

CURRICULUM VITAE

Jeremy R. Cooperstock
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BIOGRAPHICAL

PERSONAL DATA

Nationality Canadian
Languages English, French and Hebrew
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EDUCATION

Ph.D. Electrical and Computer Engineering, University of Toronto, 1996.
Thesis: "Reactive Environments and Augmented Media Spaces."
(Nominated for NSERC Doctoral Dissertation Award)
Advisors: Prof. K.C. Smith and Prof. W. Buxton

M.Sc. Computer Science, University of Toronto, 1992.
Thesis: "Neural Network Operated Vision-Guided Mobile Robot Arm
for Docking and Reaching." Advisor: Prof. E. Milios.

B.A.Sc. Electrical Engineering, Computer Engineering Option, University of
British Columbia, 1990 (Honours)

AWARDS AND DISTINCTIONS

- 2022 Honorable Mention, “The Sound of Hallucinations: Toward a more convincing emulation of internalized voices” (top 5% of papers), Human Factors in Computing Systems (CHI) [C4]
- 2022 Finalist, Best Applications Paper Award, “Speaking Haptically: from Phonemes to Phrases with a Mobile Haptic Communication System”, Transactions on Haptics [J3]
- 2019 Honorable Mention, “Detecting Perception of Smartphone Notifications using Skin Conductance Responses” (top 5% of papers), Human Factors in Computing Systems (CHI) [C33]
- 2019 San Diego Opera, Opera Hack award, Hamsafar! (\$10,000, with 5 co-awardees)
- 2018 Best poster presentation award, “Enhanced Pressure-Based Multimodal Immersive Experiences”, Augmented Human [CP9]
- 2015 Gerald W. Farnell Teaching Scholar, Faculty of Engineering (\$12,500)
- 2014 US Ignite Best App in Education, [Augmented Reality for Improved Training of First Responders](#)
- 2013 Canadian National Institute for the Blind, Hochhausen Access Technology Research Award (\$10,000)
- 2013 Best paper award, “Vibrotactile Rendering of Splashing Fluids”, Transactions on Haptics [J16]
- 2013 Best use of sound award, “The Walking Straight Mobile Application: Helping the Visually Impaired Avoid Veering, International Conference on Auditory Displays [C61]
- 2012 Mozilla Foundation and NSF Gold Prize in the Mozilla Ignite Challenge (out of 305 submissions in the Brainstorming Round) (\$5,000) for [Real-Time Emergency Response](#)
- 2012 Canadian Internet Registry Association .CA Impact Award (Applications category) for In-Situ Audio Services Project (\$5,000)
- 2011 Best paper award, “What’s around me? Spatialized audio augmented reality for blind users with a smartphone”, Mobile and Ubiquitous Systems [C72]
- 2010 Best paper award, “Design of a Vibrotactile Display via a Rigid Surface”, Haptics Symposium [C81]
- 2009, 2010 Nominee, NSERC Brockhouse Canada Prize
- 2009 Best paper award, “SoundPark: Exploring Ubiquitous Computing through a Mixed Reality Multi-player Game Experiment”, 9e Conférence Internationale sur Les NOuvelles TEchnologies de la REpartition [C91]
- 2005 ACM/IEEE Supercomputing, Most Innovative Use of New Technology for [Wide Screen Window on the World: Life Size HD Videoconferencing](#)
- 2001 Audio Engineering Society Citation Award for [pioneering the technology enabling collaborative multichannel performance over the broadband internet](#)

WORK EXPERIENCE

CAREER HIGHLIGHTS

Haptic Information Delivery (2018-2021) My lab's haptics research has resulted in prominent visibility in the preeminent journal, IEEE Transactions on Haptics, and the two top-tier international conferences in the field, IEEE Haptics Symposium and IEEE World Haptics Conference, with a dozen publications in these forums between 2020 and 2021. Given my recognition in the field, I was invited to serve on the editorial boards of all of these bodies, in addition to the specialty section on haptics of the Frontiers Journal in Virtual Reality. Specific examples of significant contributions include the performance attained through use of our two-actuator apparatus and phonemic encoding for tactile communication of natural language [C30, J3, C8], which outperformed the previously cited best results on this task, achieved by Facebook Research Labs. A second contribution relates to the high recognition rates we attained for multi-dimensional tacton delivery (3 parameters, each at 3 levels), targeting clinical patient-monitoring scenarios. This work inspired studies of wearable vibrotactile devices for physiological monitoring of patients [C29, C18]. While our results were achieved initially using a set of three actuators [C43, C40, C31, C21], we subsequently demonstrated equivalent recognition performance via only a single vibrotactile actuator, with a novel parameter encoding scheme [C20]. We further demonstrated achievement of the highest information transfer rates reported in the literature for such a single-actuator device [C15].

Physiological Sensing (2017-2020) Our research for detection of smartphone notifications was recognized by an Honourable Mention (top 5% of papers) from the top-tier ACM Conference on Human Factors in Computing ([C33]), and led to a recent patent filing ([P5]). This work has the potential to serve as not only for more intelligent, context-sensitive notification delivery, but also, as a tool that can be exploited to combat the prevalent and adverse effects of Internet addiction, driven largely by "fear of missing out."

Real-Time Emergency Response (rtER) (2012-2013) provides an envisionment of the future of next-generation 911 (NG-911) technologies, supporting enhanced situational awareness for first responders through the use of citizen-supplied smartphone video streams and other relevant data [J14]. Our work was recognized by the *Gold Prize* from the Mozilla Ignite Fund, featured on the web site of the White House Office of Science and Technology, and prompted the launch of a funding program by the U.S. Department of Justice.

Autour (2009-2018) is an "eyes-free" app for the blind, which provides a rich, spatialized audio representation of one's environment [J22, C72, C63, C60]. The project further motivated a rigorous analysis of smartphone sensor reliability, resulting in what was the first comprehensive examination of practical limits on smartphone sensors, including the problems of gyro drift [C63].

Mobile Treatment Device for Amblyopia (2009-2012, in collaboration with ophthalmologist R. Hess) is a patented prototype Mobile Treatment Device for Amblyopia [P10] ("lazy eye"). Initial trials [J21], based on the popular Tetris game, provided highly promising early results [J28, J24], not only restoring the use of both eyes in a majority of patients but even resulting in binocular (3D) depth perception in some. Most significantly, the treatment has been found to work successfully

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