Azim Heydari

EDUCATION AND TRAINING

PhD in Energy and Environment
Sapienza University of Rome [01/11/2017 – 08/02/2021]

Address: Rome (Italy)

Master Degree in Industrial Engineering
Islamic Azad University, South Tehran Branch [23/09/2011 – 28/06/2014]

Address: Tehran (Iran)

Bachelor Degree in Industrial Engineering
Islamic Azad University [23/09/2007 – 22/09/2011]

Address: (Iran)

WORK EXPERIENCE

Lecturer
Graduate University of Advanced Technology [01/09/2021 – Current]

City: Kerman
Country: Iran

- Management and Energy Economics (Online course)

Teaching Assistant
Sapienza University of Rome [01/09/2018 – 01/02/2019]

Address: Rome (Italy)

- Energy Management

Strategic Planning Consultant
Sanarah Sharif Company [07/12/2013 – 29/07/2017]

Address: Kerman (Iran)

Lecturer
University of Applied Science and Technology [25/08/2015 – 30/05/2017]

Address: Rafsanjan (Iran)

- Artificial Intelligent
- Maintenance Scheduling
- Operation Research I
- Operation Research II
- Project Control
- Quality Control

RESEARCH PROJECTS

Short- Term Research Project- Sapienza University of Rome
[01/05/2021 – 31/07/2021]

Title: *Predictive Maintenance Strategy based on Big Data Analysis and Machine Learning Approach*

Joint research project in cooperation with University of Alberta

[01/04/2020 – 30/09/2020]

Title: *Analysis of Reliability and Efficiency of Renewable Energy Microgrid*

Joint research project in cooperation with KTH – The Royal Institute of Technology

[01/04/2019 – 30/09/2019]

Title: *Managing Renewable Energies Efficiency based on Environment Emission Reduction Using Machine Learning Methodologies*

INTERNATIONAL COURSES

Time Series Analysis - with a focus on modelling and forecasting in energy systems

[26/08/2019 – 30/08/2019]

Technical University of Denmark (DTU), Copenhagen, Denmark

PhD and Industrial short Course on Machine Learning in Power System

[10/06/2019 – 14/06/2019]

Chalmers University of Technology – in cooperation with IEEE Sweden PE/PEL Joint Chapter

Computer Applications in Power Systems

[20/04/2019 – 30/06/2019]

KTH Royal Institute of Technology, Stockholm, Sweden

PUBLICATIONS

Journal Articles

2016

- **Heydari, A.,** & Keynia, F. (2016). Prediction of wind power generation through combining particle swarm optimization and Elman neural network (El-PSO). *International Energy Journal*, 15(2).
- **Heydari, A.,** & Keynia, F. (2016). A new intelligent heuristic combined method for short-term electricity price forecasting in deregulated markets. *Australian Journal of Electrical and Electronics Engineering*, 13 (4), 258-267.

2017

- Shahsavari-pour, N., **Heydari, A.,** Kazemi, M., & Karami, M. (2017). A novel method for ranking fuzzy numbers. *International Journal of Mathematics in Operational Research*, 11(4), 544-566.
- **Heydari, A.,** Keynia, F., Shahsavari-Pour, N., & Sedaghat, R. (2017). An evolutionary hybrid method to predict pistachio price. *Complex & Intelligent Systems*, *3*(2), 121-132.

2019

- Keynia, F., & **Heydari, A.** (2019). A new short-term energy price forecasting method based on the wavelet neural network. *International Journal of Mathematics in Operational Research*, 14 (1), 1- 14.
- **Heydari, A.,** Garcia, D.A., Keynia, F., Bisegna, F. and De Santoli, L. (2019). A novel composite neural network-based method for wind and solar power forecasting in microgrids. *Applied Energy*, 251, p.113353.
- **Heydari, A.,** Astiaso Garcia, D., Keynia, F., Bisegna, F., & De Santoli, L. (2019). Hybrid intelligent strategy for multifactor influenced electrical energy consumption forecasting. *Energy Sources, Part B: Economics, Planning, and Policy*, 1-18.

2020

- Nezhad, M. M., **Heydari, A.,** Groppi, D., Cumo, F., & Garcia, D. A. (2020). Wind source potential assessment using Sentinel 1 satellite and a new forecasting model based on machine learning: A case study Sardinia islands. *Renewable Energy*, 155, pp. 212-224.
- Kakueinejad, M. H., **Heydari, A.,** Askari, M., & Keynia, F. (2020). Optimal Planning for the Development of Power System in Respect to Distributed Generations Based on the Binary Dragonfly Algorithm. *Applied Sciences*, 10(14), 4795.
- **Heydari, A.,** Nezhad, M. M., Pirshayan, E., Garcia, D. A., Keynia, F., & De Santoli, L. (2020). Short-term electricity price and load forecasting in isolated power grids based on composite neural network and gravitational search optimization algorithm. *Applied Energy*, 277, 115503.
- Majidi Nezhad, M., Shaik, R. U., **Heydari, A.,** Razmjoo, A., Arslan, N., & Astiaso Garcia, D. (2020). A SWOT Analysis for Offshore Wind Energy Assessment Using Remote-Sensing Potential. *Applied Sciences*, 10(18), 6398.

