

Hazhar Sufi Karimi

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- Control theory and state estimation theory with 6 years' experience through my masters and PhD programs.
 - Compressed lossy/delayed measurements
 - Smart Distribution Systems
 - Nonlinear systems such as: Ships and Gene Regulatory Networks
- 2 years of experience in Statistical data analysis
- 2 years of experience in Machine Learning (Deep Learning)
- Economic modeling and analysis in smart distribution systems

Postdoctoral Training

- **Harvard Medical School** **Medical Image Analysis**
Boston, MA, USA *Jan/2021-present*

Education

- **Kansas State University** **Doctor of Philosophy (PhD)**
Manhattan, Kansas, USA *2016-2020*
Electrical Engineering
- **Kansas State University** **Graduate Certificate**
Manhattan, Kansas, USA *2018*
Applied Mathematics
- **Tarbiat Modares University** **Master of Science**
Tehran, Iran *2012-2014*
Electrical Engineering (Control)
- **Sahand University of Technology** **Bachelor of Science**
Tabriz, Iran *2008-2012*
Electrical Engineering (Control)

Research Papers

- *Thesis:*
 - **Hazhar Sufi Karimi**. "Design and analysis of dynamic Compressive Sensing in distribution grids." Kansas State University, 2020
- *Journals:*
 - Shweta Dahale, **Hazhar Sufi Karimi**, Kexing Lai, Balasubramaniam Natarajan. "Comparison of Sparse-aware State Estimation Approaches in Smart Distribution Systems." IEEE Access, 2020
 - **Hazhar Sufi Karimi**, Balasubramaniam Natarajan. "Kalman Filtered Compressive Sensing

with Intermittent Observations.” Signal Processing, 163 (2019): 49-58.

- **Hazhar Sufi Karimi**, et.al. “Comparison of Learning Based Wastewater Flow Prediction Methodologies for Smart Sewer Management.” Journal of Hydrology, 577 (2019): 123977
 - Mohammadian, M., Momeni, H. R., **Karimi, H. S.**, Shafikhani, I., & Tahmasebi, M. “An LPV based robust peak-to-peak state estimation for genetic regulatory networks with time varying delay” Neurocomputing 160 (2015): 261-273.
- *Refereed Conferences:*
- **Hazhar Sufi Karimi**, Balasubramaniam Natarajan. “Recursive Dynamic Compressive Sensing in Smart Distribution Systems.” IEEE PES Innovative Smart Grid Technologies (ISGT), 2020
 - Rahul Madbhavi, **Hazhar Sufi Karimi**, Babji Srinivasan, Balasubramaniam Natarajan. “Tensor Completion based State Estimation in Distribution Systems.” IEEE PES Innovative Smart Grid Technologies (ISGT), 2020
 - Mohammadian, M., Momeni, Tahmasebi, M & H. R., **Karimi, H. S.** “Switched adaptive observer with exponential forgetting factor for structure identification in gene regulatory networks.” 28th Iranian Conference on Electrical Engineering, (ICEE 2020). IEEE, 2020.
 - **Hazhar Sufi Karimi**, Kumarsinh Jhala, and Balasubramaniam Natarajan. “Impact of Real-Time Pricing Attack on Demand Dynamics in Smart Distribution Systems.” 2018 North American Power Symposium (NAPS). IEEE, 2018.
 - **Hazhar Sufi Karimi**, and Balasubramaniam Natarajan. “Compressive Sensing Based State Estimation for Three Phase Unbalanced Distribution Grid.” GLOBECOM 2017-2017 IEEE Global Communications Conference. IEEE, 2017.
 - **Hazhar Sufi Karimi**, et al. “Robust Extended Kalman Filter for Positioning Control of Ships in Presence of Parameter Uncertainties.” Control, Instrumentation, and Automation (ICCIA), 2016 4th International Conference on. IEEE, 2016.
- *Under Review:*
- **Hazhar Sufi Karimi**, Balasubramaniam Natarajan. “Dynamic Signal Recovery in Distribution Grids using Compressive Lossy Measurements.” under review, 2020
 - **Hazhar Sufi Karimi**, Balasubramaniam Natarajan. "Compressed Sensing Based State Estimation in Smart Distribution Systems with Topology Error." under review, 2020
 - Iman Shafikhani, **Hazhar Sufi Karimi**, Hamidreza Momeni, & Amin Ramezani. “A Recursive Delay Estimation Algorithm for Linear Multivariable Systems with Time varying Delays.” under review (2020).
- *In Progress:*
- **Hazhar Sufi Karimi**, Kexing Lai, Sai Munikoti, Balasubramaniam Natarajan. "Smart Distribution System Observability: A Review." under preparation, 2020
 - **Hazhar Sufi Karimi**, Balasubramaniam Natarajan. "Dynamic Signal Recovery with Compressive Delayed Measurements." under preparation, 2020

Technical Skills

- **Programming** : MATLAB , SIMULINK , C-Programming, Python , R-Programming
- **Hardware**: Arduino, AVR, Microcontroller setup, PLC systems

- **Software:** Powerworld, Proteus , PSPICE, CodeVision
- **Documentary:** LATEX, Microsoft Office

Teaching Experience

Graduate Teaching Assistant at:

Kansas State University: Department of Electrical and Computer Engineering, Manhattan KS:

- Applied Probability and Random Processes Fall 2019-2020
- Electric Circuits and Control Fall 2020
- Applied Scientific Computing for Engineers Spring 2020
- Calculus I & Calculus II Fall/Spring 2019
- Electrical Engineering Senior Design I Spring 2019
- Introduction to Computer Engineering Fall 2017
- Introduction to Electrical Engineering Fall 2016, Spring 2017
- Advanced Systems Theory Fall 2016
- Advanced Control Theory Fall 2013

Project Proposal Experience

Assisted in the development of the following proposals:

- Department of Energy (2019-present) *“Enabling cybersecurity, situational awareness and resilience in distribution grids with high penetration of photovoltaics (CARE-PV)”* (Funded 3.5 M).
- Black and Veatch (2017-2019) *“Modeling and Predictive Analysis of Springfield Sanitary Sewer System from a Machine/Statistical Learning Perspective”* (Funded \$ 125 K).

Reviewing Experience

Reviewer of the following journals:

- IEEE Transactions on Smart Grid
- IEEE Transactions on Vehicular Technology
- IEEE Access
- International Journal of Electrical Power and Energy Systems
- Journal of Franklin Institute

Related Courses

- Analysis of Distribution Systems, Power System Design, Detection and Estimation Theory, Applied Probability Theory and Random Processes, Nonlinear Control, Optimal Control, Adaptive Control, Digital Control, Industrial Control, Model Predictive Control, Fuzzy Control, System Identification, Applied Mathematics I, Applied Mathematics II, Microcontroller, Machine Learning and Big Data Analysis, Convex Optimization

Languages

- English (fluent), Kurdish (native), Persian (native), Azeri (intermediate)

Service and Membership

- “Iranian Graduate Student Association– Kansas State University” **Central Committee membership** – (2018-2019) Manhattan, Kansas, USA.
- IEEE Student Member since 2013.
- “7th & 8th term of Electrical Engineering Scientific Association- Sahand University of Technology” **Secretary of association** – (2009-2011) Tabriz , Iran.
- “Control Engineering Scientific Association – Tarbiat Modares University” **Central Committee membership** – (2012-2014) Tehran , Iran.