Julia Ebert

PhD Candidate • Robotics Researcher

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Education

Cambridge, MA 2016 –	**Harvard University** PhD Candidate in Computer Science Advisor: Prof. Radhika Nagpal	
London, UK 2016	**Imperial College London** Master of Research in Bioengineering, with Distinction Advisors: Prof. Etienne Burdet, Dr. Ildar Farkhatdinov Thesis: *Assisting Balance Recovery with a Lower Limb Exoskeleton*	
Boston, MA 2015	**Northeastern University** BS in Behavioral Neuroscience, Minor in Computer Science GPA: 3.98 / 4.0, summa cum laude Honors Thesis: *Asymmetric Learning in an Asymmetric Bimanual Task*	

Research

Cambridge, MA 2017 – 2016 –	**Harvard University Self-Organizing Systems Research Group** Prof. Radhika Nagpal › LARVAbot: Locomotion of autonomous robots via aggregation › Multi-feature perception and decision making in robot collectives
Livermore, CA 2018 –	**Lawrence Livermore National Laboratory** Dr. Michael Schneider › Collaborative Autonomy for Space Situational Awareness
London, UK 2015 – 2016	**Imperial College Human Robotics Group** Prof. Etienne Burdet and Dr. Ildar Farkhatdinov › Co-control of balance recovery in a lower limb exoskeleton
Boston, MA 2014 – 2015 2012 – 2015 2011 – 2012	**Northeastern University Action Lab** Prof. Dagmar Sternad › Prediction and stability in control of objects with complex dynamics › Learning and long-term retention of an asymmetric bimanual task › Effects of central fatigue on cognitive and motor performance
Nahant, MA May – Aug. 2015	**Northeastern University Marine Science Center** Prof. Joseph Ayers › Neuro-inspired rheotaxis and antenna design in a robotic lobster
Watertown, MA July – Sept. 2014	**Interactive Motion Technologies** › Integrated stroke assessment software in rehabilitation robotics
Tübingen, DE July – Dec. 2013	**Max Planck Institute for Intelligent Systems** Prof. Stefan Schaal › Learning and exploration in a novel dimensionality-reduction task

Grants and Scholarships

2016	Department of Energy Computational Science Graduate Fellowship (DOE CSGF)
2015	Marshall Scholarship

2014	Northeastern Provost Undergraduate Advanced Research Award
2013	Barry Goldwater Scholarship
2013	Northeastern Provost Undergraduate Research Award
2013	DAAD Undergraduate Scholarship
2013	Northeastern Presidential Global Scholarship
2010	Northeastern National Merit Scholarship

Awards

2018	Distinction in Teaching, Harvard University
2016	Finalist, Hertz Fellowship
2016	Honorable Mention, National Science Foundation Graduate Research Fellowship Program (NSF GRFP)
2015	Northeastern University Honors Program Distinction
2015	Northeastern Honors in Behavioral Neuroscience
2015	Northeastern Alex Skavenski Award for Behavioral Neuroscience
2015	Northeastern Sears B. Condit Award for academic achievement
2010 – 2015	Northeastern Dean's List (6 semesters)
2015	Finalist; Rhodes, Fulbright, and Mitchell Scholarships

Papers

Julia Ebert, Melvin Gauci and Radhika Nagpal. 2018. Multi-feature collective decision making in robot swarms. In *Proceedings of the 17th International Conference on Autonomous Agents and MultiAgent Systems*, 1711–1719.

Salah Bazzi, **Julia Ebert**, Neville Hogan and Dagmar Sternad. 2018. Stability and Predictability in Dynamically Complex Physical Interactions. In *2018 IEEE International Conference on Robotics and Automation (ICRA)*, 5540–5545.

Salah Bazzi, **Julia Ebert**, Neville Hogan and Dagmar Sternad. 2018. Stability and predictability in human control of complex objects. *Chaos*, 28, 10. DOI: https://doi.org/10.1063/1.5042090

Ildar Farkhatdinov, **Julia Ebert**, Geiss van Oort, Edwin van Asseldonk and Etienne Burdet. 2018. Experiments on Human Balancing Co-Control in Standing. Submitted to *IEEE RA-L*.

Se-Woong Park, **Julia Ebert** and Dagmar Sternad. Asymmetric Learning in an Asymmetric Bimanual Task. In preparation.

Conference Abstracts and Posters

Julia Ebert, Joshua Meyers, William Dawson and Michael Schneider. 2018. Collaborative Autonomy for Space Situational Awareness. Poster at *Lawrence Livermore National Laboratory Summer Student Poster Symposium* (8 August 2018). Livermore, CA.

