

Netta Gurari

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Curriculum vitae last updated on November 27, 2018

RESEARCH INTEREST My research interest is to apply analysis and design tools from the field of robotics to the field of quantitative systems neuroscience to develop a richer understanding of the human sensorimotor system, and, in turn, to develop more effective treatments for those with compromised haptic perception and motor control.

EDUCATION **Ph.D., Mechanical Engineering** Dec 2010

Johns Hopkins University

Dissertation: Characterization of Human Perception Using Haptic Systems and Implications for Upper-Limb Prosthetics

Advisor:

Dr. Allison Okamura (Mechanical Engineer)

Committee Members:

Dr. Allison Okamura (Mechanical Engineer)

Dr. Steven Hsiao (Neurophysiologist)

Dr. Amy Shelton (Cognitive Psychologist/Cognitive Neuroscientist)

Dr. Katherine Kuchenbecker (Mechanical Engineer)

M.S.E., Mechanical Engineering May 2007

Johns Hopkins University

Specialization: Robotics, Controls

B.S.E., Mechanical Engineering and Applied Mechanics, May 2004

Cum Laude Society

University of Pennsylvania

Thesis: Determination of Human Dynamics in a Pivot Turn

Advisors:

Dr. David Solomon (Neurobiologist)

Dr. Vijay Kumar (Mechanical Engineer)

POSITIONS HELD **Preceptor** Chicago, USA Aug 2018 - Present

Northwestern University

Northwestern University Interdepartmental Neuroscience Program

Research Assistant Professor Chicago, USA Apr 2017 - Present

Northwestern University

Department of Physical Therapy and Human Movement Sciences

Research Associate Chicago, USA Oct 2014 - Mar 2017

Northwestern University

Department of Physical Therapy and Human Movement Sciences

Advisor: Dr. Julius Dewald (Neurophysiologist/Biophysicist/Physical Therapist)

Postdoctoral Research Fellow Genoa, Italy Mar 2012 - Mar 2014
Istituto Italiano di Tecnologia (*effective Nov 30,
Department of Robotics, Brain, and Cognitive Sciences 2011, but delayed start
Advisor: Dr. Gabriel Baud-Bovy (Experimental Psychologist/ date until March 21,
Computer Scientist) 2012 due to the
bureaucratic process)

Postdoctoral Research Fellow Baltimore, USA Jun 2011 - Nov 2011
Johns Hopkins University
Department of Mechanical Engineering
Advisor: Dr. Allison Okamura (Mechanical Engineer)

Research Assistant Baltimore, USA Sep 2004 - Dec 2010
Johns Hopkins University
Department of Mechanical Engineering
Advisor: Dr. Allison Okamura (Mechanical Engineer)

Undergraduate Researcher Philadelphia, USA Jan 2003 - May 2004
University of Pennsylvania
Department of Neurology and Otolaryngology
Advisor: Dr. David Solomon (Neurobiologist/Physician)

Undergraduate Researcher Tel Aviv, Israel Jun 2002 - Aug 2002
Tel Aviv University
Department of Biomedical Engineering
Advisor: Dr. David Elad (Biomedical Engineer)

GRANTS AND
FELLOWSHIPS

Title: Upper-Extremity Torque Perceptual Impairments in Chronic 2018 - 2023
Hemiparetic Stroke
Amount Awarded: 642,105 USD
PI: Netta Gurari
Funding Source: National Institutes of Health, Eunice Kennedy Shriver
National Institute of Child Health & Human Development

Grant Summary: The grant aim is to examine the cause of torque perceptual impairments, quantify its magnitude during unimanual and bimanual perceptual tasks, and test its neuroplasticity by using bimanual training in individuals with chronic hemiparetic stroke. Findings will lead to an improved understanding of the extent to which torque perceptual impairments impact a stroke survivor's ability to execute activities of daily living.

Title: Enhancing Stroke Rehabilitation with a Novel Tactile Feedback Device 2013 - 2016
Amount Awarded: 200,000 Euro (*At the completion of my contract
Co-PIs: Alberto Ansaldo, Michela Bassolino, Netta Gurari with IIT, I left my contribution
Funding Source: Istituto Italiano di Tecnologia, Department of to this grant in the hands of
Robotics, Brain, and Cognitive Sciences, Internal Grant others with relevant skill sets.)

