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Demetris Chrysostomou

I am passionate about advancing the theoretical and algorithmic foundations of machine learning to solve real-world challenges. My research focuses on developing data-driven models for energy systems, with a particular emphasis on robustness, generalization, and computational efficiency. By integrating modern machine learning with optimization and control theory, I aim to contribute scalable and reliable solutions to complex problems.

WORK EXPERIENCE

Postdoctoral Researcher–Cyber Resilient Power Grids Group, TU Delft
- Horizon Europe's COCOON project.   Oct. 2025 – Now
- Developing Generative AI-based models for synthetic cyber-physical system generation.

Ph.D. Candidate – AI Energy Lab, TU Delft   Oct. 2021 – Feb.2026
- Ph.D. thesis "Learning-based Distributed Resource Flexibility Estimation for Enhanced TSO-DSO Coordination."
- NWO MegaMind project researcher
- Project partners: TU Delft, TU Eindhoven, Tilburg University, University of Twente, TNO, IBM, PWC, Transdev, Enexis, Stedin, Alliander, Smart State Technology, TenneT, Equans.
- Teacher Assistant on the "*Intelligent Electrical Power Grids*" MSc Course at TU Delft, 2022, 2023.
- Energy Expert at PWC "*Data Analytics*" Workshop in Amsterdam, the Netherlands, 2022.
- Workshop Tutor for "*Graph Neural Networks in Power Systems*" in AIT, Vienna, Austria, 2023.
- Workshop Tutor for "Best Coding Practices" for the AI Energy Lab at TU Delft, the Netherlands, 2023.
- Supervisor for MSc thesis on "*Data-Driven Adaptive Dynamic Equivalent of Active Distribution Networks.*"
- Secretary of TU Delft IEEE PES Chapter since 2024.

R&D Intern – ABB Corporate Research   Mar. 2020 – Sep. 2020
- Research and Development at the Cyber-Physical Systems Group.
- Devised machine learning models and application logic for AI-assisted automated security testing for industrial automation systems. Utilized natural language processing and understanding.
- Designed software architecture for proof of concept (POC) and documented a technical summary.

Research Assistant – PSM Laboratory, UCY   Jun. 2015 – Aug. 2018
- Part-time participation in research projects.

External Evaluation Committee Member – CYQAA   May. 2018 – Jul.2018
- The Cyprus Agency of Quality Assurance and Accreditation in Higher Education.

Soldier– Cyprus National Guard   Jun. 2012 – Jun. 2014

EDUCATION

Robotics, Systems and Control MSc – ETH Zurich   Sep. 2018 – Jun. 2021
- MSc Thesis: "Optimal learning task paths for neural networks"
    - Supervisors: Dr. Julian Zilly, Dr. Andrea Censi, Prof. Emilio Frazzoli
- Semester Project: "Impact of Inverter-Based Generation on Islanding Detection Schemes in Distribution Networks"
    - Supervisors: Dr. Uros Markovic, Dr. Petros Aristidou, Prof. Gabriela Hug
- Modules Include Autonomous Mobility on Demand, Dynamic Programming and Optimal Control, Recursive Estimation, Introduction to Machine Learning, Probabilistic Artificial Intelligence, System Identification, Theory of Robotics and Mechatronics, and Linear Systems Theory.
- GPA 5.24 out of 6

Electrical Engineering BSc – University of Cyprus   Sep. 2014 – Jun. 2018
- Excellent Performance - GPA 9.03 out of 10 (Top 3 of the Electrical and Computer Engineering Class)

SKILLS
Artificial Intelligence

Machine Learning

Deep Learning

Graph Neural Networks

Recurrent Neural Networks

Long Short-Term Memory

Bayesian Neural Networks

Ensemble Learning

Generative Models

Variational Autoencoders

Diffusion Models

Transfer Learning

Reinforcement Learning

Power System Operation

Power System Analysis

Distribution System Flexibility

Power System Dynamics

Dynamic Equivalent Networks

Optimization Algorithms

Control Systems

System Identification

Path Planning Algorithms

Natural Language Processing

Natural Language Understanding

Data Augmentation

LANGUAGES

Greek – Native Language

English – Fluent (IELTS C1)

