Habiballah Rahimi-Eichi

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EDUCATION

Ph.D. in Electrical Engineering, North Carolina State University, NC, USA, 2014

- Thesis title: Online adaptive battery parameters identification and State-of-Charge (SOC) and State-of-Health (SOH) co-estimation.

M.Sc. in Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2004

- Thesis title: Composite QFT Controller Design for a Nonlinear Flexible Joint Robot.

B.Sc. in Electrical Engineering, Isfahan University of Technology, Isfahan, Iran, 2001

- Research: Fiber optic fieldbuses and intrinsically safety conditions for foundation fieldbus in hazardous area.

RESEARCH EXPERIENCE

Instructor at Harvard Medical School, McLean Hospital, 2021 - Current

- Analyzing objective data from actigraphy watches and smartphones along with homeostatic energy models to develop biomarkers for identifying mood fluctuations in psychiatric patients and predict episodes of depression.
- Collaborating with clinicians to provide real-time objective actigraphy reports on patients' treatment effect, sleep quality and daily activities by analyzing watch data collected during hospitalization.
- Investigating patterns of sleep and daily activity by demographics including age and sex in large-scale objective data (UK Biobank on 100K individuals) to identify risk factors for accelerated aging and psychiatric disorders.
- Contributing technical and experimental expertise in digital biomarker data acquisition and analysis to large national and international collaborative consortiums such as ILHBN, Welcome Leap MCPsych, PREDiCT, AMP®SCZ.

Post-doctoral Research Associate, McLean Hospital, 2019 - 2021

- Optimized the Deep Phenotyping of Sleep (DPSleep) pipeline to extract sleep parameters and daily activity of both in-patient and out-patient individuals with various psychiatric disorders (Bipolar, Psychosis, Schizophrenia, OCD, PTSD, Anhedonia) using different actigraphy devices (GENEActiv, Axivity, Empatica).
- Designed and developed actigraphy-based energy models to study depression in individuals with bipolar disorders.

Post-doctoral Research Fellow, Harvard University, Department of Psychology, 2016 - 2021

- Developed the DPSleep pipeline to analyze watch accelerometer data and extract sleep parameters including sleep quality, and daily activity. Compared and validated the pipeline's performance with polysomnography (PSG) and self-reported sleep diaries.

- Developed the Deep Phenotyping of Location (DPLocate) pipeline to analyze smartphone-collected GPS data using spatial clustering techniques for identifying individuals' points of interest (POIs) and Markov models to characterize their daily relocation among POIs.
- Implemented an interactive user interface to analyze longitudinal models in self-reported mood-related behaviors of college students.
- Acquired expertise in MRI and fMRI imaging techniques through the Martinos Center FreeSurfer workshops, various neuroscience courses, and lab meetings focused on evaluating brain imaging and parcellation techniques including characterizing default network.

Post-doctoral Research Associate, North Carolina State University, Electrical and Computer Engineering Department, 2014 - 2016

- Developed an adaptive predictive algorithm within a big data framework to estimate the driving range of electric vehicles by collecting traffic, weather, route, and other data from online APIs, applying data analysis techniques in MATLAB and Python.
- Developed a big data framework to collect and analyze data for home energy management algorithms, utilizing public databases with SQL and JMP Pro.
- Designed and implemented an algorithm to predict the remaining useful life (RUL) and end of life (EOL) of batteries in grid-connected applications using Bayesian inference.

Graduate Research Assistant, North Carolina State University, **Electrical and Computer Engineering Department, 2009 - 2014**

- Designed an intelligent Battery Management System (iBMS) for electric vehicles and smart grids, implemented in MATLAB and a microcontroller-based embedded system, by developing a patented online adaptive battery parameter identification and State-of-Charge (SOC) and State-of-Health (SOH) co-estimation algorithm.
- Analyzed, modeled, and tested different lithium-ion batteries using data obtained from the Arbin test system, considering temperature, hysteresis, and aging effects.
- Developed an optimization algorithm for power management in a large-scale plug-in hybrid electric vehicle (PHEV) municipal parking deck using auction theory and game theory.

