

Vahab Nekoukar

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Faculty of Electrical Engineering
Shahid Rajaei Teacher Training University
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Current Position at Shahid Rajaei University

Assistant Professor	2015-now
Faculty Vice-Chancellor of Education and Research	2017-now

Previous Position at Shahid Rajaei University

Head of Control Department	2016-2018
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Education

Iran University of Science and Technology Ph.D. Electrical Engineering Dissertation: Robust Control of Paraplegic Walking Using Functional Electrical Stimulation	2012
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Tarbiat Modares University M.Sc. Electrical Engineering	2007
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K. N. Toosi University B.S. Electrical Engineering	2004
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Research Experience

Iran University of Science and Technology

- Graduate Researcher
 - Design and implementation of different control schemes on paraplegic subjects using functional electrical stimulation
- Clinic Director at Institute of Neural Engineering and Technology

Shahid Rajaei University

- Artificial Pancreas
 - Design and simulation of different control scheme for regulation of blood glucose level in type 1 diabetic patients
- Melanoma cancer
 - Tumor growth modelling in presence of drug resistance
 - Personalize cancer therapy using individual-based mathematical model
- Robotics
 - Design and implementation of hybrid exoskeleton
 - Design and implementation of autonomous flight control
 - Design and implementation of UAV path planning on CAN bus
 - Detection and tracking of specific targets on quadcopters using image processing
- Motor Driver
 - Design and implementation of model predictive control

Research Interest

- Control of Multi-Rotor Drones and Drone Swarms
- Control of Biological Systems such as Neuromusculoskeletal System and Personalized Treatment of Cancer
- Myoelectrical Control

Teaching Experience

Undergraduate:

Linear Control Lab, Measurement and Electrical Circuit Lab, Linear Control, Microprocessors, Microcontrollers, Modern Control, Electrical Circuit 1, Electrical Measurement.

Postgraduate:

Fuzzy Control, Neural Control, Optimal Control, Evolutionary Algorithms, Theory of Linear Systems.

Related Professional Experience

Project Manager in Farda System Company

- Design and implementation of inertial navigation system of aircrafts
- Design and implementation of various electromechanical indicators of aircrafts
- Modelling and simulation of projectiles
- Design and implementation of navigation and guidance of projectiles

Cognitive Sciences and Technologies Council

- A survey on cognitive technologies and equipment available in the world for students' education