2021

- **Heydari, A**., Memarzadeh, G., Garcia, D. A., Keynia, F., & De Santoli, L. (2021). Interval prediction algorithm and optimal scenario-making model for wind power producers bidding strategy. *Optimization and Engineering*, 1-23.
- **Heydari, A.,** Nezhad, M. M., Garcia, D. A., Keynia, F., & De Santoli, L. (2021). Air pollution forecasting application based on deep learning model and optimization algorithm. *Clean Technologies and Environmental Policy*, 1-15.
- Nezhad, M. M., Neshat, M., Groppi, D., Marzialetti, P., **Heydari, A**., Sylaios, G., & Garcia, D. A. (2021). A primary wind farm site assessment using reanalysis data: A case study for Samothraki Island. *Renewable Energy, 172;* 667-679.
- Nezhad, M. M., Neshat, M., **Heydari, A**., Razmjoo, A., Piras, G., & Garcia, D. A. (2021). A new methodology for offshore wind speed assessment integrating Sentinel-1, ERA-Interim and in-situ measurement. *Renewab le Energy, 172*, pp.1301-1313.
- Neshat, M., Nezhad, M. M., Abbasnejad, E., Mirjalili, S., Groppi, D., **Heydari, A**., ... & Wagner, M. (2021). Wind Turbine Power output Prediction Using a New Hybrid Neuro-Evolutionary Method. *Energy*, 120617.
- **Heydari, A.,** Majidi Nezhad, M., Neshat, M., Garcia, D. A., Keynia, F., Santoli, L. D., & Tjernberg, L. B. (2021). A Combined Fuzzy GMDH Neural Network and Grey Wolf Optimization Application for Wind Turbine Power Production Forecasting Considering SCADA Data. *Energies*, *14*(12), 3459.
- **Heydari, A.,** Garcia, D. A., Fekih, A., Keynia, F., Tjernberg, L. B., & De Santoli, L. (2021). A Hybrid Intelligent Model for the Condition Monitoring and Diagnostics of Wind Turbines Gearbox. *IEEE Access*, *9*, pp. 89878-89890.
- Majidi Nezhad, M., **Heydari, A.,** Pirshayan, P., Groppi, D., Astiaso Garcia, D. (2021). A novel forecasting model for wind speed assessment using sentinel family satellites images and machine learning method. *Re newable Energy,* 179:2198-211.

2022

- Neshat, M., Mirjalili, S., Sergiienko, N. Y., Esmaeilzadeh, S., Amini, E., **Heydari, A.,** & Garcia, D. A. (2022). Layout optimisation of offshore wave energy converters using a novel multi-swarm cooperative algorithm with backtracking strategy: A case study from coasts of Australia. *Energy*, *239*, 122463.
- Shahsavari-Pour, N., Bahador, S., **Heydari, A.,** & Fekih, A. (2022). Analyzing Tehran's Air Pollution Using System Dynamics Approach. *Sustainability*, *14*(3), 1181.
- **Heydari, A.** Majidi Nezhad, M. Keynia, F. Fekih, A. Shahsavari-Pour, N. Astiaso Garcia, D Piras, G. A combined multi-objective intelligent optimization approach considering techno-economic and reliability factors for hybrid-renewable microgrid systems. Renewable energy, (Under review).
- Mirhosseini, M. Heydari, A. Astiaso Garcia, D. Keynia, F. Reliability-based maintenance programming by a new index for distribution system components ranking. O*ptimization and Engineering*, (Under review).
- Majidi Nezhad, M. **Heydari, A.** Neshat, M. Keynia, F. Piras, G. Astiaso Garcia, D. A Mediterranean Sea Offshore Wind Classification using MERRA-2 and Machine Learning Models. Energy Conversion and Management, (Under review).
- Shahsavari-Pour, N. Asadi, H. **Heydari, A.** A novel methodology to obtain all Pareto-optimal solutions for flow shop scheduling. *Assembly Automation*, *(Under review)*.
- Keynia, F. Mirhosseini, M. **Heydari, A.** Fekih, A. A Budget Allocation and Programming-based RCM Approach to Improve the Reliability of Power Distribution Networks. *Energy Reports* (Under review).