Graduate Research Assistant, University of Miami, Electrical and Computer Engineering Department, 2008 - 2009

- Implemented a graphic user interface (GUI) platform using Java to demonstrate modeling, simulation, and energy management in micro-grids and electric vehicles.

Research Assistant, Isfahan University, Biomedical Engineering Department, 2003 - 2008

- Designed and implemented a quantitative feedback theory (QFT) controller for a robot using MATLAB Realtime toolbox.
- Implemented a laboratory robot set for a control and automation lab.

Research Assistant, Khajeh Nasireddin Toosi University of Technology, Electrical and Computer Engineering Department, 2002 - 2005

- Designed H-inf and μ-synthesis robust controllers for a flexible link arm.
- Implemented ELS, MSLS, and Kalman Filter adaptive algorithms to identify the variable parameters of different systems and designing robust controllers.

PUBLICATIONS

Journal Papers

- L. Valeri, X. Cai, H. Rahimi-Eichi, E. Liebenthal, S. Rauch, D. Ongur, R. Schutt, L. Dixon, J. Onnela, J. Baker, "Smartphone-based markers of social connectivity in schizophrenia and bipolar disorder.", *NPP—Digital Psychiatry and Neuroscience*, *2*(1), 12, 2024.
- C. Wannan, B. Nelson, J. Addington, …, H. Rahimi-Eichi, … M. Shenton, "Accelerating Medicines Partnership® Schizophrenia (AMP® SCZ): Rationale and Study Design of the Largest Global Prospective Cohort Study of Clinical High Risk for Psychosis.", *Schizophrenia Bulletin*, *50*(3), 496–512, 2024.
- C. Vidal Bustamante, G. Coombs, H. Rahimi-Eichi, P. Mair, J. Onnela, J. Baker, R. Buckner, "Precision Assessment of Real-World Associations Between Stress and Sleep Duration Using Actigraphy Data Collected Continuously for an Academic Year: Individual-Level Modeling Study.", *JMIR Form Res*, *8*, e53441, 2024.
- L. Valeri, H. Rahimi-Eichi, E. Liebenthal, S. Rauch, R. Schutt, D. Öngür, L. Dixon, J. Onnela, J. Baker, "Intensive longitudinal assessment of mobility, social activity and loneliness in individuals with severe mental illness during COVID-19." *Schizophr* 9, 62, 2023.
- H. Rahimi-Eichi, G. Coombs 3rd, J. Onnela, J. Baker, R. Buckner, "Measures of Behavior and Life Dynamics from Commonly Available GPS Data (DPLocate): Algorithm Development and Validation.", *medRxiv*, (Preprint) doi: 2022.07.05.22277276, 2022.
- B. Ren, E. Balkind, B. Pastro, E. Israel, D. Pizzagalli, H. Rahimi-Eichi, J. Baker, C. Webb, "Predicting states of elevated negative affect in adolescents from smartphone sensors: A novel personalized machine learning approach." *Psychological Medicine*, 1-9, 2022.
- C. Vidal Bustamante, G. Coombs, H. Rahimi-Eichi, P. Mair, J. Onnela, J. Baker, R. Buckner, "Fluctuations in behavior and affect in college students measured using deep phenotyping," *Sci Rep* 12, 1932, 2022.
- E. Liebenthal, M. Ennis, H. Rahimi-Eichi, E. Lin, Y. Chung, and J. Baker, "Linguistic and non-linguistic markers of disorganization in psychotic illness," *Schizophr. Res.*, 2022.
- H. Rahimi-Eichi, G. Coombs 3rd, C. Bustamante, J. Onnella, J. Baker, R. Buckner, "Open-source Longitudinal Sleep Analysis From Accelerometer Data (DPSleep): Algorithm Development and Validation," *JMIR Mhealth Uhealth*; 9(10): e29849, 2021.
- H. Rahimi-Eichi, F. Baronti, and M. Y. Chow, "Online Adaptive Parameter Identification and State-of-Charge Coestimation for Lithium-Polymer Battery Cells," *Industrial Electronics, IEEE Transactions on,* vol. 61, pp. 2053-2061, 2014.
- H. Rahimi-Eichi, U. Ojha, F. Baronti, and M. Chow, "Battery Management System: An Overview of Its Application in the Smart Grid and Electric Vehicles," *Industrial Electronics Magazine, IEEE,* vol. 7, pp. 4-16, 2013 **(Best Paper Award).**
- W. Su, H. Rahimi-Eichi, W. Zeng, and M.-Y. Chow, "A Survey on the Electrification of Transportation in a Smart Grid Environment," *Industrial Informatics, IEEE Transactions on,* vol. 8, pp. 1-10, 2012 **(IES student best paper award)**.
- C. Vidal Bustamante, G. Coombs, H. Rahimi-Eichi, P. Mair, J. Onnela, J. Baker, R. Buckner, "Year-Long Digital Phenotyping and Natural Language Processing of Daily Voice Diaries Reveal Affective and Behavioral Signatures of Real-World Life Stress.", doi: 10.31219/osf.io/fn3aj, *(Submitted)*, 2024.

