

CURRICULUM VITAE
Mehdi Delrobaei, Ph.D., P.Eng.

PERSONAL

Rank: Assistant Professor

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EDUCATION

- 2012 – 2013 *Postdoctoral Clinical Research Fellow*, Department of Clinical Neurological Sciences, Western University Hospital, London, ON, Canada – Collaborators: Dr. Kenneth Mclsaac and Dr. Mandar Jog
Research title: Developing a computational framework for optimization of deep brain stimulation parameters for Parkinson disease patients.
- 2011 – 2012 *Postdoctoral Industrial Research Fellow*, Department of Electrical and Computer Engineering, Western University, London, ON, Canada – Industrial partner: CrossWing Inc., Toronton, ON, Canada
Research title: Self-balancing and active-compliance of delta parallel robots.
- 2006 – 2010 *Ph.D.*, Control Systems & Robotics, Department of Electrical and Computer Engineering, Western University, London, ON, Canada – Supervisor: Dr. Kenneth Mclsaac
Thesis title: Autonomous docking and parking control of center-articulated mobile robot modules using visual localization.
- 2000 – 2003 *M.Sc.*, Electrical Engineering, K. N. Tousei University of Technology, Tehran, Iran (with honors)
Supervisors: Dr. Ali Khaki-Sedigh and Dr. Shokrollah Shokri
Thesis title: Direct Torque Control of Induction Motors.
- 1995 – 1999 *B.Sc.*, Electrical Engineering, Shiraz University, Shiraz, Iran

TEACHING EXPERIENCE

• **Undergraduate Courses**

SE2205A: Algorithms and Data Structures for Object Oriented Design

Department of Electrical and Computer Engineering, Western University, London, ON, Canada

Introduction to Java, Analysis of algorithms, Sorting Algorithms, Searching Algorithms, Dictionaries and hashing, Trees and Heap, Graphs Algorithms, Dynamic Programming.

September 2019-December 2019 (Evaluation by 110/167 students enrolled)

Overall effectiveness: 7/7

ECE 3349A: Introduction of VLSI

Department of Electrical and Computer Engineering, Western University, London, ON, Canada

Semiconductor Devices and Technology, CMOS Logic, MOS Transistor Theory, Analog IC Characterization, Circuit Simulation, Combinational Circuit Design, Sequential Circuit Design

- *September 2019-December 2019 (Not Evaluated)*

Engineering Communication

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

Interpretation of engineering innovations with emphasis on professional writing and oral presentation. This course was aimed at non-native English speakers to improve their technical English language.

- *January 2018-April 2018 (Evaluation by 47/49 students enrolled)*

Overall effectiveness: 3.82/4

Signals and Systems

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

The fundamentals of signal and system analysis, representations of linear, time-invariant systems, discrete-time and continuous-time signals representations and analysis, singularity functions, complex exponentials and geometrics, Fourier representations, Laplace and Z transforms, and sampling.

- *January 2017-April 2017 (Evaluation by 48/50 students enrolled)
Overall effectiveness: 3.80/4*
- *September 2016-December 2016 (Evaluation by 45/50 students enrolled)
Overall effectiveness: 3.77/4*

Engineering Mathematics

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

- *January 2016-April 2016 (Evaluation by 55/62 students enrolled)
Overall effectiveness: 3.88/4*

MSE 2201: Introduction to Electrical Instrumentation

Mechatronic Systems Engineering Program, Western University, London, ON, Canada

Introduction to basic concepts of electrical circuit theory and instrumentation; sensors; actuators; transistors and operational amplifiers; introduction to transient response analysis.

- *September 2015-December 2015 (Evaluation by 29/46 students enrolled)
Overall effectiveness: 6.0/7*
- *September 2014-December 2014 (Evaluation by 27/45 students enrolled)
Overall effectiveness: 6.0/7*
- *September 2013-December 2013 (Evaluation by 21/26 students enrolled)
Overall effectiveness: 6.0/7*
- *September 2012-December 2012 (Evaluation by 18/25 students enrolled)
Overall effectiveness: 5.5/7*

ECE 2277: Digital Logic Systems

Department of Electrical and Computer Engineering, Western University, London, ON, Canada

Digital Number Systems; Boolean Algebra and Logic Gates; Gate-Level Minimization; Combinational Circuits; Synchronous Sequential Circuits; Registers and Counters; Use of industry-standard FPGA design software.

