

# Ladan Sadeghikhorami

Dept. of Power and Control Engineering, School of Electrical and Computer Engineering,  
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## Education

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### **Ph.D, Electrical Engineering (Control) 2015-2020**

- *School of Electrical and Computer Engineering, Shiraz University (Ranked fifth among Iranian universities according to QS World University Rankings)*

**Thesis:** "Design of Secure Resilient Control Systems for Industries" (Defended with the score of 4 out of 4).

**Supervisor:** Prof. Ali Akbar Safavi

### **Visiting Research 2019**

- *Advanced Cyber Security Engineering Research Centre, The University of Newcastle, Australia. (Ranked 13th according to Shanghai World University Rankings)*

**Research Title:** "Security in Control Systems".

**Supervisor:** Prof. Vijay Varadharajan

### **M.Sc., Electrical Engineering (Control) 2013-2015**

- *School of Electrical Engineering, Amirkabir University of Technology (Ranked second among Iranian universities according to QS World University Rankings)*

**Thesis:** "Identify cyber attack to network control system based on fusion of network and system information" (Defended with the score of 4 out of 4).

**Supervisor:** Prof. Ahmad Afshar

**GPA:** 18.35/20

### **B.Sc., Electrical Engineering (Control) 2009-2013**

- *School of Electrical and Computer Engineering, Shiraz University (Ranked fifth among Iranian universities according to QS World University Rankings)*

**Thesis:** "Designing and making level measurement by using laser" (Defended with the score of 4 out of 4).

**Supervisor:** Dr. Paknoosh Karim Aghaee

**GPA:** 17.49/20

## Publication

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### Journal Article.....

- **L.Sadeghikhorami**, V.Varadharajan, A.A.Safavi, "A Novel Secure Observer-Based Controller and Attack Detection Scheme for Networked Control Systems", *Information Sciences* 575 (2021): 185-205.
- **Sadeghikhorami, Ladan**, and Ali Akbar Safavi. "Secure distributed Kalman filter using partially homomorphic encryption." *Journal of the Franklin Institute* 358.5 (2021): 2801-2825.
- **L.Sadeghikhorami**, M.Zamani, A.A.Safavi, Z.Chen, "A secure control mechanism for network environments." *Journal of the Franklin Institute* 357.17 (2020): 12264-12280.
- **Sadeghikhorrani, L.**, and A. A. Safavi. "Designing Secure Unknown Input Observer Using Encryption." *TABRIZ JOURNAL OF ELECTRICAL ENGINEERING* 50.2 (2020): 757-764.
- Mostafaeipour, Ali, Mojtaba Qolipour, Hossein Goudarzi, Mehdi Jahangiri, Amir-Mohammad Golmohammadi, Mostafa Rezaei, Alireza Goli, **Ladan Sadeghikhorami**, Ali Sadeghi Sedeh, and Seyad Rashid Khalifeh Soltani. "Implementation of Adaptive Neuro-Fuzzy Inference System (Anfis) for Performance Prediction of Fuel Cell Parameters." *Journal of Renewable Energy and Environment* 6, no. 3 (2019): 7-15.
- **L.Sadeghikhorrani**, and A.Afshar. "Attack detection and isolation with Unknown input observer design in non-minimum Phase Systems in networked control systems", *magiran*, Volume:1 Issue:1.

### Conference Article.....

- **Ladan, Sadeghikhorami**, and Safavi Ali Akbar. "Secure Centralized Kalman Filter for Network Environments by Homomorphic Encryption." 2021 7th International Conference on Control, Instrumentation and Automation (ICCIA). IEEE, 2021.
- **L.Sadeghikhorrani**, AA Safavi, "Secure Networked Control System with Encrypted Controller", The 6th International Conference on Control, Instrumentation, and Automation, 2019.
- M.Zamani, **L.Sadeghikhorrani**,AA.Safavi, F.Farokhi . "Private state estimation for cyber physical systems using semi homomorphic encryption." *Proceedings of the 23rd International Symposium on Mathematical Theory of Networks and Systems*. 2018.
- Mousavi, H.Mohammadi, **L.Sadeghikhorrani**, P.Sharifi, "Investigating the affecting factors to design a bladder pressure sensors". 25th Annual Conference of Mechanical Engineering, 2018
- **L.Sadeghikhorrani**, and A.Afshar. "Attack detection in active queue management within large-scale networks control system with information of network and physical system." *Electrical Engineering (ICEE)*, 2016 24th Iranian Conference on. IEEE, 2016.
- **L.Sadeghikhorrani**, and A.Afshar. "Attack detection and isolation by unknown input observer for non- minimum phase for networks control" *Electrical Engineering (ICEE)*, 2016 24th Iranian Conference on. IEEE, 2016.

## Teaching Experience

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School of Electrical and Computer Engineering, virtual learning of Shiraz University:

- Advanced control system 2018-2019

School of Engineering, Larestan University:

- signal and systems 2015-2016
- Modern control 2017
- Digital control systems 2017-2021
- Internet of Things 2020
- Industry control 2019-2020
- Electrical circuit 2017
- Digital Circuits 2017
- Numerical calculations 2015-2021

## Honors and Awards

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- Ranked 3rd among students of control field (MSc)
- Ranked 2nd among students of control field (BSc) and Exempted from the MSc entrance exam, as an exceptionally talented student, Being awarded as an excellent student by Shiraz University.
- Ranked 480th in 2nd region of the country entrance university exam, 2009.

## Research Interests

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- Networked Control Systems
- Cyber Security
- Machine Learning and Data Mining
- Cryptography
- Bio-medical Signal Processing and Control

## Selected courses

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- **Ph.D**
  - Robust Control
  - Game Theory (1st grade)
  - Model Predictive Control
  - Linear Matrix Inequality
  - Pattern Recognition (1st grade)
  - Neural Network and wavelet

- **M.sc.**
  - Nonlinear Control system
  - Multivariable Control Systems
  - Intrusion Detection System
  - Distributed Control System (1st grade)
  - Stochastic Control Systems (1st grade)
  - Networked Control System (1st grade)
  - System Identification

## Projects

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- Resilient controller by MPC in CPS. (2019)
- Resilient controller against DoS attack by robust method in NCS. (2018)
- Attack detection system by machine learning methods.(2018)
- Attack detection system by game theory approaches. (2019)
- Designing attack detection system by learning method. (2017)
- Designing attack detection system by game theory approach. (2017)
- Designing resilience model predictive control system.(2016)
- Robot Tracking with a similar game theory approach with Obstacle Avoidance. (2014)
- Designing a hybrid fuzzy-adaptive controller with fuzzy estimation for an unknown system (2014)
- Designing a PID Robust Controller for an uncertain System with Noise and Simulating and Applying it on a Flight Control System. (2014)
- Parameter Identification and Control of a Nonlinear Unstable System with Presence of Nonlinearity in Parameters. (2014)

## Technical and Personal Skills

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- **Programming Languages:**
  - MATLAB and Simulink (Professional)
  - C/C++ (Intermediate)
  - Python (Intermediate)
  - LaTeX (Intermediate)
- **Language Skills:**
  - Persian (Native)
  - English (Intermediate)