PERSONAL INFORMATION	Prof. ALFONSO CAPOZZOLI - Director of BAEDA lab

📍 Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia

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🌐 http://www.baeda.polito.it/

Sex M | *Date of birth* ▉▉▉▉▉ | *Nationality* Italian

h-index: 26 Total citations: 2299 (Scopus identifier: 23018003200)

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☒ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

2017 - present	**Associate Professor in building physics and building energy systems, Director of BAEDA lab@POLITO (http://www.baeda.polito.it/)**
	Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia
	Research: Intelligent buildings; energy data analytics; adaptive and model predictive control in HVAC systems; AI-based energy management and control strategies of building-integrated micro-grids
2014 - 2017	**Assistant Professor in building physics and building energy systems with time contract (tenure track)**
	Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia
	Research: Building physics; data-driven energy modelling; advanced building envelope technologies
2012 - 2014	**Assistant Professor in building physics and building energy systems with time contract**
	Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia
	Research: Data analysis and data mining for building energy management; analysis of thermal bridging effect in high energy efficient buildings; energy optimization of smart buildings
2011 - 2012	**Postdoctoral Research Fellow**
	Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia
	Research: Building energy performance monitoring; indoor environment and energy in buildings
2008 - 2011	**Postdoctoral Research Fellow**
	Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi, 24, 10129, Torino, Italia
	Research: Development and application of wireless technology for building energy and environmental audit; inverse building energy modeling

EDUCATION AND TRAINING

2006	Ph.D in in Engineering of Mechanical Systems
	University of Naples Federico II (Italy), C.so Umberto I, 40 - NAPOLI (Italy)
	Topic: Innovative HVAC systems and indoor environmental control in museum applications
2003	M.Sc. (5 years) in Mechanical Engineering
	University of Naples Federico II (Italy) C.so Umberto I, 40 - NAPOLI (Italy)
	Topic: Chemical dehumidification-based HVAC systems for supermarket application

PROJECTS
(last five years)

Research industrial projects with leadership roles

Sep. 2021 – Oct. 2023	Aquaseek s.r.l. "Experimental testing of atmospheric water generation systems" **(PI)**
Aug. 2021 – Feb. 2022	Edilclima s.r.l. "Definition of artificial intelligence-based processes for supporting decisions in the energy sector through the analysis of energy performance certificates of buildings" **(PI)**
Jun. 2021 – Jun. 2023	ABB spa "Advanced energy information and management systems based on artificial intelligence to enhance energy flexibility and efficiency in industrial and office buildings" **(PI)**
May 2020 – May 2021	ABB s.p.a. "Development of advanced predictive energy management applications and identification of anomalies with data analytics processes in office and industrial buildings" **(PI)**
Jun. 2020 – Dec. 2020	AMAECO s.r.l. "Development of artificial intelligence applications for an energy management platform for commercial and industrial buildings" **(PI)**
Mar. 2019 – Mar. 2020	ABB s.p.a. "Development of methodological processes based on data analytics techniques for the activation of a service aimed at the characterization of consumption, predictive energy management and the detection of anomalies in office and industrial buildings" **(PI)**
Jun. 2017– Jun. 2018	IREN s.p.a. "Evaluation of energy savings due to efficiency measures and identification of robust management strategies for buildings and /or HVAC systems through expert analysis of energy monitoring data" **(PI)**

National and international research projects with leadership roles

Apr. 2022 – Apr. 2025	PRIN 2020: Optimal refurbishment design and management of small energy micro-grids **(PI @POLITO)**
Jan. 2020 – Dec. 2021	ENEA "Energy management in buildings: from the component scale to the district scale" **(Co-PI)**
Oct. 2019 – Dec. 2022	General Research Fund (GRF) , Research Grants Council (RGC) of Hong Kong, China, "Development of a Big Data-Driven Methodology to Characterize and Model the Energy Dynamics of Large Buildings with Complex Energy System" (Project Number: 15213319) **(Co-PI)**
Sep. 2018 – Dec. 2018	ENEA "Performance characterization and energy management of pilot residential buildings" **(Co-PI)**
Oct. 2017 – Sept. 2018	ENEA "Management and diagnostic strategies of the energy demand of air-conditioning and of the thermo-hygrometric quality of pilot buildings" **(Co-PI)**