- *September 2015-December 2015
Overall effectiveness: 6.0/7*

ES 1050: Introduction to Engineering Design and Innovation Studio

Faculty of Engineering, Western University, London, ON, Canada

Introduction to the design and prototyping process; innovation in product development; written, oral, and graphical engineering communications; elements of need recognition, conceptualization, teamwork, and problem solving.

- *January 2014-April 2014 (Evaluation by 33/50 students enrolled)
Overall effectiveness: 5.5/7*

ECE 2238: Introduction to Electrical Instrumentation

Department of Electrical and Computer Engineering, Western University, London, ON, Canada

Introduction to DC circuit analysis, Ohm's Law, KCL, KVL, Thévenin and Norton Equivalent circuits, maximum power transfer; linear analogue circuits, diodes, transistors, operational amplifiers, biasing, gain, frequency response.

- *September 2011-December 2011 (Not Evaluated)*

EE 3402: Linear control Systems

Department of Electrical and Computer Engineering, Shahid Rajaei Teacher Training University, Tehran, Iran

Mathematical modelling of control systems, characteristics, performance, and stability of linear feedback control systems, root locus method, frequency response methods, stability in the frequency domain, design and compensation of feedback control systems.

- *January 2011-April 2011 (Evaluation by 32/36 students enrolled)
Overall effectiveness: 3.6/4*

- **Graduate Courses**

ECE9047L: Wireless Sensor Networks and Embedded Systems (Summer 2018)

Department of Electrical and Computer Engineering, Western University, London, ON, Canada

Biomechatronics Systems

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

Human Motor Control

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

Electronic Circuits and Digital Systems

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

Mechatronic Systems Design

Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran

AWARDS

- The Chancellor's Fund, K. N. Toosi University of Technology, June 2019.
- National Research Fund, Cognitive Sciences & Technologies Council (CoGC) of Iran, May 2018.
- Applied Research Fund, Iran National Science Foundation (INSF), Sept. 2017.
- Best Research Cluster, Department of Electrical and Computer Engineering, K. N. Toosi University of Technology, July 2017.
- Innovation Fund - Academic Medical Organization of Southwestern Ontario (AMOSO) - For the project: Developing a Computational Platform for Optimization of Deep Brain Stimulation Parameters - \$84,000 for duration of two years (Dec. 2013).
- Mitacs Accelerate - \$15,000 for duration of 4 months (Nov. 2012).
- MITACS Elevate Industrial Fellowship - \$65,000 for duration of one year (May 2011).
- Graduate Thesis Research Award, Western University (Jan. 2010).
- Graduate Thesis Research Award, Western University (Jan. 2009).
- Best Teaching Assistant Award, Dept. of Electrical and Computer Engineering, Western University (May 2007).

EMPLOYMENT HISTORY

2018-2019	Director, Industrial Affairs, Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran. Director, Mechatronics Department, Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran.
2016-Present	Assistant Professor, Department of Electrical and Computer Engineering, K. N. Toosi University of Technology, Tehran, Iran Adjunct Research Professor, Department of Electrical and Computer Engineering, Western University, London, ON, Canada
2013-2015	Senior Research Associate, Lawson Health Research Institute, London, ON, Canada Lecturer, Mechatronic Systems Engineering program, Western University
Fall 2012	Lecturer, Department of Electrical and Computer Engineering, Western University Part-Time Industrial Researcher - Development of a fully automated refuse collection system, Waterloo Controls Inc., Waterloo, ON (as part of Mitacs Accelerate program)
Fall 2011	Full-Time Industrial Researcher – Design and control of an omni-Delta manipulator, CrossWing Inc., Markham, ON (as part of Mitacs Elevate Industrial fellowship)

Winter 2011	Lecturer, Department of Electrical Engineering, Shahid Rajaei Teacher Training University, Tehran, Iran
Fall 2010	Part-Time Industrial Researcher - Docking control of an omni-wheel mobile platform, design and implementation, CrossWing Inc., Markham, ON
2006 – 2010	Research and Teaching Assistant, Department of Electrical and Computer Engineering, Western University, London, ON
Fall 2006	Part-Time Researcher – A power-liftgate system, investigation and identification, RHInnovations Inc., Kitchener, ON