Sharif University of Technology

- Design and implementation of automotive cruise control

Conference Presentation

1. V. Nekoukar, A. Fatehi, M. Fatehi, "Improvement of MCMI-II personality test using fuzzy logic." *17th Iranian Electrical Engineering Conference*, Iran, 2005 (in Persian).
2. V. Nekoukar, A. Erfanian, "Optimal control of walking in paraplegic subjects using functional neuromuscular electrical stimulation." *17th Iranian Electrical Engineering Conference*, Iran, 2009 (in Persian).
3. V. Nekoukar, A. Erfanian, "A decentralized modular control framework for robust control of FES-activated walker-assisted paraplegic walking using terminal sliding mode and fuzzy logic control." *17th Iranian Conference of Biomedical Engineering*, Iran, 2010 (in Persian).
4. V. Nekoukar, A. Erfanian, "Sliding-Mode control of walking using functional electrical stimulation: a simulation study." *1st Annual Conference of the International Functional Electrical Stimulation Society*, University of Salford, UK, 2010.
5. V. Nekoukar, A. Erfanian, "Adaptive terminal sliding mode control of ankle movement using functional electrical stimulation of agonist-antagonist muscles." *32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Argentine, 2010.
6. V. Nekoukar, A. Erfanian, "Optimal walking trajectories estimation using wavelet neural network for FES-assisted arm-supported paraplegic walking." *10th International Functional Electrical Stimulation Society*, Austria, 2010.
7. V. Nekoukar, A. Erfanian, "Performance improvement of walker-assisted FES-supported paraplegic walking." *11th International Functional Electrical Stimulation Society*, Brazil, 2011.
8. V. Nekoukar, A. Erfanian, "The role of ankle plantar flexors in walking performance during closed-Loop control of walker-assisted FES-activated paraplegic walking." *20th International Functional Electrical Stimulation Society*, France, 2016.
9. V. Nekoukar, A. Erfanian, "Adaptive fuzzy terminal sliding mode control of paraplegic subjects using functional electrical stimulation." *24th Iranian Electrical Engineering Conference*, Iran, 2016 (in Persian).
10. Sh. Asadi, V. Nekoukar, "Regulation of blood glucose level in patients with type I diabetes using sliding mode control." *23rd Iranian Conference of Biomedical Engineering*, Iran, 2016 (in Persian).
11. E. Samadi, V. Nekoukar, A. Badri, E. Ghorbankhani, "Multi-objective optimal grid operation in active distribution networks using PSO algorithm." *Smart Grids Conference 2016*, Iran, 2016 (in Persian).
12. F. Keighobadi, V. Nekoukar, M. Mehdipour, M. Ebrahimi, "The new method of personalized chemotherapy with Notch inhibitor and mathematical model in melanoma mouse model." *2nd International Personalized Medicine Congress*, Iran, 2018.
13. A. Javadi, V. Nekoukar, F. Keighobadi, M. Ebrahimi, "Mathematical model of tumor cell growth in melanoma cancer during drug therapy." *The 3rd Iranian Conference on Systems Biology*, Iran, 2018 (in Persian).
14. A. Javadi, V. Nekoukar, M. Ebrahimi, "Modeling of therapy-induced tumor growth in presence of drug resistance for melanoma cancer." *25th Iranian Conference on Biomedical Engineering*, Iran, 2018.

15. S. Hosseinpour, S. Ozgoli, **V. Nekoukar**, "Improving energy consumption in Exoped® lowerlimb exoskeleton by means of functional electrical stimulation." *6th International Conference on Robotics and Mechatronics*, Iran, 2018.
16. M. S. Mousavi, S. A. Davari, **V. Nekoukar**, J. Rodriguez, "Robust predictive current control for a dual inverter fed open-end winding induction motor." *10th International Power Electronics, Drive Systems and Technologies Conference*, Iran, 2019.
17. M. Shiri, **V. Nekoukar**, A. Ramezani, "Fault detection of insulin pump in closed-loop system of artificial pancreas for type 1 diabetic patients." *5th National Conference on Electrical & Mechatronics Engineering*, Iran, 2019.
18. M.S. Mousavi, S.A. Davari, **V. Nekoukar**, ..., "Four-Stage cascaded predictive control for zero-sequence current suppression of open-end winding induction motor." *11th International Power Electronics, Drive Systems and Technologies Conference*, Iran, 2020.

