f3c307ea32

K. Papoutsakis, C. Panagiotakis and A.A. Argyros, **"Temporal Action Co-Segmentation in 3D Motion Capture Data and Videos"**, In IEEE Computer Vision and Pattern Recognition **(CVPR 2017)**, IEEE, pp. 2146-2155, Honolulu, Hawaii, USA, July 2017.
https://ieeexplore.ieee.org/document/8099714

M. Foukarakis, I. Adami, D. Ioannidi, A. Leonidis, D. Michel, A. Qammaz, **K. Papoutsakis,** M. Antona and A.A.

Argyros, **"A Robot-based Application for Physical Exercise Training"**, In *International Conference on Information and Communication Technologies for Ageing Well and e-Health (ICT4AWE 2016)* *https://www.scitepress.org/PublicationsDetail.aspx?ID=ZxJ41TQqq8E=&t=1*

D. Kosmopoulos, **K. Papoutsakis**, A.A. Argyros, "**Segmentation and classification of actions in the context of unmodeled actions**", British Machine Vision Conference (**BMVC 2014**), Nottingham, UK, Sep. 1-4, **2014**. http://dx.doi.org/10.5244/C.28.95

D.Michel, **K. Papoutsakis**, A.A. Argyros, "**Gesture recognition for the perceptual support of assistive robots**", International Symposium on Visual Computing (**ISVC 2014**). http://users.ics.forth.gr/~argyros/res_gesturesforHRI.html

D. Fischinger, P.Einramhof, W.Wohlkinger, **K.Papoutsakis**, et.al. "**Hobbit - The Mutual Care Robot**", ASROB-2013, IEEE/RSJ International Conference on Intelligent Robots and Systems, November **2013**, Japan. http://hobbit.acin.tuwien.ac.at/publications/IROS_Hobbit_The_mutual_care_robot.pdf

K. Papoutsakis, P. Padeleris, et.al. "**Developing visual competencies for socially assistive robots: the HOBBIT approach**", in Proceedings of Workshop on Robotics in Assistive Environments (RasEnv 2013), in conjunction with **PETRA 2013**, Greece. https://dl.acm.org/doi/10.1145/2504335.2504395

K. Papoutsakis, A.A. Argyros, "**Object tracking and segmentation in a closed loop**", in Proceedings of the International Symposium on Visual Computing, **ISVC'2010**. https://link.springer.com/chapter/10.1007/978-3-642-17289-2_39

Patent application. D. Michel, K. Papoutsakis, A. Argyros (FORTH), GESTURE RECOGNITION APPARATUSES, METHODS AND SYSTEMS FOR HUMAN-MACHINE INTERACTION. U.S. provisional patent application No. 62/051,271, 16/09/2014. https://www.freepatentsonline.com/y2016/0078289.html

Peer reviewing - Teaching Experience

Teaching as Co-instructor (2019-2020 and 2020-2021) for the Computer Vision course (winter semester), Master program "Advanced Production, Automation, and Robotics Systems (School of Engineering)", Hellenic Mediterranean University, Heraklion, Crete.

Teaching Assistantship as postgraduate student (2014-today, per academic semester) in the Computer Science Department, School of Sciences and Technology, University of Crete, Greece.

CS472 Computer Vision, CS587 Neural Networks and Deep Learning, CS573 Discrete Optimization Methods in Computer Vision, CS118 Data structures, CS118 Discrete Mathematics, CS472 Theory of Computation

Served as reviewer: IEEE Computer Vision and Pattern Recognition (CVPR), IEEE International Conference on Computer Vision (ICCV), British Machine Vision Conference (BMVC), IEEE International Conference on Automatic Face Gesture Recognition (FG), PErvasive Technologies Related to Assistive Environments (PETRA). European Signal Processing Conference (EUSIPCO).

AWARDS & SCHOLARSHIPS

- Award for the Ph.D. dissertation and research record from the **"Friends of FORTH" organization**, December 2019. The award is granted to exceptional Ph.D. candidates among all institutes of FORTH.

- Awarded the honorary **Maria Michail Manassaki Bequest Fellowship**, academic year 2017-2018. The fellowship is granted annually to exceptional Ph.D. candidates of the University of Crete.

- Honourable nomination and participation in the **Roche Continents 2019 program** (Invited 100 talented PhD candidates from across Europe).

- **Graduate Research Scholarships**, Institute of Computer Science, FORTH, during PhD studies (2014 - now) and MSc studies (2008-2010).

Misc.

Languages	Greek, English (excellent), German (moderate).

OSs	Linux, Windows.
C/C++	STL, OpenCV, Boost, ROS, PCL.
MatLab	For computer vision, pattern recognition, robotics, and data mining.
Scripting	Python (scipy, numpy, scikit-learn), Javascript, PyTorch
Version Control	Git, Subversion
Development envs	Visual Studio, Eclipse, PyCharm, gcc, g++, CMake, Makefile
Web / DB	PHP, MySql, MSSQL, HTML, XML, JavaScript, J2EE.
Machine/Deep Learning	PyTorch, Caffe, Tensorflow, Keras, Python/Scikit-learn.

References:

Antonis Argyros, Professor, Computer Science Department, University of Crete and affiliated Researcher of the Computational Vision and Robotics Lab, Institute of Computer Science of the FORTH -Hellas.
Contact info: argyros@ics.forth.gr

Maria Pateraki, Assistant Professor in Photogrammetry, National Technical University of Athens and affiliated Researcher of the Computational Vision and Robotics Lab, Institute of Computer Science of the FORTH -Hellas.
Contact info: mpateraki@mail.ntua.gr

Costas Panagiotakis, Associate Professor in the Department of Management Science and Technology, Hellenic Mediterranean University, Crete. Contact info: cpanag@ics.forth.gr

Dimitrios Kosmopoulos, Professor, Computer Engineering & Informatics, University of Patras.
Contact info: dkosmo@ceid.upatras.gr