PEER-REVIEWED PUBLICATIONS

• Journal Papers

- A. Abeyesekera, S. Adams, C. Mancinelli, T. Knowles, G. Gilmore, M. Delrobaei, M. Jog, "Effects of Deep Brain Stimulation of the Subthalamic Nucleus Settings on Voice Quality, Intensity, and Prosody in Parkinson's Disease: Preliminary Evidence for Speech Optimization," Canadian Journal of Neurological Sciences, vol. 25, pp. 1-8, Mar. 2019.
- S. Memar, M. Delrobaei, M. Pieterman, K. Mclsaac and M. Jog, "Quantification of Whole-Body Bradykinesia in Parkinson's Disease Participants Using Multiple Inertial Sensors", J. Neurological Sciences, vol. 387, pp. 157-165, Apr. 2018.
- M. Delrobaei, S. Memar, M. Pieterman, T. W. Stratton, K. Mclsaac, M. Jog, "Towards Remote Monitoring of Parkinson's Disease Tremor using Wearable Motion Capture Systems," J. Neurological Sciences, vol. 384, pp. 38–45, Jan. 2018.
- M. Delrobaei, N. Baktash, G. Gilmore, K. Mclsaac, and M. Jog, "Using Wearable Technology to Generate Objective Parkinson's Disease Dyskinesia Severity Score: Possibilities for Home Monitoring," IEEE Trans. Neural Systems and Rehab. Eng., vol. 25, iss.10, pp. 1853 - 1863, Oct. 2017.
- S. Memar, M. Delrobaei, G. Gilmore, K. Mclsaac, M. Jog, "Segmentation and Detection of Physical Activities during a Sitting Task in Parkinson's Disease Participants using Multiple Inertial Sensors," J. Applied Biomed., vol. 15, iss.4, pp. 282 - 290, Oct. 2017.
- SF. Atashzar, M. Shahbazi, C. Ward, O. Samotus, M. Delrobaei, F. Rahimi, "Haptic Feedback Manipulation During Botulinum Toxin Injection Therapy for Focal Hand Dystonia Patients: A Possible New Assistive Strategy," IEEE Trans. Haptics, vol. 4, iss. 9, pp. 523-535, Dec. 2016 .
- M. Delrobaei, S. Tran, G. Gilmore, K. Mclsaac, M. Jog, "Characterization of multi-joint upper limb movements in a single task to assess bradykinesia," J. Neurological Sciences, vol. 368, pp. 337–342, Sept. 2016.
- M. Jackman, M. Delrobaei, F. Rahimi, S F. Atashzar, M. Shahbazi, R. Patel, M. Jog, "Predicting Improvement in Writer's Cramp Symptoms following Botulinum Neurotoxin Injection Therapy," Tremor and Other Hyperkinetic Movements Journal, vol. 6, pp. 1-9, Sept. 2016.
- M. Delrobaei, F. Rahimi, M. E. Jackman, S. F. Atashzar, M. Shahbazi, R. V. Patel, M. Jog, "Kinetic and Kinematic Assessment of Upper Limb Movements in Patients with Writer's Cramp," Journal of Neuro-Engineering and Rehabilitation, 13:15, Feb. 2016.
- M. Delrobaei, K. A. Mclsaac, "Design and Steering Control of a Center-Articulated Mobile Robot Module," Journal of Robotics, Focused issue on Intelligent Robots, pp. 1-14 , July 2011.
- M. Delrobaei, K. Mclsaac, "Connection Mechanism for Autonomous Self-Assembly in Mobile Robots", IEEE Trans. Robotics, vol. 25, iss.6, pp. 1413-1419, Dec. 2009.

• Published Abstracts

- M. Delrobaei, F. Rahimi, J. Lee, S. Tran, M. Jog, "Parkinson Disease tremor profiles across a range of loads with serial neurotoxin injections," Movement Disorders, 28 (10), E11-E11, 2013.
- S. Xian, F. Rahimi, A. Roberts, D. Boucher, M. Delrobaei, M. Jog, "Biomechanical Characterization of Freezing of Gait in Parkinson's Patients with a Kinematic Approach," Movement Disorders, 28 (10), E11-E11, 2013.