- H. Rahimi-Eichi, G. Coombs, R. Buckner, J. Baker, "Evaluation of Objective Measurement of Sleep from Phone Screen Use and Accelerometer Data in Longitudinal Studies." *(Ready to submit)*.
- H. Rahimi-Eichi, J. Baker, R. Buckner, "Accelerometer-Based Measurement of Sleep and Activity Patterns in Older Adults: The Influence of Age, Sex, and Mental Health." (*In Preparation).*

Proceeding Papers

- H. Rahimi-Eichi, P. Jeon, M.-Y. Chow, and T.-J. Yeo, "Incorporating big data analysis in speed profile classification for range estimation," *Industrial Informatics (INDIN), 2015 IEEE 13th International Conference on,* IEEE, Cambridge, UK, 2015.
- H. Rahimi-Eichi, P. Jeon, M.-Y. Chow, and T.-J. Yeo, "Big-Data Framework for Electric Vehicle Range Estimation.", *40th Annual Conference of the IEEE Industrial Electronics Society (IECON2014),* IEEE, Dallas, TX , 2014.
- N. Otero, H. Rahimi-Eichi, J. Rodriguez-Andina, M.-Y. Chow, "FPGA Implementation of an Observer for State-of-Charge Estimation in Lithium-Polymer Batteries.", *IEEE International Conference on Mechatronics and Control (ICMC)*, Jinchou, China, 2014 **(Best paper award).**
- H. Rahimi-Eichi, B. Balagopal, M.-Y. Chow, and T.-J. Yeo, "Sensitivity Analysis of Lithium-Ion Battery Model to Battery Parameters,", *39th Annual Conference of the IEEE Industrial Electronics Society (IECON2013),* IEEE, Vienna, Austria, 2013.
- F. Baronti, W. Zamboni, N. Femia, H. Rahimi-Eichi, R. Roncella, S. Rosi, et al., "Parameter identification of Li-Po batteries in electric vehicles: A comparative study," *IEEE International Symposium on Industrial Electronics (ISIE2013),* pp. 1-7, Taipei, Taiwan, 2013.
- H. Rahimi-Eichi and M.-Y. Chow, "Adaptive online battery parameters/SOC/capacity co-estimation,", *Transportation Electrification Conference and Expo (ITEC2013),* IEEE, pp. 1 – 6, Metro Detroit, Michigan, USA, 2013.
- H. Rahimi-Eichi and M.-Y. Chow, "Adaptive parameter identification and State-of-Charge estimation of lithium-ion batteries,", *38th Annual Conference on IEEE Industrial Electronics Society (IECON 2012),* IEEE, pp. 4012 – 4017, Montreal, QC, Canada, 2012.
- H. Rahimi-Eichi and M.-Y. Chow, "Modeling and analysis of battery hysteresis effects,", *Energy Conversion Congress and Exposition (ECCE2012),* IEEE, pp. 4479-4486, Raleigh, NC, USA, 2012.
- H. Rahimi-Eichi and Mo-Yuen Chow, "Auction-based Energy Management System of a large-scale PHEV municipal parking deck,", *Energy Conversion Congress and Exposition (ECCE2012),* IEEE, pp. 1811-1818, Raleigh, NC, USA, 2012.
- H. Rahimi-Eichi, F. Baronti, and M. Y. Chow, "Modeling and online parameter identification of Li-Polymer battery cells for SOC estimation,", *International Symposium on Industrial Electronics (ISIE2012),* IEEE, pp. 1336-1341, Hangzhou, Zhejiang, China, 2012 **(Top-ten scored paper presented at the conference).**
- Z. Jiang and H. Rahimi-Eichi, "Design, modeling and simulation of a green building energy system,", *Power & Energy Society General Meeting (PES2009),* IEEE, pp. 1-7, Calgary, AB, Canada, 2009.