Grant Summary: The grant aim is to encourage interdisciplinary collaborative research. The funding is supporting a proposed three-year research project to develop a novel tactile feedback device, based on novel actuators, for stroke rehabilitation using action observation.

Title: Kinematic and Dynamic Errors in Teleoperator Systems 2006 - 2008, 2010
Amount Awarded: 121,500 USD
Funding Source: National Science Foundation Graduate Research Fellowship (NSF GRFP)

Grant Summary: The grant aim is to “help ensure the vitality and diversity of the scientific and engineering workforce of the United States”. Recipients are graduate students pursuing research-based master’s and doctoral degrees in the NSF focused research areas who have demonstrated the potential to make significant advancements to the science and engineering research fields. The fellowship provided three-years of a 30,000 USD/year stipend and a partially covered tuition, along with travel support to a conference.

Title: Dean’s Fellowship 2004 - 2009
Amount Awarded: 181,200 USD
Funding Source: Johns Hopkins University, Whiting School of Engineering

Grant Summary: A prestigious fellowship offered to outstanding first-year doctoral students in the School of Engineering who help enhance diversity. The fellowship provided a full tuition waiver, health insurance benefits, and \$5,000 of a research assistantship for each of five years.

Title: Research Assistantship 2004 - 2008
Amount Awarded: 207,500 USD
Funding Source: Johns Hopkins University, Department of Mechanical Engineering

Grant Summary: The assistantship provided a full tuition fellowship, health insurance benefits, and \$20,500 stipend for four years.

Title: Locomotion and Vestibular Ocular Motor Control 2003
Amount Awarded: 4,000 USD
Funding Source: Jacob M. Abel Undergraduate Summer Research Internship, University of Pennsylvania, Department of Mechanical Engineering and Applied Mechanics

Grant Summary: Awarded to undergraduate students with the aim of promoting excellence in education by supporting the pursuit of summer research and design projects. Provided a stipend to support my research with Dr. David Solomon in the Vestibular and Ocular Motor Control Laboratory for the summer.

Title: John & Lillian Neff Scholarship 2000 - 2004
Amount Awarded: 85,200 USD
Funding Source: University of Pennsylvania

Grant Summary: An academic scholarship awarded to exceptional undergraduate students. The scholarship provided financial tuition support for four years.

Title: Merit-Based Scholarship 2000 - 2004
Amount Awarded: 20,000 USD
Funding Source: Anonymous Donor

Grant Summary: An anonymous donor from Columbus, Ohio awarded merit-based stipends of \$5,000 to selected recipients for four years.

AWARDS AND HONORS

Bexley High School Judah Folkman Scientist-in-Residence	2016 - 2017
BexTalks Inaugural Speaker	2016
National Science Foundation Graduate Research Fellow	2006 - 2008, 2010
Dean's Fellow	2004 - 2009
Jacob M Abel Undergraduate Summer Research Fellow	2003
Lillian Neff Scholar	2000-2004

PUBLICATIONS

Peer-Reviewed Journal Publications

- [J1] **N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Ability of Individuals with Chronic Hemiparetic Stroke to Locate their Forearms during Single-Arm and Between-Arms Tasks*, PLOS ONE, vol 13, issue 10, pp. 1-24, 2018.
- [J2] **N. Gurari**, J. M. Drogos, S. Lopez, and J. P.A. Dewald, *Impact of Motor Task Execution on an Individual's Ability to Mirror Forearm Positions*, Experimental Brain Research, vol 236, issue 3, pp. 765-777, 2018.
- [J3] **N. Gurari**, A. M. Okamura, and K. J. Kuchenbecker, *Perception of Force and Stiffness in the Presence of Low-Frequency Haptic Noise*, PLOS ONE, vol 12, issue 6, pp. 1-26, 2017.
- [J4] **N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Individuals with Chronic Hemiparetic Stroke can Correctly Match Forearm Positions Within a Single Arm*, Clinical Neurophysiology, vol 128, issue 1, pp. 18-30, 2017.
- [J5] **N. Gurari** and G. Baud-Bovy, *Customization, Control, and Characterization of a Commercial Haptic Device for High-Fidelity Rendering of Weak Forces*, Journal of Neuroscience Methods, vol 235, pp. 169-180, 2014.
- [J6] **N. Gurari**, K. J. Kuchenbecker, and A. M. Okamura, *Perception of Springs with Visual and Proprioceptive Motion Cues: Implications for Prosthetics*, IEEE Transactions on Human-Machine Systems, vol 43, issue 1, pp. 102-114, 2013.