- **Conference Papers**

- F. Ghorbani, M. Kia, M. Delrobaei and Q. Rahman, "Evaluating the Possibility of Integrating Augmented Reality and Internet of Things Technologies to Help Patients with Alzheimer's Disease," 2019 26th National and 4th International Iranian Conference on Biomedical Engineering (ICBME), Tehran, Iran, pp. 139-144, Nov. 2019.
- M. Delrobaei, F. Rahimi, S. Tran, K. Ognjanovic, G. Gilmore, A. Parrent, K. Mclsaac, M. Jog, "Quantifying the Short-Term Effects of Subthalamic Deep Brain Stimulation Surgery on Bradykinesia in Parkinson's Disease Patients," Proc. 21st IEEE Ir. Conf. on Biomedical Engineering, pp. 224-228, Tehran, Nov. 2014.
- M. Delrobaei, F. Rahimi, M. E. Jackman, S. F. Atashzar, M. Shahbazi, R. V. Patel, M. Jog, "Simultaneous Arm Joint Angles and Force Changes in Writer's Cramp," Proc. 21st IEEE Ir. Conf. on Biomedical Engineering, pp. 229-234, Tehran, Nov. 2014.
- F. Rahimi, M. Delrobaei, S. F. Atashzar, M. Shahbazi, J. Lee, M. E. Jackman, R. V. Patel, M. Jog, "Sensory Manipulation in Writer's Cramp: Possibilities for Rehabilitation," Proc. 6th Int. IEEE/EMBS Conf. on Neural Engineering, pp. 303-306, San Diego, Nov. 2013.
- S. F. Atashzar, M. Shahbazi, F. Rahimi, M. Delrobaei, J. Lee, R. V. Patel, M. Jog, "Effect of Kinesthetic Force Feedback and Visual Sensory Input on Writer's Cramp," Proc. 6th Int. IEEE/EMBS Conf. on Neural Engineering, pp. 883 - 886, San Diego, Nov. 2013.
- F. Rahimi, S. Xian, M. Delrobaei, M. Jog, "Characteristics of Gait Freezing: Possibilities for Rehabilitation," Proc. 6th Int. IEEE/EMBS Conf. on Neural Engineering, pp. 1594 - 1597, San Diego, Nov. 2013.
- M. Delrobaei, K. Mclsaac, "Parking Control of a Center-Articulated Mobile Robot in Presence of Measurement Noise," Proc. IEEE Int. Conf. on Robotics, Automation and Mechatronics, pp. 453 – 457, Singapore, June 2010.
- M. Delrobaei, K. Mclsaac, "Parking Control of an Active-Joint Center-Articulated Mobile Robot Based on Feedback from Beacons," Proc. IEEE Canadian Conf. Electrical and Computer Eng., pp. 1-6, Calgary, May 2010.
- M. Delrobaei, K. Mclsaac, "Docking Joint for Autonomous Self- Assembly," Proc. IEEE Canadian Conf. Electrical and Computer Eng., pp. 1025–1029, Niagara Falls, May 2008.

