



**THE CYPRUS
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RESEARCH • TECHNOLOGY • INNOVATION

Curriculum Vitae

Panayiotis Papadopoulos

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The Cyprus Institute

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Academic and Professional details:

Education:

- 2020** Ph.D. / Electrical Engineering / University of Cyprus
Title: Distributed Monitoring and Control for Smart Buildings: A Model-Based Fault Diagnosis and Accommodation Framework
Supervisor: Prof. Marios Polycarpou, ECE Department, University of Cyprus
Examination Committee:
Prof. Christos Panayiotou, ECE Department, University of Cyprus
Assist. Prof. Stelios Timotheou, ECE Department, University of Cyprus
Assist. Prof. Vasiliki Reppa, Maritime and Transport Techn., TU Delft
Prof. Petros Ioannou, Electr. Engineering, Univ. of Southern California of Engineering
- 2014** MSc / Electrical Engineering/ University of Cyprus
- 2012** Bachelor / Electrical Engineering/ University of Cyprus

Professional Experience:

- March 2022 – Present** Post-Doctoral Fellow, The Cyprus Institute
- July 2020 – February 2022** Research Associate, KIOS Research and Innovation Center of Excellence
- July 2013 – June 2020** PhD Candidate, KIOS Research and Innovation Center of Excellence

Research Experience:

ENERMAN: ENERgy-efficient manufacturing system MANAgement (EU H2020 Project, 9.7M Budget - EU Contribution) July 2021 – March 2022

Task Leader

Responsibilities:

- Design, development, and deployment of an event-driven Intelligent Decision Support System for the EnerMan solution based on the framework of SEMIoTICS
- Deliverable D.1.1, SoA and Analysis of current practices, writing and reviewing the main part of the deliverable
- Meetings with Technical partners and users
- Prepare deliverables for Task 3.4 and Task 4.2

Smart Buildings Strategic KIOS Initiative (SKI) 2020 - present

Leader

Responsibilities:

- Development of laboratory or testbed infrastructure: KIOS Smart Building Living Lab (SB-Lab)
- Modeling and Simulation of KOD03 building at University of Cyprus Campus
- Integrate real-time measurements from IoT Indoor Air Quality sensors via an API

AURA: Air Quality Monitoring for Indoor Environments 2021 - present

Tasks leader

Responsibilities:

- Lead the project Tasks 5.1, 5.2, 6.1, 6.2.
- Co-supervise for the development of the COMOB software and the modeling of Level 1 of KOD03 building at UCY campus

Domognostics+: Smart building systems for better monitor and control (Cyprus Research and Innovation Foundation, 150K Budget) 2017 - 2018

Task Leader

Responsibilities:

- Technical implementation and evaluation of a building automation systems for monitoring and fault diagnosis methodologies.

Teaching Experience:

University of Cyprus

Teaching Special Scientist (Department of Electrical and Computer Engineering)

Fall semester 2020-2021: Introduction to Control Systems (undergraduate course)

University of Cyprus

Teaching Assistant (Department of Electrical and Computer Engineering)

Fall semester:

- Systems Theory (post-graduate course) 2017-2018
- Digital Logic Design (2nd year course) 2016
- Introduction to Random Signals and Systems (2nd year course) 2015

Spring semester:

- Intelligent Control Systems (post-graduate course) 2017-2018
- Introductory Control Systems Laboratory (3rd year course) 2015-2016

Honours and Achievements:

- Young Author Award (Finalist) for the paper entitled: “Distributed Design of Sensor Fault-Tolerant Control for Preserving Comfortable Indoor Conditions in Buildings” at the 10th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes (SAFEPROCESS) 2018

Other Skills:

Specialized Software: AutoCAD, Revit, Autodesk CFD, Ansys Fluent, EnergyPlus, BCVTB, OpenStudio

Software Development: Python, Java

Programming Languages: MATLAB, C, C++,

General Software & Tools: MS Office, Latex

Professional Service and Memberships:

- IEEE University of Cyprus Student Branch - President 2015-2018
- IEEE Cyprus Society - Student Branches Coordinator January 2017-Present
- Cyprus Scientific and Technical Chamber (ETEK) - Member 2016-Present
- Institute of Electrical and Electronics Engineers (IEEE) - Student Member 2013-Present
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) - Student Member 2019-Present
- 16th annual European Control Conference (ECC), Limassol, Cyprus - Volunteer June 12-15, 2018

Training Attended:

- European Embedded Control Institute: International Graduate School on Control
 - Model Predictive Control 14 - 18 March 2016 Prof. Jan Maciejowski, University of Cambridge, UK
 - High-gain observers in nonlinear feedback control 14 - 18 March 2016 Prof. Hassan K. Khalil, Michigan State University, USA
- 36th International Summer School of Automatic Control 7 - 11 September 2015 Positive invariance as a set-theoretic tool for fault diagnosis and fault tolerant control, Grenoble, France
- Educ. Center of Cyprus Scientific and Technical Chamber (ETEK) 23 - 24 January 2015 Two-day Seminar in Design and Advance Installation Technologies of HVAC systems and Domestic Hot Water in Energy Efficient Buildings