In Preparation for Submission to and Under Review with Peer-Reviewed Journals

- [1] **N. Gurari**, N. A. van der Helm, J. M. Drogos, and J. P.A. Dewald, *Between-Arms Torque-Matching Ability Depends on the Arm Referenced in Individuals with Chronic Hemiparetic Stroke*. [In Revisions]
- [2] **N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Position-Mirroring Ability Depends on the Arm Referenced during Self-Generated Movements in Individuals with Chronic Hemiparetic Stroke*. [In Preparation]
- [3] J. R. Patterson, J. M. Drogos, **N. Gurari**, and J. P.A. Dewald, *Volitional Muscle Activation Restores Elevated Motoneuron Excitability Following Multiple Stretches in Chronic Hemiparetic Stroke*. [In Preparation]
- [4] **N. Gurari**, N. Cai, J. M. Drogos, and J. P.A. Dewald, *Single-Arm Torque-Matching Ability in Individuals with Chronic Hemiparetic Stroke*. [In Preparation]
- [5] M. D. Ellis, N. T.A. Gerritsen, **N. Gurari**, S. M. Lee, and J. P.A. Dewald, *A Passive-State Comparison of Ultrasound Elastography of the Biceps Brachii With Robotic Measurement of Elbow Extension Impedance in Chronic Stroke*. [In Preparation]

Book Chapter

- [B1] **N. Gurari** and A. M. Okamura, *Compliance Perception using Natural and Artificial Motion Cues*. In Massimiliano Di Luca, editor, *Multisensory Softness: Perceived Compliance from Multiple Sources of Information*, chapter 10, pp. 189-217, Springer, July 2014.

Peer-Reviewed Conference Publications

- [C1] *N. A. van der Helm, ***N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Task Directionality Impacts the Ability of Individuals with Chronic Hemiparetic Stroke to Match Torques Between Arms: Preliminary Findings*, Proceedings of the 15th International Conference on Rehabilitation Robotics (ICORR), pp. 714-719, 2017. *N. A. van der Helm and **N. Gurari** equally contributed to this work.
- [C2] *E. J. Euving, ***N. Gurari**, J. M. Drogos, S. Traxel, A. H.A. Stienen, and J. P.A. Dewald, *Individuals with Chronic Hemiparetic Stroke Correctly Match Forearm Position Within a Single Arm: Preliminary Findings*. In International Conference on Human Haptic Sensing and Touch Enabled Computer Applications (Eurohaptics), Springer International Publishing, pp. 122-132, 2016. (Acceptance Rate for Oral Presentation = 22%) *E. J. Euving and **N. Gurari** equally contributed to this work.
- [C3] F. Tatti, **N. Gurari**, and G. Baud-Bovy, *Static Force Rendering Performance of Two Commercial Haptic Systems*. In International Conference on Human Haptic Sensing and Touch Enabled Computer Applications (Eurohaptics), Springer Berlin Heidelberg, pp. 342-350, 2014.
- [C4] **N. Gurari**, J. Wheeler, A. Shelton, and A. M. Okamura, *Discrimination of Springs with Vision, Proprioception, and Artificial Skin Stretch Cues*. In International Conference on Human Haptic Sensing and Touch Enabled Computer Applications, Springer International Publishing, pp. 160-172, 2012 (Eurohaptics). (Acceptance Rate for Oral Presentation = 24%)
- [C5] A. Cheng, K. Nichols, H. Weeks, **N. Gurari**, and A. M. Okamura, *Conveying the Configuration of a Virtual Human Hand Using Vibrotactile Feedback*. Proceedings of the Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (Haptics Symposium), pp. 155-162, 2012. (Acceptance Rate for Oral Presentation = 26%)
- [C6] **N. Gurari**, K. Smith, M. Madhav, and A. M. Okamura, *Environment Discrimination with Vibration Feedback to the Foot, Arm, and Fingertip*. Proceedings of the 11th International Conference on Rehabilitation Robotics (ICORR), pp. 343-348, 2009.
- [C7] **N. Gurari**, K. J. Kuchenbecker, and A. M. Okamura, *Stiffness Discrimination with Visual and Proprioceptive Cues*. Proceedings of the Third Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (World Haptics), pp. 121-126, 2009. (Overall Acceptance Rate = 55%)
- [C8] J. Tapson, **N. Gurari**, J. Diaz, E. Chicca, D. Sander, P. Pouliquen, and R. Etienne-Cummings, *The Feeling of Color: A Haptic Feedback Device for the Visually Disabled*. Proceedings of the Biomedical Circuits and Systems Conference (BiOCAS), pp. 381-384, 2008.
- [C9] K. J. Kuchenbecker, **N. Gurari**, and A. M. Okamura, *Effects of Visual and Proprioceptive Motion Feedback on Human Control of Targeted Motion*. Proceedings of the 10th International Conference on Rehabilitation Robotics (ICORR), pp. 513-524, 2007.
- [C10] **N. Gurari** and A. M. Okamura, *Human Performance in a Knob-Turning Task*. Proceedings of the Second Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (World Haptics), pp. 96-101, 2007. (Acceptance Rate for Oral Presentation = 32%)
- [C11] K. J. Kuchenbecker, **N. Gurari**, and A. M. Okamura, *Quantifying the Value of Visual and Haptic Position Feedback During Force-Based Motion Control*. Proceedings of the Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (Haptics Symposium), pp. 561-562, 2007. (Overall Acceptance Rate = 73%)