Member of international research programmes

2019 - present	IEA EBC - Annex 81 "Data-Driven Smart Buildings"
2013 - 2017	IEA EBC Annex 65 "Long Term Performance of Super-Insulating Materials in Building Components and Systems"
2012 to 2015	IEA EBC Annex 59 "High temperature cooling and low temperature heating in buildings"
2010 – present	JP Smart cities in EERA (European Energy Research Alliance) - Urban energy networks
2008 - 2013	IEA EBC Annex 53 "Total Energy Use in Buildings: Analysis & Evaluation Methods"

Project reviewer

2018	State Education Development Agency (SEDA) of the Republic of Latvia
2017	FONDECYT Regular 2018 grant competition (CONICYT- Chile)
2017	State Education Development Agency (SEDA) of the Republic of Latvia
2015	International Post-Doc Initiative (IPODI) Technische Universität, Berlin

COMMUNITY SERVICE

General Chair	International Conference on Sustainability in Energy and Buildings (SEB 2016).
TPC chair	International Conference on Sustainability in Energy and Buildings (SEB) Editions: 2022, 2021, 2020, 2019, 2018
TPC member/Reviewer	International Conference on Sustainability in Energy and Buildings (SEB) Roomvent 2020 Building Simulation 2019 Conference (BS 2019) 21st IEEE International Conference on Computational Science and Engineering (CSE 2018) IEEE International Conference on Energy Conservation& Efficiency (ICECE 2017) International Symposium on Parallel and Distributed Computing (ISPDC) Editions: 2018, 2017 International Conf. on Sustainability in Energy and Buildings (SEB) Editions: 2014, 2015, 2016, 2017 International Building Physics Conference (IBPC 2015) International Conference on the European Energy Market (EEM). Editions: 2014, 2015 IBPSA-Italy Conference "Building Simulation Applications" (BSA). Editions: 2013, 2014, 2015
Session chairman	WESC – 2022, SEB2022, SEB2021 - SEB 2020 - BS 2019 - SEB 2019 - SEB 2018 - IEECB&SC 2018 - SEB 2017 - SEB 2016 - SEB 2015- SEB 2014 - 3th International workshop on energy-efficient data center - BSA 2013 - Clima 2010

EDITORIAL ACTIVITY

2021 – 2022	Energy and AI, Elsevier (ISSN: 2666-5468), Special Issue "AI and Data Science-enabled Applications for Intelligent Building Energy Management" – Co-guest editor
2020 – 2021	Energies MDPI (ISSN 1996-1073), Special issue "Bottom-Up Urban Building Energy Modelling" – Co-guest editor
2020 – Present	Energies, MDPI (ISSN 1996-1073) - Member of the Editorial Board
2020 – Present	Frontiers in Built Environment, Frontiers Media S.A.(ISSN: 22973362) - Member of the Editorial Board
2019	Smart Innovation, Systems and Technologies : Sustainability in Energy and Buildings, Proceedings of SEB 2019, Springer Nature Scientific Publishing Services (P) Ltd., Co-Guest Editor
2018 – Present	Smart Science (ISSN 2308-0477), Taylor&Francis - Member of the Editorial Board
2018 – Present	Smart cities, MDPI (ISSN: 2624-6511) - Member of the Editorial Board
2017	American Journal of Engineering and Applied Sciences, Science Publications group (ISSN Print: 1941-7020) - special issue "Renewable Energy, Environmental Engineering, Architectural and Civil Engineering, Sustainable Energy" - Co-Guest editor
2017	Building Services Engineering Research & Technology, SAGE Publishing (ISSN: 01436244) - special issue "Small scale/urban renewable energy technologies" - Co-Guest editor
2016	Engineering Sustainability, ICE Publishing (ISSN: 1478-4629) - Co-Guest editor of a special issue including selected papers from SEB 16
2016	Energy Procedia, Elsevier, (ISSN 1876-610, - Vol. 111, Pages 1-1088) - Issue "Eighth International Conference on Sustainability in Energy and Building - Co-Guest editor
2015 – Present	American Journal of Engineering and Applied Sciences, Science Publications group (ISSN Print: 1941-7020 - ISSN Online: 1941-7039) – Member of the Editorial Board