Publications:

- [1] P. M. Papadopoulos, G. Lympieropoulos, M. M. Polycarpou, P. A. Ioannou, Distributed Diagnosis of Sensor and Actuator Faults in Air Handling Units in Multi-Zone Buildings: A Model-Based Approach, Energy and Buildings (to appear).
- [2] F. Mehmood, P. M. Papadopoulos, L. Hadjidemetriou, M. M. Polycarpou, Modeling of sensor faults in power electronics inverters and impact assessment on power quality, in: Proceedings of the IEEE Madrid PowerTech, 2021, pp. 1–6. doi:10.1109/PowerTech46648.2021.9494765.
- [3] G. Lympieropoulos, P. M. Papadopoulos, P. Ioannou, M. M. Polycarpou, Distributed adaptive control of air handling units for interconnected building zones, in: Proceedings of the American Control Conference (ACC), IEEE, 2020, pp. 4207–4212.
- [4] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Scalable distributed sensor fault diagnosis for smart buildings, IEEE/CAA Journal of Automatica Sinica 7 (3) (2020) 638–655. doi:10.1109/JAS.2020.1003123.

- [5] P. M. Papadopoulos, G. Lympieropoulos, M. M. Polycarpou, P. A. Ioannou, Model-based Fault Detection and Localization Algorithm for Air Handling Units in Large-Scale Buildings, in: Proceedings of the 16th Conference of the International Society of Indoor Air Quality & Climate (Indoor Air), 2020. doi:(to appear).
- [6] P. M. Papadopoulos, Distributed monitoring and control for smart buildings: a model-based fault diagnosis and accommodation framework, Ph.D. thesis, Cyprus.
- [7] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Distributed Sensor Fault Accommodation of Multi-Zone HVAC Systems, in: Proceedings of the IEEE Conference on Decision and Control, IEEE, 2018, pp. 7296–7301. doi:10.1109/CDC.2018.8619178.
- [8] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Distributed Design of Sensor Fault-Tolerant Control for Preserving Comfortable Indoor Conditions in Buildings, in: Proceedings of the 10th Symposium on Fault Detection, Supervision and Safety of Technical Processes, Warsaw, Poland, 2018, pp. 688–695.
- [9] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Distributed Diagnosis of Actuator and Sensor Faults in HVAC Systems, in: Proceedings of the IFAC World Congress, 2017, pp. 4209–4215. doi:10.1016/j.ifacol.2017.08.816.
URL <http://linkinghub.elsevier.com/retrieve/pii/S2405896317312715>
- [10] P. M. Papadopoulos, L. Hadjidemetriou, E. Kyriakides, M. M. Polycarpou, Robust Fault Detection, Isolation, and Accommodation of Current Sensors in Grid Side Converters, IEEE Transactions on Industry Applications 53 (3) (2017) 2852–2861. doi:10.1109/TIA.2016.2636815.
URL <http://ieeexplore.ieee.org/document/7776877/>
- [11] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Distributed adaptive sensor fault tolerant control for smart buildings, in: Proceedings of IEEE Conference on Decision and Control (CDC), IEEE, 2015, pp. 3143–3148. doi:10.1109/CDC.2015.7402690.
URL <http://ieeexplore.ieee.org/document/7402690/>
- [12] P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, C. G. Panayiotou, Distributed Adaptive Estimation Scheme for Isolation of Sensor Faults in Multi-zone HVAC Systems, in: Proceedings of 9th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, Elsevier, 2015, pp. 1146–1151. doi:10.1016/j.ifacol.2015.09.681.
- [13] V. Reppa, P. Papadopoulos, M. M. Polycarpou, C. G. Panayiotou, A Distributed Architecture for HVAC Sensor Fault Detection and Isolation, IEEE Transactions on Control Systems Technology 23 (4) (2015) 1323–1337. doi:10.1109/TCST.2014.2363629. URL <http://ieeexplore.ieee.org/document/6964806/>
- [14] V. Reppa, P. Papadopoulos, M. M. Polycarpou, C. G. Panayiotou, A distributed virtual sensor scheme for smart buildings based on adaptive approximation, in: Proceedings of the International Joint Conference on Neural Networks (IJCNN), 2014, pp. 99–106. doi:10.1109/IJCNN.2014.6889976.
- [15] V. Reppa, P. Papadopoulos, M. M. Polycarpou, C. G. Panayiotou, Distributed detection and isolation of sensor faults in HVAC systems, in: Proceedings of Mediterranean Conference on Control and Automation (MED), 2013, pp. 401–406. doi:<https://doi.org/10.1109/MED.2013.6608753>.