Peer-Reviewed Abstract Publications

- [A1] Y. Avelar, M. Cregg, L. Kettering, M. Kulbersh, **N. Gurari**, C. Ingo, *Motor Perception Deficits and White Matter Volume in the Corpus Callosum in Patients with Chronic Hemiparetic Stroke*. Combined Sections Meeting American Physical Therapy Association, 2019. [To Be Presented]
- [A2] A. Alberto, J. M. Drogos, N. Cai, N. Reddy, J. P.A. Dewald, and **N. Gurari**, *Annual Biomedical Research Conference for Minority Students*, 2018. (Accepted for Oral Presentation)
- [A3] J. R. Patterson, J. M. Drogos, **N. Gurari**, and J. P.A. Dewald, *Stretching Only Temporarily Ameliorates Elevated Motoneuron Excitability in Chronic Stroke*. Neuroscience, 2019.
- [A4] J. R. Patterson, J. M. Drogos, **N. Gurari**, and J. P.A. Dewald, *Muscle Activation Restores Elevated Motoneuron Excitability Following Stretching in Chronic Stroke*. Progress in Clinical Motor Control 1: Neurorehabilitation, 2018.
- [A5] J. M. Drogos, N. A. van der Helm, J. P.A. Dewald, and **N. Gurari**, *Torque Matching Impairment can be Predicted Based on Motor Impairment Level in Individuals with Chronic Hemiparetic Stroke*. Combined Sections Meeting American Physical Therapy Association, 2018.
- [A6] A. E. Paramadilok, N. A. Newman, K. N. Ogden, N. R. Stortini, J. Urbaniak, **N. Gurari**, S. M. Lee, and M. D. Ellis, *Inter-Rater Reliability of Shear Wave Ultrasound Elastography in the Biceps Brachii Muscle of Individuals with Chronic Stroke*. Combined Sections Meeting American Physical Therapy Association, 2018.
- [A7] *N. A. van der Helm, ***N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Between Arms Torque Matching Ability in Individuals with Chronic Hemiparetic Stroke: Preliminary Findings*. Second Congress on NeuroRehabilitation and Neural Repair, 2017. *N. A. van der Helm and **N. Gurari** equally contributed to this work.
- [A8] M. D. Ellis, N. T. A. Gerritsen, S. M. Lee, J. P.A. Dewald, and **N. Gurari**, *Increased Passive Elbow Joint and Biceps Muscle Stiffness in Chronic Stroke*. Second Congress on NeuroRehabilitation and Neural Repair, 2017.
- [A9] J. M. Drogos, J. P.A. Dewald, and **N. Gurari**, *Between Arms and Within Arm Position Matching Assessments Lead to Differing Findings in Individuals with Chronic Hemiparetic Stroke*. Combined Sections Meeting American Physical Therapy Association, San Antonio, TX, 2017.
- [A10] **N. Gurari**, J. M. Drogos, and J. P.A. Dewald, *Using Robotic Systems to Assess Proprioceptive Deficits in Individuals with Hemiparetic Stroke*. XXI International Society of Electrophysiology and Kinesiology Congress, 2016.
- [A11] **N. Gurari** and G. Baud-Bovy, *Design of a Joystick with an Adjustable Damper to Study Kinematically Constrained Movements made by Children*. Proceedings of the IEEE Haptics Symposium, pp. 103-105, 2014. (Acceptance Rate for Oral Presentation = 27%)