PHD SUPERVISION

Nov. 2021 – Present	"Artificial intelligence based decision support systems for enhancing energy management in buildings" PhD student: Roberto Chiosa, XXXVII cycle, Politecnico di Torino, PhD in Energetics Polito
Nov.2021 – Present	"Transfer learning to enhance the scalability of artificial intelligence based control strategies in buildings" PhD student: Davide Coraci, XXXVII cycle, Politecnico di Torino, PhD in Energetics Polito
Nov. 2021 – Present	"Data-driven energy management strategies for energy communities" PhD student: Antonio Gallo, XXXVII cycle, Politecnico di Torino, PhD in Energetics Polito
Nov. 2019 – Present	PhD project: "Energy flexibility at district scale" PhD student: Giuseppe Pinto, XXXV cycle, Politecnico di Torino, PhD in Energetics Polito
Nov. 2018 – Oct. 2021	"Adaptive Control Strategies for Improving Energy Flexibility and Comfort in Buildings" PhD student: Silvio Brandi, XXXIV cycle, Politecnico di Torino, PhD in Energetics Polito
Nov. 2016 – Oct. 2019	"Exploiting the potential of adaptive building components by means of innovative control strategies", PhD student: Francesco Isaia, XXXII cycle, Politecnico di Torino, PhD programme in Energetics – Tutor (co-tutor: prof. Valentina Serra)
Nov. 2016 – Oct. 2019	"Energy management in buildings through data analytics techniques",PhD student: Marco Savino Piscitelli, XXXII cycle, Politecnico di Torino, PhD in Energetics Polito (co-tutor: prof. Marco Perino)
Nov- 2014 – Oct.2017	"Getting closer the mismatch between RES availability and exploitation", PhD student: Gianluca Serale, XXX cycle, PhD in Energetics Polito (co-tutor: prof. Marco Perino)
Nov. 2013 – Oct. 2016	"Optimisation of opaque building envelope components with Phase Change Materials", PhD student: Ylenia Cascone, XXIX cycle, PhD programme in Energetics Polito (co-tutor: prof. Marco Perino)

TEACHING

From ay 2021/2022 - Present	"Energy transition and low carbon architecture B", Master's degree in Architecture For The Sustainability Design, Politecnico di Torino - Lecturer in charge
From ay 2020/2021 - Present	"Energy management and automation in buildings", Master's degree in Energy and Nuclear Engineering, Politecnico di Torino - Lecturer in charge
From ay 2013/2014 - Present	"Environmental control principles and techniques", Master's degree in Architecture For The Sustainability Design, Politecnico di Torino - Lecturer in charge
From ay 2013/2014 - Present	"Building physics and HVAC systems" Bachelor's degree in Energy Engineering, Politecnico di Torino - Lecturer in charge

INSTITUTIONAL RESPONSIBILITIES

2022 and 2019	Member of the selection committee for the admission of the PhD candidates (XXXVIII and XXXV cycle cycle) to PhD Energetics program Politecnico di Torino
a.y. 2020/2021 and 2021/2022	Member of the selection commission for admission to master's degree courses in architecture for the Politecnico di Torino for candidates with a foreign qualification
Jul. 2020 – Sep. 2021	Principal academic tutor of the project Clean Tech - SEI Pioneer (Alta Scuola Politecnica)
2020 - Present	Member of the Information Technology Strategy Commission Politecnico di Torino
2020 - 2022	Member of the Executive Committee of the Specializing Master and Lifelong Learning School Politecnico di Torino
2020 - Present	Member of equipment resources committee in DENERG at Politecnico di Torino
2019 - Present	Elected member of the Academic Board of the Specializing Master and Lifelong Learning School Politecnico di Torino
2019 - Present	Member of the PhD Board of Energetics at Politecnico di Torino
Jul. 2018 – Sep. 2019	Co-Tutor of the project Smart City DiVA financed by Alta Scuola Politecnica 2018
2015 - Present	Member of Advisory Board for Erasmus/DD Politecnico di Torino (co-responsible for Europe area)

