Mohsen Rakhshan, Ph.D. candidate

✉ mohsen.rakhshan.gr@dartmouth.edu
🌐 https://mrakhsha.github.io
in https://www.linkedin.com/in/mohsen-rakhshan-aaaa8270/

Education

2017 – now   🔖 **Ph.D., Dartmouth College, NH, USA** in Computational and Cognitive Neuroscience.
Research title: *Neural mechanism of decision making under value and perceptual uncertainty.*

2015 – 2017   🔖 **M.Sc., The University of Notre Dame, IN, USA** in Electrical Engineering (Signals, Systems, and Control).
Research title: *Noise effects on learning of spiking neural networks.*

2013 – 2015   🔖 **M.Sc., Shiraz University of Technology, Shiraz, Iran** in Electrical Engineering (Control).
Thesis title: *Sum of Squares-Based Quadratic and Nonquadratic Stabilization Conditions for Nonlinear PDE and ODE Systems in the Polynomial Fuzzy Form.*

2009 – 2013   🔖 **B.Sc., Shiraz University (Pahlavi University), Shiraz, Iran** in Electrical Engineering (Control)
Research title: *ANFIS Approach for Tracking Control of MEMS Triaxial Gyroscope.*

Research Publications

Journal Articles (* shows equal contribution)

1. Soltani, A., **Rakhshan, M.**, Schafer, R. J., Burrows, B., & Moore, T. (2020). Separable influences of reward value on visual processing and choice. *bioRxiv*.

2. **Rakhshan, M.***, Lee, V.*, Chu, E.*, Harris, L., Laiks, L., Khorsand, P., & Soltani, A. (2020). Influence of expected reward on temporal order judgment. *Journal of Cognitive Neuroscience*, *32*(4), 674–690.

3. Ardeshiri, R. R., Khooban, M. H., Noshadi, A., Vafamand, N., & **Rakhshan, M.** (2019). Robotic manipulator control based on an optimal fractional-order fuzzy pid approach: Sil real-time simulation. *Soft Computing*, 1–12.

4. Stolyarova, A.*, **Rakhshan, M.***, Hart, E., O'Dell, T., Peters, M., Lau, H., Soltani, A., & Izquierdo, A. (2019). Contributions of anterior cingulate cortex and basolateral amygdala to decision confidence and learning under uncertainty. *Nature Communications*, *10*(1), 1–14.

5. **Rakhshan, M.**, Gupta, V., & Goodwine, B. (2019). On passivity of fractional order systems. *SIAM Journal on Control and Optimization*, *57*(2), 1378–1389.

6. **Rakhshan, M.**, Vafamand, N., Mardani, M. M., Khooban, M.-H., & Dragičević, T. (2019). Polynomial control design for polynomial systems: A non-iterative sum of squares approach. *Transactions of the Institute of Measurement and Control*, *41*(7), 1993–2004.

7. Pitarch, J. L., **Rakhshan, M.**, Mardani, M. M., & Shasadeghi, M. (2017). Distributed saturated control for a class of semilinear pde systems: An sos approach. *IEEE Transactions on Fuzzy Systems*, *26*(2), 749–760.

8   **Rakhshan, M.**, Vafamand, N., Khooban, M. H., & Blaajberg, F. (2017). Maximum power point tracking control of photovoltaic systems: A polynomial fuzzy model-based approach. *IEEE Journal of Emerging and Selected Topics in Power Electronics*.

9   Vafamand, N., & **Rakhshan, M.** (2017). Dynamic model-based fuzzy controller for maximum power point tracking of photovoltaic systems: A linear matrix inequality approach. *Journal of Dynamic Systems, Measurement, and Control*, *139*(5).

10   Pitarch, J., **Rakhshan, M.**, Mardani, M., Sadeghi, M., & de Prada, C. (2016). Distributed nonlinear control of a plug-flow reactor under saturation. *IFAC-PapersOnLine*, *49*(24), 87–92.

11   **Rakhshan, M.**, Moula, E., Shabani-nia, F., Safarinejadian, B., & Khorshidi, S. (2016). Active noise control using wavelet function and network approach. *Journal of Low Frequency Noise, Vibration and Active Control*, *35*(1), 4–16.

12   **Rakhshan, M.**, Vafamand, N., Shasadeghi, M., Dabbaghjamanesh, M., & Moeini, A. (2016). Design of networked polynomial control systems with random delays: Sum of squares approach. *International Journal of Automation and Control*, *10*(1), 73–86.

13   Tajeddini, M. A., Safarinejadian, B., & **Rakhshan, M.** (2015). An unknown input observer for fault detection based on sliding mode observer in electrical steering assist systems. *AUT Journal of Modeling and Simulation*, *47*(2), 31–43.

14   **Rakhshan, M.**, Shabani-nia, F., & ShaSadeghi, M. (2015). Anfis approach for tracking control of mems triaxial gyroscope. *Modeling and Simulation in Electrical and Electronics Engineering*, *1*(1), 35–40.

15   Safarinejadian, B., Gharibzadeh, M., & **Rakhshan, M.** (2014). An optimized model of electricity price forecasting in the electricity market based on fuzzy timeseries. *Systems Science & Control Engineering: An Open Access Journal*, *2*(1), 677–683.

16   **Rakhshan, M.**, Barzegar, H., Safarinejadian, B., & Ostovar, F. (2014). An automotive cruise control using fuzzy control optimized via extended kalman filter. *Majlesi Journal of Mechatronic Systems*, *3*(4).

17   **Rakhshan, M.**, Khorshidi, S., & Safarinejadian, B. (2014). Active noise control in presence of disturbance using adaptive neuro fuzzy inference system. *Journal of Computational Intelligence and Electronic Systems*, *3*(2), 99–105.