Non-Peer-Reviewed Publications

- [N1] R. Tian, Y. Yang, O. G. Filatova, P. Maceira-Elvira, K. B. Wilkins, **N. Gurari**, C. Ingo, Y. Takeda, G. Kwakkel, O. Yamashita, F. C.T. van der Helm, and J. P.A. Dewald, *Neural Dynamics based on Multi-Modal Brain Imaging: Potential in Studying Stroke*. Computational Research Day, Northwestern University, 2018.
- [N2] A. Alberto, J. M. Drogos, N. A. Reddy, N. Cai, J. P.A. Dewald, and **N. Gurari**, *Single-Arm Torque Perception in Individuals with Chronic Hemiparetic Stroke*. Eighth Annual Movement and Rehabilitation Sciences Training Day, 2018.
- [N3] J. R. Patterson, J. M. Drogos, **N. Gurari**, J. P.A. Dewald, *Volitional Muscle Activation Restores Elevated Motoneuron Excitability Following Multiple Stretches in Chronic Hemiparetic Stroke*. Eighth Annual Movement and Rehabilitation Sciences Training Day, 2018.

- [N4] *S. Lopez, ***N. Gurari**, J. M. Drogos, P. Krueger, and J. P.A. Dewald, *The Ability of Individuals with Chronic Hemiparetic Stroke to Mirror Arm Positions Depends on the Task*. Sixth Annual Movement and Rehabilitation Science Training Day, 2016. *S. Lopez and **N. Gurari** equally contributed to this work.
- [N5] **N. Gurari**, J. Drogos, and J. P.A. Dewald, *Perception of Angular Position during Passive and Slow Movements about the Elbow Joint in Individuals with Chronic Hemiparesis*. Neuroscience, 2015.
- [N6] **N. Gurari**, J. Drogos, and J. P.A. Dewald, *Individuals with Chronic Hemiparesis Estimate Angular Positions about the Elbow Joint in the Paretic and Non-Paretic Arm during Slow Passive Movements*. Fifth Annual Movement and Rehabilitation Science Training Day, 2015.
- [N7] G. Baud-Bovy and **N. Gurari**, *A Joystick to Study how Children Control the Interaction Force during the Manipulation of Kinematically Constrained Objects*. 9th FENS Forum of Neuroscience, 2014.

Dissertation/Thesis

- [D1] **N. Gurari**, *Characterization of Human Perception Using Haptic Systems and Implications for Upper-Limb Prosthetics*. Doctoral Dissertation, Department of Mechanical Engineering, Johns Hopkins University, Dec 2010.
- [D2] **N. Gurari**, *Locomotion and Vestibular Ocular Motor Control*. Bachelor of Science in Engineering Thesis, Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Dec 2003.