INVITED TALKS

19 Jan. 2022	Guidehouse insight webinar, "The penetration of AI in EMS"
16 Jun. 2021	ANNEX 81 webinar "BAEDA Lab experience in FDD and ADD in energy&buildings"
6 Oct. 2021	Seminar UniCampania doctoral school " Making Sense from Sensors: Artificial Intelligence to enhance IEQ and system operation in buildings"
6 Dec. 2018	The Hong Kong Polytechnic University, Hong Kong (China) "Enhancing Building Energy Management using Data Analytics Based Methodologies"
3-5 Dec. 2018	International conference ASim2018, Hong Kong (China), "Big Data Analytics for Smart Building Energy Management", International workshop
5-7 July 2017	International Conference on Sustainability in Energy and Buildings (SEB 2017), Chania, Greece, " Mining typical load profiles in buildings to support energy management in the smart city context"
29 Nov. 2016	Cardiff Metropolitan University, Cardiff School of Art & Design, Cardiff, UK, "Enhancing energy efficiency in buildings through data analytics"
1-3 Jul. 2015	International Conference on Sustainability in Energy and Buildings 2015", Lisbon, Portugal "Extracting knowledge from building energy data" - Keynote speaker
3-4 Jun. 2015	Data cloud Europe Global Congress, Monaco (with dr. Marta Chinnici) "Energy and Thermal Management Metrics for Energy Efficiency in Data Centres"
14 Jun. 2018	35° AICARR National conference, Firenze, Italy "Le potenzialità dell'analisi dati per il miglioramento della gestione energetica degli edifci"
27-28 Mar. 2018	Workshop "Retrofit Energetico e Certificazione del Costruito", Vicenza, Italia, "Le potenzialità dell'analisi dei dati per la gestione energetica degli edifici"
30 Sep. 2016	2° Giornata Nazionale dell'Energia. L'Energia e la Città. Approcci intelligenti alle smart cities", Roma, Italy "Monitoraggio energetico nelle smart cities"
20 Oct. 2010	National conference "Promozione dell'Ecolabel Europeo per il servizio di ricettività turistica e di campeggio", "Uso razionale dell'energia", Torino, Italy

FELLOWSHIPS AND AWARDS

01-15 Jul. 2018	Sustainable Buildings Research Centre (SBRC) Innovation Campus, University of Wollongong, Australia - Visiting principal fellow
01-31 Mar. 2017	Sustainable Buildings Research Centre (SBRC) Innovation Campus, University of Wollongong, Australia - Visiting principal fellow
12-13 Oct. 2016	Department of "Computer Science", University Politehnica of Bucharest: 2016 – Guest Researcher - (
25 - 27 Jun. 2014	As scientific organiser and chairman, award for the technical session "Advanced building envelope technologies for high energy performance" as "Best Invited Session" in the International Conference on Sustainability in Energy and Buildings 2014 Cardiff, Wales, UK.
2011 - 2015	Member of directive board of IBPSA Italy ((International Building Performance Simulation Association)