- A. Khodabakhshian, H. Rahimi-Eichi, and N. Golbon, "QFT design for load frequency control of non-minimum phase hydro power plant," *Computer Aided Control System Design, IEEE International Conference on Control Applications and IEEE International Symposium on Intelligent Control,* IEEE, pp. 1380-1385, Munich, Germany, 2006.
- H. D. Taghirad and H. Rahimi-Eichi, "Composite QFT controller design for flexible joint robots,", *IEEE Conference on Control Applications (CCA 2005)*, pp. 583-588, Toronto, ON, Canada, 2005.

Book Chapter

- H. Rahimi-Eichi and M.-Y. Chow, "Batteries," in *Handbook of Energy*, G. M. Crawley, Ed., ed USA, *World Scientific Publishing Company* and *Imperial College Press*, 2012.

Invited Talks/Workshops

- H. Rahimi-Eichi, "Digital Phenotyping of Sleep and Activity", *Buckner and Fischl Joint Meeting,* May 2024.
- H. Rahimi-Eichi, Y. Chumg, "AMP®SCZ Digital Biomarker Feature Extraction" *Hackathon, Boston,* June 2024.
- H. Rahimi-Eichi, "Sleep and activity patterns in older adults: effects of age, sex, and mental health", *SCPAB virtual quarterly meeting (Simons Foundation),* February 2024.
- H. Rahimi-Eichi, "Introduction to DPSleep and DPLocate pipelines to extract sleep and mobility from watch and phone data", *Orygen- The University of Melbourne as AMP ® SCZ consertium*, June 2023.
- J. Baker, H. Rahimi-Eichi, "Into the Deep: Digital Approaches to Neuropsychiatric Disorders", *MIT Media Lab (Rosalind Picard),* March 2023.