PRESENTATIONS

University Research Presentations

- [U1] *Using Mechatronic Systems to Debug Proprioceptive Deficits in Individuals with Chronic Hemiparetic Stroke*. Clinically Applied Rehabilitation Research and Engineering Seminar, The University of Texas at Austin, Austin, TX, USA, Dec 8, 2017.
- [U2] *Using Mechatronic Systems to Debug Proprioceptive Deficits in Individuals with Chronic Hemiparetic Stroke*. Department of Physical Therapy and Human Movement Sciences Research Seminar, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA, Dec 6, 2017.
- [U3] *Using Mechatronic Systems to Debug Proprioceptive Deficits in Individuals with Chronic Hemiparetic Stroke*. Robotics Lab Meeting, Shirley Ryan Abilitylab, Chicago, IL, USA, Dec 4, 2017.
- [U4] *Debugging Clinical Sensory Assessments Using Robotics: Implications for Rehabilitation of Individuals with Stroke*. Joint Marquette/MCW/UWM Biomedical Engineering Seminar, Milwaukee, WI, USA, Nov 18, 2016.
- [U5] *Debugging Clinical Sensory Assessments Using Robotics: Implications for Rehabilitation of Individuals with Stroke*. Department of Physical Therapy and Human Movement Sciences, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA, Oct 26, 2016.
- [U6] *Understanding and Enhancing Touch Perception and Motor Control Using Haptic Systems*. Department of Computer Science, Rutgers University, New Brunswick, NJ, USA, Jul 8, 2014.
- [U7] *Characterization and Enhancement of Touch Perception and Motor Control Using Haptic Systems*. Grand Rounds Lecture, Department of Physical Therapy and Human Movement Sciences, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA, Jun 12, 2014.
- [U8] *Characterization of Touch Perception Using Custom Haptic Systems*. Computational Motor Control Lab, Ben Gurion University of the Negev, Beer Sheva, Israel, Jul 15, 2012.
- [U9] *Characterization and Enhancement of Touch Perception Using Custom Haptic Systems*. Robotics, Brain and Cognitive Sciences Department, Istituto Italiano di Tecnologia, Genova, Italy, Nov 23, 2011.

- [U10] *Characterization and Enhancement of Touch Perception Using Custom Haptic Systems*. Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, Illinois, USA, Oct 17, 2011.
- [U11] *Characterization of Human Sensing Capabilities for Improved Upper-Limb Prosthesis Use*. One of two JHU graduate students selected to give a high-level presentation of the PhD research to the general JHU community, Eaton E. Lattman Graduate Student Community Lecture Series, Maryland, USA, Apr 14, 2010.

Conference and Workshop Research Presentations

- [P1] *Torque Perception in Individuals with Chronic Hemiparetic Stroke*. Invited Speaker, 15th Karniel Computational Motor Control Workshop, Ben-Gurion University of the Negev, Be'er Sheva, Israel, Mar 25, 2019. [To be Presented]
- [P2] *Torque Perceptual Deficits in Individuals with Chronic Hemiparetic Stroke*. Invited Speaker, Progress in Clinical Motor Control: Neurorehabilitation, Pennsylvania State University, State College, PA, USA, Jul 24, 2018.
- [P3] *Using Robotic Systems to Assess Proprioceptive Deficits in Individuals with Hemiparetic Stroke*. Symposium Presentation: Implementation of Impairment Based Neuro-Rehabilitation Devices and Technologies following Brain Injury, XXI International Society of Electrophysiology and Kinesiology Congress, Chicago, Illinois, USA, Jul 7, 2016.
- [P4] *Design of a Joystick with an Adjustable Damper to Study Kinematically Constrained Movements made by Children*. Paper Presentation, Haptics Symposium, Houston, Texas, USA, Feb 25, 2014.
- [P5] *Compliance Perception using Natural and Artificial Motion Cues*. Workshop Presentation, Haptics Symposium, Houston, Texas, USA, Feb 23, 2014.
- [P6] *Discrimination of Springs with Vision, Proprioception, and Artificial Skin Stretch Cues*. Paper Presentation, Eurohaptics, Tampere, Finland, Jun 15, 2012.
- [P7] *Human Performance in a Knob-Turning Task*. Paper Presentation, Second Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (World Haptics), Tsukuba, Japan, Mar 22, 2007.

Educational Outreach Talks

- [E1] *Understanding the Science of Touch Using Robotics*. Presentation to Bexley School System, Bexley Education Foundation, Speaker for the 2016-2017 Bexley High School Judah Folkman Scientist in Residence, Bexley, Ohio, USA, Oct 21, 2016.
- [E2] *Robotics in the Science of Touch*. Presentation to FIRST Robotics Club and Engineering Class, Bexley High School, Bexley, Ohio, USA, Jan 29, 2016.
- [E3] *Robotics in the Science of Touch*. Presentation to middle and high school female students, Columbus School for Girls, Bexley, Ohio, USA, Jan 29, 2016.
- [E4] *Robotics in the Science of Touch*. BexTalks inaugural lecture to members of the community, Invited speaker by the City of Bexley, Bexley Public Library, and Bexley Community Foundation, Bexley, Ohio, USA, Jan 28, 2016.
- [E5] *Leading Labs: Engineering*. Lecture to incoming graduate students, JHU Teaching Assistant Orientation, Johns Hopkins University, Maryland, USA, Sep 3, 2008.
- [E6] *Get a Grip!* Break Out Session Leader – presentation to primarily middle school female students, Computer Mania Day, University of Maryland, Maryland, USA, Apr 9, 2005.