2020 - Present	Co-Founder and CEO of the start-up ToBe Analytics s.r.l recognized as a spin-off of Politecnico di Torino (21.07.2021) offering services in the field of energy data analytics
2018	Italian National Qualification for Full Professor position (Italian Ministry for University and Research) ASN I Fascia – sector 09/C2
2016	Co-Founder of the Start-up C2R ENERGY CONSULTING s.r.l.
PUBLICATIONS	Complete list at https://iris.polito.it/cris/rp/rp04006?sortBy=2&order=DESC&type=all
Publications best and most relevant in the last 10 years	1. Brandi S., Gallo A., Capozzoli A. (2022). A predictive and adaptive control strategy to optimize the management of integrated energy systems in buildings. ENERGY REPORTS, vol. 8, p. 1550-1567, ISSN:2352-4847, doi: 10.1016/j.egyr.2021.12.058 2. Fan C., Lei Y., Sun Y., Piscitelli M. S., Chiosa R., Capozzoli A. (2022). Data-centric or algorithm-centric: Exploiting the performance of transfer learning for improving building energy predictions in data-scarce context. ENERGY, vol. 240, ISSN: 0360-5442, doi: 10.1016/j.energy.2021.122775 3. Pinto G., Wang Z., Roy A., Hong T., Capozzoli A. (2022). Transfer learning for smart buildings: A critical review of algorithms, applications, and future perspectives. ADVANCES IN APPLIED ENERGY, vol. 5, ISSN: 2666-7924, doi: 10.1016/j.adapen.2022.100084 4. Isaia F., Fiorentini M., Serra V., Capozzoli A. (2021). Enhancing energy efficiency and comfort in buildings through model predictive control for dynamic façades with electrochromic glazing. JOURNAL OF BUILDING ENGINEERING, vol. 43, ISSN: 2352-7102, doi: 10.1016/j.jobe.2021.102535 - Articolo in rivista 5. Pinto G., Deltetto D., Capozzoli A. (2021). Data-driven district energy management with surrogate models and deep reinforcement learning. APPLIED ENERGY, vol. 304, ISSN: 0306-2619, doi:10.1016/j.apenergy.2021.117642 6. Pinto G., Piscitelli M. S., Vazquez-Canteli J. R., Nagy Z., Capozzoli A. (2021). Coordinated energy management for a cluster of buildings through deep reinforcement learning. ENERGY, vol. 229, ISSN: 0360-5442, doi: 10.1016/j.energy.2021.120725 7. Brandi S., Piscitelli M. S., Martellacci M., Capozzoli A. (2020). Deep reinforcement learning to optimise indoortemperature control and heating energy consumption in buildings. ENERGY AND BUILDINGS, vol. 224, ISSN: 0378-7788, doi: 10.1016/j.enbuild.2020.110225 8. Piscitelli M. S., Brandi S., Capozzoli A., Xiao F. (2020). A data analytics-based tool for the detection and diagnosis of anomalous daily energy patterns in buildings. BUILDING SIMULATION, ISSN: 1996-3599, doi: 10.1007/s12273-020-0650-1 9. Piscitelli M. S., Mazzarelli D. M., Capozzoli A. (2020). Enhancing operational performance of AHUs through an advanced fault detection and diagnosis process based on temporal association and decision rules. ENERGY AND BUILDINGS, vol. 226, ISSN: 0378-7788, doi: 10.1016/j.enbuild.2020.110369 10. Piscitelli M. S., Brandi S., Capozzoli A. (2019). Recognition and classification of typical load profiles in buildings with non-intrusive learning approach. APPLIED ENERGY, vol. 255, ISSN: 0306-2619, doi: 10.1016/j.apenergy.2019.113727 11. Capozzoli A., Piscitelli M.S., Brandi S., Grassi D., Chicco G., (2018). Automated load pattern learning and anomaly detection for enhancing energy management in smart buildings. ENERGY, vol. 157, p. 336-352, ISSN: 0360-5442, doi: 10.1016/j.energy.2018.05.127 12. Serale G., Fiorentini M., Capozzoli A., Bernardini D., Bemporad A. (2018), Model Predictive Control (MPC) for Enhancing Building and HVAC System Energy Efficiency: Problem Formulation, Applications and Opportunities, ENERGIES, Vol. 11, pp. 1-35, MDPI, ISSN: 1996-1073, DOI: 10.3390/en11030631 13. Capozzoli A., Piscitelli M. S., Brandi S., Grassi D., Chicco G. (2018). Automated load pattern learning and anomaly detection for enhancing energy management in smart buildings, ENERGY, Vol. 157, pp. 336-352, Elsevier, ISSN: 0360-5442 , DOI: 10.1016/j.energy.2018.05.127 14. Capozzoli A., Piscitelli M.S., Gorrino A., Ballarini I., Corrado V. (2017), Data analytics for occupancy pattern learning to reduce the energy consumption of HVAC systems in office buildings, SUSTAINABLE CITIES AND SOCIETY, Vol. 35, pp. 191–208, Elsevier, ISSN: 2210-6707, DOI: 10.1016/j.scs.2017.07.016. 15. Capozzoli A., Piscitelli M. S., Neri F, Grassi D, Serale G. (2016), A novel methodology for energy performance benchmarking of buildings by means of Linear Mixed Effect Model: the case of space and DHW heating of out-patient Healthcare Centres, APPLIED ENERGY, vol. 171, pp. 592–607, Elsevier, ISSN: 0306-2619, DOI: 10.1016/j.apenergy.2016.03.083 16. Capozzoli A., Lauro F., Khan I. (2015), Fault detection analysis using data mining techniques for a cluster of smart office buildings, EXPERT SYSTEMS WITH APPLICATIONS, vol. 42, Issue 9, pp. 4324-4338, Elsevier, ISSN 0957-4174, DOI: 10.1016/j.eswa.2015.01.010 17. Méndez Echenagucia T., Capozzoli A., Cascone Y, Sassone M. (2015), The early design stage of a building envelope: Multi-objective search through heating, cooling and lighting energy performance analysis, Applied Energy, vol. 154, pp. 577-591, Elsevier, ISSN: 0306-2619, DOI: 10.1016/j.apenergy.2015.04.090

Date and signature

Turin 2022