Julia Ebert, Melvin Gauci and Radhika Nagpal. 2018. Multi-Feature Collective Decision Making in Robot Swarms. Poster at *DOE CSGF Program Review* (15–19 July 2018). Washington, DC.

Julia Ebert, Clark Teeple, Emma Steinhardt and Sharad Ramanathan. 2018. Infotaxis in a Multi-agent Sensor Network. Poster at *DOE CSGF Program Review* (24–27 July 2017). Washington, DC.

Ildar Farkhatdinov, **Julia Ebert**, Geiss van Oort, Edwin van Asseldonk and Etienne Burdet. 2017. Human Balance Augmentation with Lower Limb Exoskeleton Robot. Poster at *RehabWeek 2017 workshop: Towards a next generation of wearable robotic devices for human-oriented assistance and therapy* (17 July 2017). London, UK.

Julia Ebert, Ildar Farkhatdinov, Geiss van Oort, Edwin van Asseldonk and Etienne Burdet. 2016. Preliminary Study on Assisting Balance Recovery with Lower Limb Exoskeleton. Poster at *EuroHaptics 2016* (4–7 July 2016). London, UK.

Dagmar Sternad, Albert Mukovskiy, **Julia Ebert** and Tjeerd Dijkstra. 2016. Dynamic Stability in the Control of Complex Objects. Poster at *Biomechanics and Neural Control of Movement 2016* (12–17 June 2016). Mt. Sterling, OH.

Julia Ebert, Se-Woong Park and Dagmar Sternad. 2015. 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.

Julia Ebert, Albert Mukovskiy, T Dijkstra and Dagmar Sternad. 2015. Why You Don't Spill Your Coffee. Poster at *Northeastern University Research, Innovation, and Scholarship Expo (RISE)* (9 April 2015). Boston, MA.

Julia Ebert, S Kim, Dagmar Sternad and Stefan Schaal. 2014. 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.

Julia Ebert, Se-Woong Park and Dagmar Sternad. 2014. Asymmetric Learning in an Asymmetric Bimanual Task. Poster at *Northeastern University Research, Innovation, and Scholarship Expo (RISE)* (10 April 2014). Boston, MA.

Julia Ebert, Se-Woong Park and Dagmar Sternad. 2013. Asymmetric Learning in an Asymmetric Bimanual Task. Poster at *Northeast Undergraduate Research and Development Symposium* (2–3 March 2013). Biddeford, ME.

Julia Ebert, Se-Woong Park, L Griffen, T O'Neil Pirozzi and Dagmar Sternad. 2012. Central Fatigue in Cognitive and Motor Performance. Poster at *Northeastern University Research, Innovation, and Scholarship Expo (RISE)* (29 March 2012). Boston, MA.

Teaching

Cambridge, MA	**Harvard University**
Fall 2018	› **Teaching Staff,** How To Make (Almost) Anything, Harvard section
Spring 2018	› **Teaching Fellow,** CS 189: Autonomous Robot Systems
Boston, MA	**Northeastern University**
2014 – 2015	› **Teaching Assistant,** CS 2510: Fundamentals of Computer Science (2 semesters)
2012 – 2014	› **Tutor,** CS 2510: Fundamentals of Computer Science (3 semesters)
2011 – 2013	› **Undergraduate Mentor,** Proactive Recruitment in Science and Mathematics (PRISM)

Outreach and Service

2018	Robot Design Judge, FIRST LEGO League Newton Qualifier
2018	Speaker, Science in the News fall lecture series: "Brains and Bodies: How to Make Smart Robots"
2018	Guest, *Brains On!* science podcast live show
2017, 2018	Volunteer, Boston Public Schools Science Fair
2016	Volunteer, EuroHaptics 2016
2010 – 2015	Volunteer, Northeastern Civic Engagement Program
2014	Tutor team leader, TechBoston Academy
2014	Teacher, NEU Splash Program. Class: "This is your Brain"
2011 – 2013	Volunteer, Brigham and Women's Hospital
2010 – 2011	Mentor, Massachusetts General Hospital Youth Program

Skills

Programming	Python (including Django, NumPy) · 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	Stochastic Methods for Data Analysis, Inference and Optimization · Biological Signal Processing · Statistics and Data Analysis · Multivariable Calculus · Linear Algebra · Differential Equations

Activities and Interests

Sport | Harvard University curling team · Imperial College and Goodenough College fencing clubs · Cycling

Music | Northeastern University pep band, drumline, and wind ensemble · Clarinet · Saxophone · Percussion

Other | Web design and development · Graphic design · Writing · Baking