Mehmet KORUTURK

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Summary

I am an M.S. student in Electrical Engineering at Virginia Tech with research experience in reinforcement learning, optimization, and grid-interactive power systems. I am interested in how we can build energy-management agents that are not only efficient but also safe, interpretable, and able to continually adapt to changing grid conditions, uncertainty, and disturbances—so that learning-based control can be trusted in real, mission-critical infrastructure.

Education

August 2024 – Present

M.S. in Electrical Engineering
Virginia Polytechnic Institute and State University (**Virginia Tech**),
GPA: **3.96/4.00**
Advisor: **Ming Jin**
Thesis (in progress): **Reinforcement Learning Benchmarking for Sustainable Energy Systems: Perturbation Robustness, Safety Constraints, and Multi-Agent Coordination**
Relevant Coursework:

- Power System Planning (**Prof. Lamine M. Mili**)
- Advanced Alternative Energy Systems (**Prof. Saifur Rahman**)
- Advanced Microgrids (**Prof. Ali Mehrizi-Sani**)
- Computational Methods in Power (**Prof. Lamine M. Mili**)

August 2017 – May 2022

B.Sc. in Electrical Engineering
Yildiz Technical University (**YTU**), GPA: 3.21/4.00
Advisors: **Prof. Ozan Erdinc**, **Prof. Ali Rifat Boynuegri**

Research Experience

Graduate Research Assistant, Virginia Tech 2024 – Present

- Built RL benchmarks for power-system control under operational constraints, uncertainty, and non-stationarity.
- Developed model-free and hybrid RL controllers for DERs (PV, ESS, EV/FCEV) in grid-interactive homes.
- Designed resilience-aware optimization for post-disaster restoration via vehicle-to-home (V2H) resources.
- Analyzed stability and robustness of learning-based policies; built scalable pipelines for parameter / uncertainty sweeps.

Publications

Koruturk, **Mehmet**, Alper Kagan Candan, et al. (July 2025). "Post-Disaster Energy Management for Homes Using Limited-Capacity Fuel Cell Electric Vehicle Batteries". In: ***Renewable Energy***. Under review.

Koruturk, **Mehmet**, Artun Sel, et al. (June 2025). "Optimization of End-Consumer Energy Management with PV, ESS, EV, and Peer-to-Peer Trading in Smart Grids". In: ***IEEE INTCEC 2025***. URL: https://ieeexplore.ieee.org/document/11255815.

Sel, Artun, Will Barrett, et al. (June 2025). "Estimation of Regions of Attraction for Nonlinear Systems via Coordinate-Transformed TS Models". In: ***IEEE INTCEC 2025***. URL: https://ieeexplore.ieee.org/document/11255827.

Sel, Artun, **Mehmet Koruturk**, et al. (July 2025). "Estimation of Regions of Attraction for Nonlinear Systems via Coordinate-Transformed TS Models and Piecewise Quadratic Lyapunov Functions". In: ***IEEE INTCEC 2025***. URL: https://ieeexplore.ieee.org/document/11256030.

Koruturk, **Mehmet** et al. (2026a). "Post-Disaster Home Energy Management with Fuel Cell Vehicles: Adaptive MILP+RL Coordination via Deviation-Based Mode Switching Under Islanding Conditions". In: ***Applied Energy***. In preparation.

Koruturk, **Mehmet** et al. (2026b). "Post-Disaster Home Energy Management with Fuel Cell Vehicles: Evaluating Reinforcement Learning Against MILP Under Islanding Conditions". In: ***GPECOM 2026***. Accepted.

Koruturk, **Mehmet**, Bilgehan Sel, et al. (2026). "SustainRL-Bench: A Three-Axis RL Benchmark for Sustainable Energy Systems". In: ***IEEE SmartGridComm 2026***. Under review.

Industry Experience

Electrical Engineer, Huawei Technologies Co. Ltd. Jul 2022 – Jul 2023, Istanbul, Turkey

– Led technical deployment and validation of 4G/5G base station installations.
– Conducted system-level acceptance testing and performance verification.
– Coordinated site implementation for large-scale telecom infrastructure projects.

Professional Service

- Peer Reviewer,
  IEEE Transactions on Automation Science and Engineering (T-ASE) (2025–Present)
- Core Organizing Committee Member,
  Power and Energy Center (PEC) 2026 Annual Conference, Virginia Tech

Awards

- Awarded ***Turkey's Ministry of Education Scholarship for Graduate Studies in USA*** (2022–Present)

Skills

Programming	Python, MATLAB
Engineering Tools	PSCAD, AutoCAD
Productivity	MS Office