18   **Rakhshan, M.**, Mardani, M. M., ShaSadeghi, M., & Mardaneh, M. (2012). Relaxed stabilization conditions via sum of squares approach for the nonlinear polynomial model. *The Modares Journal of Electrical Engineering*, *12*(1), 24–30.

Conference Proceedings

1   Jarrahi, M. A., Samet, H., Raayatpiseh, H., Jafari, A., & **Rakhshan, M.** (2015). An anfis-based fault classification approach in double-circuit transmission line using current samples, In *International work-conference on artificial neural networks*. Springer, Cham.

2   **Rakhshan, M.**, Vafamand, N., & Shasadeghi, M. (2014). Nonlinear static state feedback control design for polynomial systems: A sum of squares approach, In *1st national conference on development of civil engineering, architecure,electricity and mechanical in iran*. civilica.

Research Experiences

2017 – now   🔖 **Dartmouth College, NH, USA**: Value-based decision making and attention

2018 – 2019   🔖 **Dartmouth College, NH, USA**: Simultaneous decoding of attentional and reward modulations in human EEG

Research Experiences (continued)

2016 – 2017   **University of Notre Dame, IN, USA**: Noise effects on neural networks

2015 – 2016   **University of Notre Dame, IN, USA**: Intelligent Transportation Network Control

2013 – 2015   **Shiraz University of Technology, Shiraz, Iran**: Sum of Squares-based stabilization conditions for nonlinear systems

2011 – 2013   **Shiraz University, Shiraz, Iran**: Remotely operated underwater vehicle design and build

2012 – 2012   **Shiraz University, Shiraz, Iran**: PCB Rogowski coil design and build

   Shiraz University, Shiraz, Iran: Low frequency sonic flow meter design and build

2011 – 2011   **Shiraz University, Shiraz, Iran**: Sound array and object tracking design and build

   Cornell University, NY, USA: Solar desalination systems prototyping

Teaching Experiences

Winter 2020   **Dartmouth College, NH, USA**: Principles of Human Brain Mapping with fMRI (TA), Lecturer: Prof. Wager

Fall 2019   **Dartmouth College, NH, USA**: Laboratory in Psychological Science (TA), Lecturer: Prof. Brown

Spring 2019   **Dartmouth College, NH, USA**: Statistics (TA), Lecturer: Prof. Soltani

Spring 2018   **Dartmouth College, NH, USA**: Laboratory in Psychological Science (TA), Lecturer: Prof. Gobbini

Spring 2016   **University of Notre Dame, IN, USA**: Power Systems Analysis and Electrical Machines (TA), Lecturer: Prof. Lemmon

Fall 2015   **University of Notre Dame, IN, USA**: Signal and Systems (TA), Lecturer: Prof. Hochwald

Fall 2013a   **Shiraz University, Shiraz, Iran**: Operations Research (TA), Lecturer: Prof. Dehghani

Fall 2013b   **Shiraz University, Shiraz, Iran**: Digital Control Systems (TA), Lecturer: Prof. KarimAghaei

Spring 2013   **Shiraz (Students' Research and Entrepreneurship Center), Shiraz, Iran**: Applied Electronics and Digital Circuits, Lecturer: Mohsen Rakhshan

Fall 2012   **Shiraz (Students' Research and Entrepreneurship Center), Shiraz, Iran**: Applied Electronics and Digital Circuits, Lecturer: Mohsen Rakhshan

Teaching Experiences (continued)

- **Shiraz Payam Noor (Students' Research and Entrepreneurship Center), Shiraz, Iran**: Applied Electronics and Digital Circuits, Lecturer: Mohsen Rakhshan

Working Experiences

2014 **Co-founder**: ARTIN Sanaat Kusha Company co-founder (smart irrigation systems), Shiraz, Iran

2013 **Intern**: Electrical Engineering intern in Shiraz Refinery, Shiraz, Iran

Skills

Languages | Persian (native), English (professional), French (intermediate), Arabic (intermediate), German (beginner), Spanish (beginner).

Coding | MATLAB/Octave (professional), Python (intermediate), C/C++ (beginner), R (beginner), ROS (beginner), Julia (beginner).

Software | MNE EEG Toolbox, Codevision AVR, Altium, Pspice, Proteus, multisim, Labview, Comsol, LaTeX

Misc. | Advanced academic knowledge in machine learning and data science. Basic academic knowledge in object tracking, MEMS and NANO technology.

Miscellaneous Experience

Awards and Achievements

2015 **Valero Ph.D. Scholarship**, University of Texas at San Antonio, TX, USA.

First rank, among all the students of the Engineering school with GPA 4/4, Shiraz University of Techonology, Shiraz, Iran.

Peer Review Services

- PLOS Computational Biology
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE transaction on Cybernetics
- IEEE Transactions on Cognitive and Developmental Systems
- IEEE Transactions on Systems, Man, and Cybernetics
- IEEE Conference on Decision and Control
- Neurocomputing
- Nonlinear Dynamics
- International Journal of Systems Science
- Journal of Dynamic Systems, Measurement, and Control

Memberships

- Student member of IEEE
- Member of The New York Academy of Sciences
- Member of American Association for the Advancement of Science
- Member of Society for Neuroscience (SfN)
- Member of Society for Neuroeconomics (SNE)

Miscellaneous Experience (continued)

Certification

2020 ▌ **BCI** & **Neurotechnology Spring School**, By g.tec medical engineering GmbH, Austria.

2019 ▌ **Medical Neuroscience**, By Coursera (Duke University), USA.

Interests

▌ **Hiking**

▌ **Running**

▌ **Traveling**

References

Available on Request