POSTER PRESENTATIONS

- S. Tran, M. Delrobaei, G. Gilmore, K. Ognjanovic, K. Mclsaac, M. Jog, "Effects of Different Electrical Parameter Settings on Bradykinesia in Patients with Parkinson's Disease Treated with Subthalamic Deep Brain Stimulation," 12th World Congress of the International Neuromodulation Society, Montreal, June 2015 (Accepted).
- M. Delrobaei, S. Tran, G. Gilmore, K. Ognjanovic, K. Mclsaac, M. Jog, "The Impact of Electrical Parameters on Bradykinesia of Parkinson Disease Patients after Deep Brain Stimulation Surgery," 19th International Congress of Parkinson's Disease and Movement Disorders, San Diego, June 2015 (Accepted).
- M. Delrobaei, S. Tran, G. Gilmore, K. Ognjanovic, K. Mclsaac, M. Jog, "Effects of Variations in Electrical Parameters on Bradykinesia of Patients after Subthalamic Deep Brain Stimulation," International Society for Posture and Gait Research (ISPGR) Congress, 2015 (Accepted).
- A. Abeyesekera, S. Adams, T. Knowles, C. Mancinelli, M. Delrobaei, and M. Jog, "Effect of Different Deep Brain Stimulation Parameters on Voice Quality, Speech Intensity and Prosody in Parkinson's Disease," HRS graduate Research Forum, Western University, January, 2015.
- T. Knowles, S. Adams, A. Abeyesekera, C. Mancinelli, M. Delrobaei, and M. Jog, "Effect of deep brain stimulation parameters on speech intelligibility and speech acoustics in Parkinson's Disease," HRS graduate Research Forum, Western University, January, 2015.
- C. Mancinelli, S. Adams, T. Knowles, A. Abeyesekera, M. Delrobaei, and M. Jog, "Deep brain stimulation parameter optimization for rate of speech in Parkinson's Disease," HRS graduate Research Forum, Western University, January, 2015.
- M. Delrobaei, G. Gilmore, K. Ognjanovic, F. Rahimi, S. Tran, S. Xian, K. Mclsaac, M. Jog, "Quantifying the short-term effects of Subthalamic deep brain stimulation surgery on bradykinesia in Parkinson's disease patients," SFN Conference, Washington DC, Nov. 2014.

- G. Gilmore , M. Delrobaei, K. Ognjanovic, F. Rahimi, B. Xian, M. Jog, "Motor assessment of Parkinson's disease patients following deep brain stimulation surgery using gait analysis technology," ISPGR World Congress, Vancouver, July 2014.
- K. Ognjanovic, M. Delrobaei, G. Gilmore , F. Rahimi, B. Xian, M. Jog, "Assessment of postural stability and balance in Parkinson disease patients after deep brain stimulation surgery using Full-body motion capture suit," ISPGR World Congress, Vancouver, July 2014.
- G. Gilmore, K. Ognjanovic, M. Delrobaei, M. Jog, "Optimization of Deep Brain Stimulation Parameters for PD Patients Using Objective Measures," 8th Annual Meeting of the Canadian Association for Neuroscience, Montreal, June 2014.
- D. A. Abeysekera, S. Adams, C. Mancinelli, F. Rahimi, M. Delrobaei, M. Jog, "Deep brain stimulation parameter optimization for speech in Parkinson's disease," Health and Rehabilitation Sciences Research Forum, Western University, Faculty of Health Sciences, Feb. 2014.
- M. Delrobaei, F. Rahimi, J. Lee, S. Tran, M. Jog, "Parkinson Disease tremor profiles across a range of loads with serial neurotoxin injections," 3rd World Parkinson Congress, Montreal, Oct. 2013.
- F. Rahimi, S. Xian, M. Delrobaei, A. Roberts-South, D. Boucher, M. Jog, "Automatic Multi-sensor Detection of Freezing of Gait in Parkinson Disease," 3rd World Parkinson Congress, Montreal, Oct. 2013.
- M. Delrobaei, F. Rahimi, J. Lee, S. Tran, M. Jog, "Parkinson disease tremor profiles across a range of loads with serial neurotoxin injections," Parkinson Society Group Symposium, Montreal, Sep. 2013.
- F. Rahimi, S. Xian, M. Delrobaei, A. Roberts-South, D. Boucher, M. Jog, "Automatic multi-sensor detection of freezing of gait in Parkinson disease," 7th Annual Meeting of the Canadian Association for Neuroscience, Toronto, May 2013.
- M. Delrobaei, F. Rahimi, J. Lee, M. Jog, "Rest and action tremor profiles across a wide range of loads in PD and ET patients over sequential neurotoxin injections," 7th Annual Meeting of the Canadian Association for Neuroscience, Toronto, May 2013.
- M. Delrobaei, K. A. Mclsaac, "An Infrared Docking System for Modular Wheeled Mobile Robots," Proc. of 5th SASTech Int. Conf., Mashhad, May 2011.

MEMBERSHIP

- Professional Engineers Ontario (2014-Present)
- IEEE Member (2010-Present)
- Canadian Association for Neuroscience (2012-2015)
- Society for Neuroscience (2014-2015)
- International Society for Posture and Gait Research (2015)
- IEEE Student Member (2006-2010)

REFERENCES

- Kenneth A. Mclsaac, Ph.D., P.Eng.
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