Conference Articles

- **Heydari, A.,** Astiaso Garcia, D., Keynia, F., and De Santoli, L. Mid-Term Load Power Forecasting Considering Environment Emission using A Hybrid Intelligent Approach. The 5th International Symposium on Environment-Friendly Energies and Applications (EFEA 2018). September 24-26 in Rome, Italy.
- **Heydari, A.,** Astiaso Garcia, D., Keynia, F., Bisegna, F., and De Santoli, L. Forecasting Long-Term Carbon Dioxide Emission from energy consumption through Intelligent Computing Methods. Applied Energy Symposium and Forum, Renewable Energy Integration with Mini/Microgrids, REM 2018, 29–30 September 2018, Rhodes, Greece.
- Mirhosseini. M, **Heydari. A,** Astiaso Garcia. D, and Keynia. F. A new reliability-centered maintenance programming for sustainable distribution networks based on new indexed components ranking. The 16th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), Accepted.
- M. Majidi Nezhad, S. Agostinelli, F. Cumo, **A. Heydari**, D. Astiaso Garcia, G. Piras. Predictive Maintenance Strategy based on Big Data Analysis and Machine Learning Approach for an Advanced Building. the 13th International Conference on Sustainable Energy and Environmental Protection (SEEP2021), 13-16 September 2021, (Accepted).
- Majidi Nezhad. M, **Heydari. A,** Neshat. M, Keynia. F, Piras. G, Astiaso Garcia. D. Offshore wind speed classification using MERRA-2 and machine learning models of the Mediterranean Sea. The 16th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), (Accepted).
- **Heydari. A,** Lakzadeh. A, Hassani. M, Majidi Nezhad. M, Astiaso Garcia. D, and Keynia. F. Design and implementation of a new wind speed and power forecasting model based on hybrid neural network and WPD pre-processing. The 16th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), (Accepted).

Book Chapters

- **Heydari, A**., & Keynia, F. DIFFERENT TECHNIQUES FOR PREDICTION OF WIND POWER GENERATION. *RENEW ABLE ENERGY SYSTEMS,* 85.
- Keynia, F., and **Heydari, A**. "WIND SPEED AND POWER GENERATION FORECASTING BY A HYBRID NEURAL NETWORK PREDICTION MODEL." ADVANCES IN ENERGY RESEARCH: 27, 2017.

Books

- Shahsavari Pour, N., Kazemi, M., Asadi, H, and **Heydari, A.** "Application of Met-heuristic Algorithm in Production Planning." Kian Publication, Iran (Persian), 2015.
- Keynia, F., and **Heydari, A**. "An Introduction to New Prediction Models in the Operation of Power Systems." Kerman Branch, Islamic Azad University, Kerman, Iran (Persian), 2016.

LANGUAGE SKILLS

Mother tongue(s): **Persian**

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

EDITORIAL BOARD MEMBERS

A special issue of Sustainability (ISSN 2071-1050)

Guest Editor for Sustainability, Special Issue "Energy and Environment Management through Data-Driven Modelling, Optimization and Forecasting"

https://www.mdpi.com/journal/sustainability/special_issues/EEMDDMOF

NETWORKS AND MEMBERSHIPS

Memberships

- Member of Society of Petroleum Engineers (SPE)
- Member of Iranian Wind Energy Association
- IEEE Student Member

Academic Reviewer

- IEEE Transactions on Power Systems
- IEEE Access
- Energy (Elsevier)
- Energy Conversion Management (Elsevier)
- International Journal of Electrical Power and Energy Systems (Elsevier)
- International Journal of Energy Research (Wiley)
- Clean Technologies and Environmental Policy (Springer)
- Energy Sources, Part A: Recovery, Utilization, and Environmental Effects (Taylor & Francis)
- Economic Modelling (Elsevier)
- Industrial Management & Data System (Emerald Group Publishing)
- Computational Economics (Springer)
- Earthquake Engineering and Engineering Vibration (Springer)
- Energies (MDPI)
- Applied Science (MDPI)
- Sustainability (MDPI)
- Processes (MDPI)
- Agronomy (MDPI)
- Journal of Vibration and Control

RESEARCH INTERESTS

Research Interests

- Optimization of Hybrid Renewable Energy Systems
- Energy Management
- Machine Learning
- Point and Interval Prediction
- Optimization
- Predictive Maintenance
- Energy Planning

COMPUTING SKILLS

Computing Skills

Software

MATLAB, Python, LEAP, HOMER, PVsyst, WindPro, Windographer, WRPLOT, SPSS, Minitab, Office, GAMS.