GitHub   LinkedIn   Google Scholar

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TOOLS & LEVEL

Tool	Level
Python	■■■
MATLAB	■■■
PyTorch	■■■
TensorFlow	■■■
Scikit-Learn	■■■
GIT	■■■
PowerFactory	■■■
Overleaf	■■■
Jupyter Notebook	■■■
Linux	■■□
Sphinx	■■□
Docker	■■□
C	■■□
RASA	■■□
Simulink	■■□
ROS	■■□
NLTK	■□□
SpaCy	■□□
MIPS-32	■□□
Java	■□□
SQL	■□□
Android Studio	■□□

HOBBIES

Painting: Hosted two personal art exhibitions.

JOURNAL PUBLICATIONS

D. Chrysostomou, J. L. R. Torres and J. L. Cremer, "Machine Learning-based Method to Support TSO-DSO Adaptive Coordination with Active Power Management for Instability Prevention", in Elsevier International Journal of Electrical Power and Energy Systems (IJEPES), 2025.

D. Chrysostomou, J. L. R. Torres and J. L. Cremer, "TensorConvolutionPlus: A Python package for distribution system flexibility area estimation", in SoftwareX 2025.

D. Chrysostomou, J. L. R. Torres and J. L. Cremer, "Tensor Convolution-Based Aggregated Flexibility Estimation in Active Distribution Systems", in IEEE Transactions on Smart Grid, 2024.

M. Chrysostomou, N. Christofides, D. Chrysostomou. "A Novel Machine Learning-Based Load-Adaptive Power Supply System for Improved Energy Efficiency in Datacenters". IEEE Access, 2021.

U. Markovic, D. Chrysostomou, G. Hug, P. Aristidou, "*Impact of Inverter-Based Generation on Islanding Detection Schemes in Distribution Networks*", Electric Power Systems Research (EPSR), 2021.

D. Chrysostomou, A. Dimitriou, N. Kokkinos, C. A. Charalambous *"Short-Term Electromagnetic Interference on a Buried Gas Pipeline Caused by Critical Fault Events of a Wind Park: A Realistic Case Study"*, IEEE Transactions on Industry Applications, 2020.

JOURNAL SUBMISSIONS UNDER REVIEW

D. Chrysostomou, J. L. R. Torres and J. L. Cremer, "Selection for Flexibility Areas using Probabilistic Machine Learning Under Measurement Uncertainty", Under Review.

CONFERENCE PUBLICATIONS

D. Chrysostomou, J.L.R. Torres, J.L. Cremer "Exploring Operational Flexibility of Active Distribution Networks with Low Observability," IEEE Powertech Belgrade, Serbia, 2023

TECHNICAL REPORTS

P. Aristidou, D.Chrysostomou, and C.A. Charalambous, "Assessment of the Loss-of-Mains/Anti-islanding protection for the Cyprus Distribution System". Adopted by the Distribution System Operator of Cyprus, 2019.

AWARDS

Leventis Foundation
Scholarship for the MSc of Robotics, Systems and Control.   2019 & 2020

Logicom Company
Scholarship for the MSc of Robotics, Systems and Control.   2018

Electrical and Computer Engineering Department, University of Cyprus
Best Thesis of 2018 Award.   2018

Electrical and Computer Engineering Department, University of Cyprus
Award for Excellent Academic Performance.   2018

ADDITIONAL PROJECTS

- Graph Neural Networks for Power Flow Estimation – TU Delft.
- Gradient Boosting for Transformer Temperature Prediction – Elia Hackathon.
- Autonomous Mobility on Demand: Fleet Autopilot – ETH Zurich.
  - Focused on Robot localization, movement planning, coordination, and precision.
- Creating Computational Tools for Cable Thermal Limits and Grounding Electrode Dimensions – UCY.

MEMBERSHIPS

IEEE TU Delft PES Chapter – Secretary in 2024, 2025
IEEE TU Delft Student Branch – Member
IEEE Computer Society, Control Systems Society, and PES Society
- Graduate Student Member

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