Hands-On Demonstrations

- [H1] *Development of Object Interaction Skills: Manipulating a Joystick*. **N. Gurari** and G. Baud-Bovy, Hands-on demonstration presented at IEEE World Haptics Conference, Daejeon, Korea, Apr 16, 2013.
- [H2] *Comparing Visual and Haptic Position Feedback*. K. J. Kuchenbecker, **N. Gurari**, and A. M. Okamura, Hands-on demonstration presented at IEEE World Haptics Conference, Tsukuba, Japan, Mar 23, 2007.
- [H3] *Get a Grip!* **N. Gurari**, P. Marayong, and S. Saha, Hands-on demonstration of the Impulse Engine 2000 and Phantom Omni presented at Computer Mania Day, Maryland, USA, Apr 9, 2005.

TEACHING
EXPERIENCE

Guest Speaker, NU, Emerging Technology in Rehabilitation Fall 2015/
Summer 2016
 Level of Course: Graduate
 Role: Provided to Doctor of Physical Therapy students an overview of my research in which I use robotics to investigate the reason for haptic perceptual impairments in individuals with chronic hemiparetic.

Co-Instructor, IIT, RBCS Methods Toolbox Fall 2013
 Level of Course: Graduate
 Role: Created and delivered a 2-hour overview lecture on the field of haptics.

Teaching Assistant, JHU, Electronics & Instrumentation Spring 2008
 Level of Course: Sophomore Undergraduate
 Primary Instructor: Dr. Noah Cowan
 Student Evaluations:
 Effectiveness in helping students learn course material: 4.67/5
 Genuine interest in students' progress in the course: 4.67/5
 Organization of laboratory sessions: 4.78/5
 Thoroughness of answers to student questions: 4.75/5
 Clear and understandable voice: 4.89/5
 Role: Instructed weekly lab sessions, graded lab reports, held office hours, and lectured three classes.

Teaching Assistant, JHU, Design and Analysis of Dynamic Systems Fall 2006
 Level of Course: Junior Undergraduate
 Primary Instructor: Dr. Allison Okamura
 Student Evaluations:
 Effectiveness in helping students learn course material: 4.2/5
 Genuine interest in students' progress in the course: 4.25/5
 Thoroughness of answers to student questions: 4.5/5
 Role: Held office hours, conducted problem solving sessions, graded homework, wrote homework solutions, and lectured one class.

Academic Tutor 2002 - 2003
 University of Pennsylvania
 Topics: Calculus I, II, and Hebrew

ADVISING

Co-Mentored Doctoral Students

Ninghe Cai (<i>AHA Predoctoral Fellow</i>)	NU	2018 - Present
Jacqueline Patterson	NU	2017 - 2018
Doctor of Physical Therapy Synthesis Project Students	NU	2016 - Present
Grzegorz Bubak	IIT	2013

Co-Mentored Masters Students

Nirvik Sinha	NU	2018
Ahalya Mandana	NU	2018
Nina van der Helm	NU	2016 - 2017
Ninette Gerritsen	NU	2015 - 2016
Erik Euving	NU	2015 - 2016

Co-Mentored Post-Baccalaureate Students

Shawn Lopez	NU	2015 - 2016
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Co-Mentored Undergraduate Students

Angelica Alberto	NU	2018
Cristina Costantino	IIT	2013
Alice Wu	JHU	2008 - 2012
Kathryn Smith	JHU	2008 - 2009
David Ferguson	JHU	2007 - 2008

High School Students

Jennifer Lee	JHU	2006
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General Outreach

Co-founder of <i>Me To Me Too</i>	www.metometoo.com	2011 - Present
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WORKSHOPS AND SPECIALTY COURSES

Advanced Systems Physiology: Neuroscience

Graduate-level course (BMD ENG 401) that provides a basic understanding of the structure and function of the human nervous system from an engineering and evolutionary perspective. Emphasis is placed on the structure and electrical properties of the neuron, its means of signaling and how neurons pass signals from one to another. The organization of neural systems on a macro scale is covered within the context of the somatosensory, visual, and motor system.