Conference Presentations

- Y. Chung, B. Gillis, H. Rahimi-Eichi, V. Holstein, S. Rauch, E. Liebenthal, J. Baker, "Digital Phenotyping Approaches for Tracking Clinical Symptoms in Serious Mental Illness.", *Biol. Psychiatry*, *95*(10, Supplement), S288–S289, 2024.
- B. Culhane, H. Rahimi-Eichi, R. Patterson, A. Yip, A. Pandina, E. Liebenthal, K. Ressler, J. Baker, "Toward Objective Measurements of Inpatient Sleep and Activity: A Study of the Feasibility and Utility of Wearable Devices for Tracking Inpatient Sleep and Activity.", *Biol. Psychiatry*, *95*(10, Supplement), S182, 2024.
- E. Liebenthal, M. Ennis, H. Rahimi-Eichi, E. Lin, Y. Chung, J. Baker, "Linguistic and Non-Linguistic Digital Markers of Conceptual Disorganization in Psychotic Illness." *Biol. Psychiatry*, *93*(9, Supplement), S243–S244, 2023.
- A. Yip, S. Layfield, L. Duffy, S. Wong, J. Chen, A. Osman, F. Rodriguez-Villa, S. Gelda, E. Gelwan, P. Beauchamp, H. Rahimi-Eichi, "Deep Phenotyping in Routine Inpatient Psychiatric Care: Methods, Feasibility, Early Results, Potential Applications," *Neuropsychopharmacology*, Vol. 47, No. Suppl. 1, pp. 255-256, 2022.
- S. Layfield, S. Wong, L. Duffy, P. Beauchamp, H. Rahimi-Eichi, J. Salvi, J. Baker, K. Ressler, A. Yip, "The Relationship Between Sleep Disturbance and Suicidal Thoughts on Inpatient Psychiatric Units," *Biol. Psychiatry 2022*, 91(9), pp. S201–S201, 2022.

- L. Duffy, S. Wong, S. Layfield, P. Beauchamp, H. Rahimi-Eichi, J. Salvi, J. Baker, K. Ressler, A. Yip, "Precision Psychiatry on Adult Inpatient Psychiatric Units: Utilizing Patient Reported Measures and Actigraphy Data to Characterize Patient Symptomology and Outcomes." *Biol. Psychiatry*, *91*(9, Supplement), S201–S202, 2022.
- K. Howell, E. Casteen, H. Rahimi-Eichi, E. Akman, J. Baker, C. Ravichandran, S. Rauch, I. Rosso, "Objective index of sleep fragmentation correlates with smaller hippocampi in posttraumatic stress disorder", *Biol. Psychiatry* 91(9), S345-S346, 2022.
- A. Wang, L. Valeri, Z. Wang, H. Rahimi-Eichi, E. Liebenthal, R. Schutt, D. Ongur, K. Baker, "Smartphone-Based Markers of Social Activity in Schizophrenia and Bipolar Disorder", *Biological Psychiatry* 89(9), S222-S223, 2021.
- L. Valeri, Z. Wang, A. Wang, H. Rahimi-Eichi, E. Liebenthal, S. Rauch, R. Schutt, D. Ongur, L. Dixon, J. Baker, J. Onnela, "The Effect of COVID-19 Shelter in Place Orders on Loneliness of Schizophrenia and Bipolar Disorder Patients.", *Biol. Psychiatry 2021*, 89, S134–S135, 2021.
- H. Rahimi-Eichi, G. Coombs 3rd, S. Scott, R. Buckner, J. Baker, "Intensive Longitudinal Assessment of College Transition and Psychiatric Illness Supports an Energy Allostatic Model of Depression and Sleep-Wake Dynamics," *Society of Biological Psychiatry, Virtual Meeting*, 2021.
- H. Rahimi-Eichi, G. Coombs 3rd, J. Onnela, J. Baker, R. Buckner, "Deep Dynamic Phenotyping of the Individual: Daily Life Event Analysis Using Actigraphy from Wearable Devices,", *Society for Neuroscience,* Annual meeting, San Diego, CA, 2018.
- H. Rahimi-Eichi, G. Coombs 3rd, J. Onnela, J. Baker, R. Buckner, "Measures of Behavior and Life Dynamics from Smartphone GPS Data," *Society of Biological Psychiatry,* 73rd Annual meeting, New York, NY, 2018.
- J. Baker, E. Barrick, H. Rahimi-Eichi, I. Barnett, D. Ongur, J. Onnela, R. Buckner, "Intensive Longitudinal Assessment of Mania and Psychosis Using Commonly Available Technologies," *Society of Biological Psychiatry,* 73rd Annual meeting, New York, NY, 2018.

