Julia Ebert

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EDUCATION

Harvard University | PhD candidate in Computer Science — 2016 –
Advisor: Prof. Radhika Nagpal

Imperial College London | Master of Research in Bioengineering, with Distinction — 2016
Advisors: Prof. Etienne Burdet, Dr. Ildar Farkhatdinov
Thesis: *Assisting Balance Recovery with a Lower Limb Exoskeleton*

Northeastern University | BS in Behavioral Neuroscience, Minor in Computer Science — 2015
GPA: 3.98 / 4.0, summa cum laude
Honors Thesis: *Asymmetric Learning in an Asymmetric Bimanual Task*

RESEARCH

Harvard Self-Organizing Systems Research Group | Prof. Radhika Nagpal
LARVAbot: Locomotion of autonomous robots via aggregation — 2017 –
Multi-feature perception and decision making in robot collectives — 2016 –

Lawrence Livermore National Laboratory | Dr. Michael Schneider
Multi-telescope image integration for efficient geosynchronous orbit estimation — May – August 2018

Imperial College Human Robotics Group | Prof. Etienne Burdet, Dr. Ildar Farkhatdinov
Co-control of balance recovery in a lower limb exoskeleton — 2015 – 2016

Northeastern University Action Lab | Prof. Dagmar Sternad
Prediction and stability in control of objects with complex dynamics — 2014 – 2015
Learning and long-term retention of an asymmetric bimanual task — 2012 – 2015
Effects of central fatigue on cognitive and motor performance — 2011 – 2012

Northeastern University Marine Science Center | Prof. Joseph Ayers
Neuro-inspired rheotaxis and antenna design in a robotic lobster — May – August 2015

Max Planck Institute for Intelligent Systems | Prof. Stefan Schaal
Learning and exploration in a novel dimensionality-reduction task — July – December 2013

GRANTS AND SCHOLARSHIPS

Department of Energy Computational Science Graduate Fellowship (DOE CSGF) — 2016
Marshall Scholarship — 2015
Northeastern Provost Undergraduate Advanced Research Award — 2014
Barry M. Goldwater Scholarship — 2013
Northeastern Provost Undergraduate Research Award — 2013
DAAD Undergraduate Scholarship — 2013
Northeastern Presidential Global Scholarship — 2013
Northeastern National Merit Scholarship — 2010

AWARDS

Hertz Fellowship Finalist — 2016
National Science Foundation Graduate Research Fellowship Program (NSF GRFP) Honorable Mention — 2016
Northeastern University Honors Program Distinction — 2015
Northeastern Honors in the Behavioral Neuroscience — 2015
Northeastern Alex Skavenski Award for Behavioral Neuroscience — 2015
Northeastern Sears B. Condit Award for academic achievement — 2015
Northeastern Dean's List (6 semesters) — 2010 – 2015
Rhodes, Fulbright, and Mitchell Scholarship Finalist — 2015

PUBLICATIONS

S. Bazzi, **J. Ebert**, N. Hogan, and D. Sternad. 2018. Stability and Predictability in Dynamically Complex Physical Interactions. In *Proc. of the 2018 IEEE International Conference on Robotics and Automation (ICRA 2018), Brisbane, Australia, May 21–25, 2018.*

J. T. Ebert, M. Gauci, and R. Nagpal. 2018. Multi-Feature Collective Decision Making in Robot Swarms. In *Proc. of the 17th Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), Stockholm, Sweden, July 10–15, 2018,* IFAAMAS.

[In preparation] S. Bazzi, **J. Ebert**, N.Hogan, and D. Sternad. Stability Analysis of Human Movement: Contraction Theory as a New Tool.

[In preparation] S. Park, **J. Ebert**, and D. Sternad. Asymmetric Learning in an Asymmetric Bimanual Task.

[In preparation] I. Farkhatdinov, **J. Ebert**, G. van Oort, E. van Asseldonk, and E. Burdet. Experiments on Human Balancing Co-Control in Standing.

CONFERENCE ABSTRACTS AND POSTERS

J. Ebert, C. Teeple, E. Steinhardt, and S. Ramanathan, "Infotaxis in a Multi-agent Sensor Network." Poster at: *DOE CSGF Program Review;* 24–27 July 2017; Washington, DC.

I. Farkhatdinov, **J. Ebert**, G. van Oort, E. van Asseldonk, and E. Burdet, "Human Balance Augmentation with Lower Limb Exoskeleton Robot." Extended abstract and poster at: *RehabWeek 2017 workshop: Towards a next generation of wearable robotic devices for human-oriented assistance and therapy;* 17 July 2017; London, UK.