Peer-Reviewed Publications

1. **V. Nekoukar**, M.T.H. Beheshti, "A local linear radial basis function neural network for financial time-series forecasting." *Applied Intelligence* 33.3 (2010): 352-356.
2. **V. Nekoukar**, A. Erfanian, "An adaptive fuzzy sliding-mode controller design for walking control with functional electrical stimulation: A computer simulation study." *International Journal of Control, Automation and Systems* 9.6 (2011): 1124-1135.
3. **V. Nekoukar**, A. Erfanian, "Adaptive fuzzy terminal sliding mode control for a class of MIMO uncertain nonlinear systems." *Fuzzy Sets and Systems* 179.1 (2011): 34-49.
4. **V. Nekoukar**, A. Erfanian, "Optimization of stimulation patterns in paraplegic walker-assisted walking using functional electrical stimulation." *Iranian Journal of Biomedical Engineering* 4.4 (2011) (in Persian).
5. **V. Nekoukar**, A. Erfanian, "A decentralized modular control framework for robust control of FES-activated walker-assisted paraplegic walking using terminal sliding mode and fuzzy logic control." *IEEE Transactions on Biomedical Engineering* 59.10 (2012): 2818-2827.
6. **V. Nekoukar**, A. Erfanian, "Terminal sliding mode control of ankle movement in paraplegic subjects using functional electrical stimulation." *Journal of Isfahan Medical School* 29.174 (2012) (in Persian).
7. **V. Nekoukar**, A. Erfanian, "Dynamic optimization of walker-assisted FES-activated paraplegic walking: simulation and experimental studies." *Medical engineering & physics* 35.11 (2013): 1659-1668.
8. Sh. Asadi, **V. Nekoukar**, "adaptive fuzzy integral sliding mode control of blood glucose level in patients with type 1 diabetes: *in silico* studies." *Mathematical Biosciences* 305 (2018): 122:132.
9. Sh. Asadi, **V. Nekoukar**, "regulation of blood glucose level in patients with type i diabetes using sliding mode control." *Computational Intelligence in Electrical Engineering* 9.3 (2018): 61-76 (in Persian).
10. **V. Nekoukar**, "Double-objective optimization based on movement dynamics of charged particles." *International Journal of Industrial Electronics, Control and Optimization* 2.2 (2019): 113-126.
11. A. Javadi, F. Keighobadi, **V. Nekoukar**, M. Ebrahimi, "Finite-set model predictive control of melanoma cancer treatment using signaling pathway inhibitor of cancer stem cell." *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2019.
12. A. Davari, M. Norambuena, **V. Nekoukar**, C. Garcia, J. Rodriguez, "Even-handed sequential predictive torque and flux control." *IEEE Transactions on Industrial Electronics*, 2020.
13. N. Mahdian Dehkordi, **V. Nekoukar**, "Robust distributed stochastic secondary control of microgrids with system and communication noises." *IET Generation, Transmission & Distribution*, 2020.
14. N. Mahdian Dehkordi, **V. Nekoukar**, "Robust reliable fault tolerant control of islanded microgrids using augmented backstepping control." *IET Generation, Transmission & Distribution*, 2020.
15. V. Jamshidi, **V. Nekoukar**, M.H. Refan, "Analysis of parallel genetic algorithm and parallel particle swarm optimization algorithm uav path planning on controller area network." *Journal of Control, Automation and Electrical Systems*, 31 (2020): 129-140.
16. A. Davari, **V. Nekoukar**, C. Garcia, J. Rodriguez, "Online weighting factor optimization by simplified simulated annealing for finite set predictive control." *IEEE Transactions on Industrial Informatics*, 2020.
17. F. Keyghobadi, M. Mehdipour, **V. Nekoukar**, ..., "Long-term inhibition of notch in a-375 melanoma cells enhances tumor growth through the enhancement of AXIN1, CSNK2A3, CEBPA2, as intermediate genes in Wnt and Notch pathways." *Frontiers in Oncology*, 2020.
18. **V. Nekoukar**, "Control of functional electrical stimulation systems using simultaneous pulse width, amplitude, and frequency modulations." *Neuromodulation: Technology at the Neural Interface*, 2020.
19. V. Jamshidi, **V. Nekoukar**, M.H. Refan, "Analysis of asynchronous distributed multi-master parallel genetic algorithm optimization on CAN bus." *Evolving Systems*, 2020.
21. Z. Mahmoud, M.R. Arvan, **V. Nekoukar**, M. Rezaei, "Trajectory-tracking of 6-rss stewart-gough manipulator by feedback-linearization control using a novel inverse dynamic model based on the force distribution algorithm." *Mathematical and Computer Modelling of Dynamical Systems*, 2020.
22. N. Mahdian Dehkordi, **V. Nekoukar**, "Fuzzy adaptive control of unmanned aerial vehicle for carrying time-varying cargo on predefined path." *Journal of Control*, 2021 (in Persian).

Awards

Distinguished Professor Award in Education at Shahid Rajaei University, 2019.

References

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Professor

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Technology

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