Published Open-Source Pipelines

- H. Rahimi-Eichi, R. Buckner, J. Baker, "Deep phenotyping of location (DPLocate) processing pipeline;" 2022. url: https://github.com/dptools/dplocate.
- H. Rahimi-Eichi, R. Buckner, J. Baker, "Deep phenotyping of sleep (DPSleep) processing pipeline;" 2021. url: https://github.com/dptools/dpsleep.

Filed Patents

- US Patent # 10,661,805: Vehicle control unit (VCU) and operating method thereof, Inventors: Daebong Jung (Seongnam-si), Mo-Yuen Chow (Raleigh, NC), Habiballah Rahimi Eichi (Cambridge, MA), Jinyong Jeon (Yongin-si), Assignees: Samsung Electronics Co., Ltd. (Suwon-si), North Carolina State University (Raleigh, NC), 2020.
- US Patent # 10,401,433: Method and apparatus for estimating battery life, Inventors: Mo-Yuen Chow (Raleigh, NC), Habiballah Rahimi Eichi (Raleigh, NC), Taejung Yeo (Yongin-

si), Paul Barom Jeon (Seoul), Assignees: Samsung Electronics Co., Ltd. (Suwon-si), North Carolina State University (Raleigh, NC), 2019.

- US Patent # 9,643,511: Method and apparatus for estimating state of charge (SOC) of battery in electric vehicle, Inventors: Paul Barom Jeon (Seoul), Mo-Yuen Chow (Raleigh, NC), Taejung Yeo (Yongin-si), Habiballah Rahimi Eichi (Raleigh, NC), Assignees: Samsung Electronics Co., Ltd. (Suwon-si), North Carolina State University (Raleigh, NC), 2017.
- US Patent Application # 20160114698: Method and apparatus for analyzing data related to vehicle range, Inventors: Mo-Yuen Chow (Raleigh, NC), Paul Barom Jeon (Seoul), Habiballah Rahimi Eichi (Raleigh, NC), Taejung Yeo (Yongin-si), Applicants: North Carolina State University (Raleigh, NC), Samsung Electronics Co., Ltd. (Suwon-si), 2016.
- US Patent Application # 20140350877: Battery parameters, State of Charge (SOC), and State of Health (SOH) co-estimation, Inventors: Mo-Yuen Chow (Cary, NC), Habiballah Rahimi Eichi (Raleigh, NC), Applicant: North Carolina State University (Raleigh, NC), 2014.

Invention Disclosures

- M.-Y. Chow, H. Rahimi-Eichi, P. B. Jeon, T.-J. Yeo, "Incorporating Big Data Analysis in Speed Profile Classification for Range Estimation", case# 15185, February 2015.
- M.-Y. Chow, H. Rahimi-Eichi, P. B. Jeon, T.-J. Yeo, "Battery Remaining Useful Life (RUL) and End of Life (EOL) Estimation Algorithm", case# 14126, February 2014.
- M.-Y. Chow, H. Rahimi-Eichi, P. B. Jeon, T.-J. Yeo, "Online Battery Remaining Charge Estimation Algorithm in Electric Vehicles", case# 14115, January 2014.
- M.-Y. Chow, H. Rahimi-Eichi, W. Zeng, "Big Data Based Smart Battery Gauge Technology for Electric Vehicles", case# 14081, November 2013.
- M.-Y. Chow, H. Rahimi-Eichi, "Battery Parameters/SOC/SOH Co-Estimation Algorithm", case# 13099, November 2012.

GRANTS/AWARDS/HONORS:

- SEED Grant, "Actigraphy-based Standard Biomarker for Stress Triggered Depression, McLean Hospital", PIs: Habiballah Rahimi-Eichi and Justin Baker, 2021-2022.
- FHBI (Foundation for Human Behavior) Flash Grant. Project Title: "In-Depth Follow-Up Study of Harvard College Students' Affect, Behavior, and Clinical Outcomes in Response to COVID-19." PIs: Randy Buckner and Justin Baker. Role: proposal writing and investigator, 2020.
- Innovation Corps (I-Corps)", North Carolina State University. The I-Corps programs feed the NSF Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Role: proposal writing and team member, 2013.
- Samsung Advanced Institute of Technology (SAIT) Project, North Carolina State University: "Big Data Framework for Battery SOF and SOH Estimation." Role: proposal writing and leading investigator, 2013.
- Samsung Advanced Institute of Technology (SAIT) Project, North Carolina State University: "Active Balancing on the Basis of Cell's State-of-Charge (SOC) [Phase 1: feasibility Study]." Role: proposal writing and leading investigator, 2012.
- IEEE, International Conference on Mechatronics and Control, Best Paper Award, 2011.