J. Ebert, I. Farkhatdinov, G. van Oort, E. van Asseldonk, and E. Burdet, "Preliminary Study on Assisting Balance Recovery with Lower Limb Exoskeleton." Work in progress paper and poster at: *EuroHaptics 2016;* 4–7 July 2016; London, UK.

D. Sternad, A. Mukovskiy, **J. Ebert**, and T. Dijkstra, "Dynamic Stability in the Control of Complex Objects." Poster at: *Biomechanics and Neural Control of Movement 2016;* 12–17 June 2016; Mt. Sterling, OH.

J. Ebert, S. Park, and D. Sternad, "Asymmetric Learning in an Asymmetric Bimanual Task." Poster at: *Society for the Neural Control of Movement 25th Annual Meeting;* 20–24 April 2015; Charleston, SC.

J. Ebert, A. Mukovskiy, T. Dijkstra, and D. Sternad, "Why You Don't Spill Your Coffee." Poster at: *Northeastern University Research, Innovation, and Scholarship Expo (RISE);* 9 April 2015; Boston, MA.

J. Ebert, S. Kim, D. Sternad, and S. Schaal, "Learning and exploration in a novel dimensionality-reduction task." Poster at: *Society for the Neural Control of Movement 24th Annual Meeting;* 20–25 April 2014; Amsterdam, NL.

J. Ebert, S. Park, and D. Sternad, "Asymmetric Learning in an Asymmetric Bimanual Task." Poster at: *Northeastern University Research, Innovation, and Scholarship Expo (RISE);* 10 April 2014; Boston, MA.

J. Ebert, S. Park, and D. Sternad, "Asymmetric Learning in an Asymmetric Bimanual Task." Poster at: *Northeast Undergraduate Research and Development Symposium;* 2–3 March 2013; Biddeford, ME.

J. Ebert, S. Park, L. Griffin, T. O'Neil-Pirozzi, and D. Sternad, "Central Fatigue in Cognitive and Motor Performance." Poster at: *Northeastern University Research, Innovation, and Scholarship Expo (RISE);* 29 March 2012; Boston, MA.

TALKS

J. Ebert, "Bioinspired Collective Robotics," *University of Queensland;* 14 May 2018.

J. Ebert, M. Gauci, and R. Nagpal, "Collective Perception and Decision Making in Heterogeneous Swarms," *Wyss Institute Molecular Robotics Initiative;* 14 September 2017.

TEACHING

Harvard University

CS 189: Autonomous Robot Systems, Teaching Fellow — Spring 2018

Northeastern University

CS 2510: Fundamentals of Computer Science, Teaching Assistant (2 semesters) — 2014 – 2015
CS 2510: Fundamentals of Computer Science, Tutor (3 semesters) — 2012 – 2014
Proactive Recruitment in Science and Mathematics (PRISM), Undergraduate Mentor — 2011 – 2013

EMPLOYMENT

Interactive Motion Technologies

Software Development Co-op — July – September 2014

OUTREACH

Guest, Brains On! science podcast for kids
Volunteer, Boston Public Schools Science Fair 2017, 2018

SERVICE

EuroHaptics 2016 volunteer 2016
Northeastern Civic Engagement Program 2010 – 2015
Boston Bikes volunteer 2014 – 2015
Tutor team leader at TechBoston Academy 2014
Brigham and Women's Hospital: Medical Career Exploration Program volunteer 2011 – 2013
Massachusetts General Hospital: Youth Program mentor 2010 – 2011

SKILLS

Programming
Python (including Django, NumPy, SciPy) • MATLAB • C/C++ (including OpenMP, AVR, Arduino) • HTML/CSS • LaTeX • JavaScript • Java

Fabrication
Laser cutting • 3D printing • Vinyl cutting • CNC milling, ShopBot • Electronics design (Eagle) and production • Soldering • Sewing • Molding and casting

Other
Computer-aided design (OnShape) • Database design • Linux • Embedded programming • 3D motion capture • Kinematic and EEG data collection in human subjects

RELEVANT COURSEWORK

Computer Science
Biologically-inspired Multi-agent Systems • Distributed Systems • Machine Learning • Network Algorithms • Computational Neurodynamics • Artificial Intelligence • Robotics

Science and Engineering
How to Make (Almost) Anything • Biomimetics • Comparative Neurobiology • Human Neuroanatomy • Biochemistry • Genetics and Molecular Biology • Organic Chemistry

Mathematics
Biological Signal Processing • Statistics and Data Analysis • Multivariable Calculus • Linear Algebra • Differential Equations

ACTIVITIES AND INTERESTS

Harvard University curling team
Imperial College and Goodenough College fencing clubs
Northeastern University pep band, drumline, and wind ensemble

Cycling • Web design and development • Graphic design • Writing • Baking