2018

Dutch Summer School

One-week course hosted by the Rehabilitation Institute of Chicago and Northwestern University in which Dutch and American attendees gain an in-depth understanding of stroke-related topics from clinical and research perspectives, with a focus on rehabilitation. Topics covered at the summer school include neuroscience basic principles, neuropathophysiology, clinical practices, and state-of-the-art in rehabilitation.

2016

Advanced Neuroanatomy

Seven-week Northwestern University Interdepartmental Neuroscience graduate-level course (NUIN 440) that provides a fundamental understanding of neuroanatomy. This course considers the nervous system from both structural and functional perspectives, resulting in an integrated view of the brain. In addition to lectures and demonstrations, half the time is devoted to laboratory exercises in which students view histological sections and participate in the dissection of a human brain.

2016

Movement and Rehabilitation Science Clinical Boot Camp

Four-day event hosted at Northwestern University's Department of Physical Therapy & Human Movement Sciences in which participants gain an in-depth understanding of a subset of movement disorders from clinical and research perspectives, with a focus on rehabilitation. Topics covered at the boot camp include neuroscience basic principles, neuropathophysiology, clinical practices, and state-of-the-art in rehabilitation.

2014, 2015

Tenth Motor Control Summer School 2013
 Three-day event in which participants are introduced to topics in motor control by leading researchers in various areas.

Negotiating the Ideal Faculty Position 2011
 Three-day NSF ADVANCE workshop at Rice University in which faculty leaders in science, engineering, and psychology teach underrepresented prospective faculty about the faculty application process, provide direct feedback on application items, and guide attendees through mock job talks and chair interviews.

Telluride Neuromorphic Cognition Engineering Workshop 2008
 Three-week complete immersion workshop focused on neuromorphic engineering. Researchers from academia, industry, and national laboratories worked together on neurobiological and engineering aspects of sensory systems and sensory-motor integration. My unique experiences included a mini-course on how to perform fly electrophysiology.

JHU Teaching Assistant Training Workshops 2006
 Semester long lectures and panels on a broad range of topics relevant to the development of teaching skills.

Surgery For Engineers 2005
 Semester long course that teaches fundamental skills and operative procedures for general surgery through lectures and laboratory sessions. Exposure to both traditional and innovative operating room environments, as well as basic surgical procedure techniques.

PROFESSIONAL
 ACTIVITIES

Leadership Activities
 LCSR Graduate Student Committee, JHU, *Haptics Lab Representative* 2007 - 2010
 Women of Whiting, JHU, *Panel Chair* 2007 - 2009
 Women of Whiting, JHU, *Peer Advisor* 2006 - 2009
 Haptics Laboratory, JHU, *Manager of Human Subjects Protocols* 2006 - 2009
 Women of Whiting, JHU, *Social Chair* 2006
 Haptics Laboratory, JHU, *Demonstration Coordinator* 2005 - 2006
 Haptics Laboratory, JHU, *Web Master* 2004 - 2005

Outreach Activities
 UT Austin Crowdsourcing for Computer Vision Course, *Student Projects Guest Judge* 2017
 Science-Engineering-Technology Congressional Visits Days 2010
 Engineers Without Borders, *JHU South Africa Team Volunteer* 2010
 JHU Teaching Assistant Orientation, *Panel Member* 2008
 Women of Whiting, *WISE Panel Speaker* 2006
 Ready, Set, Design!, *Volunteer* 2006
 Surgical Lego Competition, *Volunteer* 2005

TECHNICAL
 REVIEWS

Neurorehabilitation and Neural Repair
 IEEE Transactions on Haptics
 IEEE Transactions on Systems, Man, & Cybernetics (w/ Peer)
 IEEE/RSJ International Conference on Intelligent Robots and Systems
 IEEE Conference on Decision and Control
 Haptics Symposium
 IEEE International Conference on Robotics & Automation
 IEEE World Haptics Conference
 Eurohaptics
 IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechanics

PERSONAL

Citizenship: United States of America, Israel

Language Skills (at Peak Level):

- Fluency: English [Native], Hebrew
- Proficiency: Russian, Spanish, Italian
- Working Knowledge: Polish, Portuguese