Armin Aligholian

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OBJECTIVES

My research interests include developing data-driven methods and optimization-based techniques for power systems, such as time-series forecasting and anomaly detection. Specifically, I use unsupervised deep learning models in conjunction with optimization techniques to develop physics aware models in order to have more realistic and practical solutions for the smart grid problems. I am passionate about smartgrid, EV, renewable energy and generally sustainable development. I deem myself a self-supervised, diligent active-learner who is collaborative and ambitious.

EDUCATION

University of California Riverside, Riverside,CA 2018-2022(expected)
PhD candidate, Electrical Engineering

University of Tehran, Tehran 2015-2017
M.S., Energy Systems Engineering

Tehran Polytechnic, Tehran 2009-2014
B.S., Electrical Engineering

EXPERIENCE

R&D Intern - ETAP - Operation Technology, Inc. June - Sep 2020
Develop robust forecasting model for day-ahead and week-ahead solar and wind generation, by using different costumer's locations. Final outputs of this project are a *python package* and *C++* project which implement location and weather forecast API (such as SolCast and Gmaps) and actively train a deep learning model for predicting renewable power generation regarding to specific location.
Supervisor: Dr. Saber

Research & Teaching Assistant - Smart Grid Lab @UCR 2018 - Now
Developing unsupervised deep learning models for prevalent smart grid problems in order to benefit the system operator and outperform the existing models. In the recent project we developed a deep learning GAN based model and MINLP optimization method to learn the normal behaviour of the system by using high-resolution micro-PMU data, to detect and cluster events.
Supervisor: Dr. Mohsenian-Rad, **TA:** Convex Optimization, Intro. ENGR optimization techniques.

Start up - Mizerv (co-founder and full-stack developer) 2017
WebApp for reserving table in cafe and restaurant, point and map based business model

RA & TA - Energy Systems Modeling LAB @Uni of Tehran 2014 - 2017
Research Area: Stochastic short-term scheduling of a microgrid, renewable energy resources and electrical vehicles,
Supervisor: Dr. Noorolahi & Dr. Ivatloo, **TA:** Reliability and Risk Assessment

SKILLS

Coding & Softwares: Python(Tensorflow, Keras, QT, develop packages), SQL, Git, Linux, C++, PHP, Laravel, Jekyll, HTML, CSS, Matlab, GAMS, CVX, CPLEX, LaTeX, ETAP, HOMER

Modeling: Convex and non-convex optimization problems, Supervised and unsupervised ML and DL models for forecasting/detection/classification and clustering, Time-series forecasting, Time-series anomally detection

Others: Active learning, Problem solving, Teamwork, Self-supervising, Eager to make new contribution, Technical report writing

COURSES

• Deep Learning Specialization (Coursera Certification Link) • Data Structure and Algorithm • Pattern Recognition • Statistical Data Mining • Convex Optimization • State Estimation • Stochastic Processes • Energy Systems Modeling • Renewable Energies • Power System Analysis

PUBLICATIONS

1. Unsupervised Event Detection, Clustering, and Use Case Exposition in Micro-PMU Measurements, A.Aligholian, A. Shahsavari, E. Cortez, E. Stewart, H. Mohsenian-rad, Submitted to *IEEE Trans. Smartgrid, R1*
2. Event-Based Analysis of Solar Power Distribution Feeder Using Micro-PMU Measurements, P. Khaledian, A.Aligholian, H. Mohsenian-rad, *IEEE ISGT 2021*
3. Event Detection in Micro-PMU Data: A Generative Adversarial Network Scoring Method A.Aligholian, A. Shahsavari, E. Cortez, E. Stewart, H. Mohsenian-rad, *IEEE PES GM 2020*
4. Sustainable Energy System Planning for an Industrial Zone by Integrating Electric Vehicles as Energy Storage, Y.Noorollahi, A.Aligholian,A. Golshanfard, B. Ivatloo, S. Nielsen, A. Hajinezhad, *Journal of Energy Storage 2020*
5. Stochastic energy modeling with consideration of electrical vehicles and renewable energy resources-A review, Y. Noorollahi, A.Aligholian, A. Golshanfard, *Journal of Energy Management and Tech. 2020*
6. Anomaly Detection in IoT-Based Lighting Systems with Application to Building Energy Efficiency, E.Samani, P. Khaledian, A.Aligholian, H. Mohsenian-rad, *IEEE ISGT NA 2020*
7. Unsupervised Learning for Online Abnormality Detection in Smart Meter Data, A.Aligholian, M. Farajollahi, H. Mohsenian-rad, *IEEE PES GM 2019*
8. Optimal planning of renewable energy resource for a residential house considering economic and reliability criteria, M.Mohammadi, R. Ghasempour, F. Razi, E. Ahmadi, A.Aligholian, A. Toopshekan, *International Journal of Electrical Power Energy Systems, 2018*

VOLUNTEER EXPERIENCE

• Reviewer of IEEE Transaction on Smart Grid Journal, 2018 - Now
• Reviewer of IEEE Journal on Selected Areas in Communications, 2018 - Now
• Reviewer of renewable and sustainable energy reviews (Elsevier), 2018 - Now

HONORS

• Received Deans Distinguished Fellowship Award from U.C Riverside, 2018
• Received award for entrepreneur project from University of Tehran Science & Technology Park (Summer 2015) (Movable Magnetic Electricity Outlet)
• Received fellowship for Master studies at University of Tehran, 2014-2016
• Received fellowship for Undergraduate studies at Tehran Polytechnic, 2009-2014
• Member of Energy Scientific Association of University of Tehran, 2016
• Top Rank (below 0.1 %) Iranian University Entrance Exam, 2009
• Two times semi-finalist of National Mathematics Olympiad, 2006-2007
• Semi-finalist of National Computer Olympiad, 2007

ACTIVITIES

• Reading • Making videos • Soccer • Workout • Hiking • Researching and Learning about Physics, Philosophy, Psychology, Computer Science, Math, History and Politics
• Solving IMO problems

LINKS