- IEEE, Industrial Electronics Magazine, Best Paper Award, 2013.
- IEEE, IES Student Best Paper Award, 2013.
- Best presentation award of FREEDM center industrial review student Forum, NCSU, 2012.
- Top 10 paper award in 21st IEEE International Symposium of Industrial Electronics, Hangzhou, China, 2012.
- Tau Beta Pi Engineering honor society, 2011.
- Phi Kappa Phi National Honor Society, 2011.
- Top student award in control engineering, Isfahan University of Technology, 2004.

TEACHING AND WORK EXPERIENCE

Harvard Medical School, McLean Hospital, 2019 - Current

- Mentoring graduate students, research assistants and postdoctoral trainees to use actigraphy and smart-phone platforms for their research.

Harvard University, Department of Psychology, 2016 - 2021

- Supervised and mentored graduate and undergraduate students.
- Assisted with MRI and resting-state fMRI and behavioral task brain scanning sessions for college and bipolar study subjects for brain connectivity/network analysis.

North Carolina State University, Electrical and Computer Engineering department, 2009 - 2016

- Supervised undergraduate students in implementing a range estimation algorithm on a Freescale evaluation board, Spring 2015.
- Supervised senior and M.Sc. students in the Advanced Mechatronics course to implement a battery state-of-charge estimation algorithm in an electric vehicle emulator, Fall 2014.
- Mentored 12 senior students from Zhejiang University and Tsinghua University during their summer internships at the Advanced Diagnosis, Automation, and Control (ADAC) Lab at NCSU, Summers 2011-2013.
- Mentored one REU senior student and two RET high school teachers at the FREEDM Center, Summer 2011.
- Served as a Teaching Assistant for the Senior Design course, assisting students with their projects, and for the Power System Analysis course, designing the course project on power flow and capacitor compensation, 2010 - 2011.

University of Miami, Electrical and Computer Engineering Department, 2008 - 2009

- Teaching Assistant for Power Electronics course, assisting students in the analysis and design of power circuits.

Isfahan Engineering Research Center, Control and Instrumentation group, 2004 -2008

- Installed and configured sensors and actuators (MFCs, humidifiers, thermo-controllers, pressure gauges, heaters, and level switches) to visually display and control parameters using MATLAB.

Professional Affiliations:

- Society for Neuroscience (SfN), Member, 2018 - Current
- Society of biological Psychiatry (SOBP), Member, 2017 - Current
- IEEE, IES East Carolina Chapter Chair, 2014 - 2015
- IEEE, IES Energy Storage Technical Committee Secretory, 2012 - 2016
- IEEE Member since 2008
- Reviewer: Journal of Medical Internet Research (JMIR), Sensors Journal, Brain and Behavior Journal, IEEE Transactions on Industrial Electronics (TIE), IEEE Transactions on Industrial Informatics (TII), Simulation Modelling Practice and Theory Journal, Industrial Electronics Magazine (IEM)

SKILLS

Computer Skills

- Proficient in MATLAB and SIMULINK programming, utilizing identification, real-time, control, GUI, data acquisition, robust, and QFT toolboxes.
- Skilled in Python, SQL, JMP Pro, statistical analysis with R, Octave, Java, FORTRAN, C programming, and Hadoop framework.
- MRI/fMRI acquisition and safety evaluations.

Language Skills

- Fluent in English and Persian
- Working knowledge of Arabic