Natural Sciences and Engineering Research Council of Canada | Conseil de recherches en sciences naturelles et en génie du Canada

FORM 100
Personal Data Form
PART I

Date: 2012/12/03

Family name	Given name	Initial(s) of all given names	Personal identification no. (PIN)
Cooperstock	Jeremy	R	**Valid** 130832

☐ I hold a faculty position at an eligible Canadian college (complete Appendices B1 and C)

☐ I do not or will not hold an academic appointment at a Canadian postsecondary institution

Place of employment other than a Canadian postsecondary Institution (give address in Appendix A)

APPOINTMENT AT A POSTSECONDARY INSTITUTION

Title of position: Associate Professor

Department:

Campus:

Canadian postsecondary institution:

Tenured or tenure-track academic appointment: Yes [X] No [ ]

Part-time appointment [ ] Full-time appointment [X]

- For all non-tenured or non tenure-track academic appointment and Emeritus Professors, complete Appendices B & C
- For life-time Emeritus Professor and part-time positions, complete Appendix C

ACADEMIC BACKGROUND

Degree	Name of discipline	Institution	Country	Date yyyy/mm
Bachelor's	Electrical Engineering, Comp. Eng. Option	British Columbia	CANADA	1990 / 06
Master's	Computer Science	Toronto	CANADA	1992 / 06
Doctorate	Electrical and Computer Engineering	Toronto	CANADA	1996 / 06

TRAINING OF HIGHLY QUALIFIED PERSONNEL

Indicate the number of students, fellows and other research personnel that you:

	Currently		Over the past six years (excluding the current year)		
	Supervised	**Co-supervised**	**Supervised**	**Co-supervised**	**Total**
Undergraduate	4		9	1	14
Master's	2		6	5	13
Doctoral	4		9	7	20
Postdoctoral			7		7
Others	2	1	9		12
Total	12	1	40	13	66

Personal information collected on this form and appendices will be stored in the Personal Information Bank for the appropriate program.
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ACADEMIC, RESEARCH AND INDUSTRIAL EXPERIENCE (use one additional page if necessary)

Position held (begin with current)	Organization	Department	Period (yyyy/mm to yyyy/mm)
Associate Professor	McGill	Electrical and Computer Engineering	2003/06
Invited Professor	University of Auckland	Computer Science	2011/07 to 2012/07
Visiting Professor	Bang & Olufsen		2009/05 to 2009/06
Consultant	Boucher Harper		2007/05 to 2007/09
Invited Professor	Université de Paris VI - Pierre et Marie Curie	Laboratoire des Instruments et Systemes	2004/09 to 2005/06
Consultant	Crawford Adjusters Canada		2004/02 to 2004/10
Consultant	Solicitor General of Canada		2002/05 to 2003/11
Assistant Professor	McGill University	Electrical and Computer Engineering	1997/11 to 2003/05
Visiting Researcher	Sony	Computer Science Laboratory	1996/09 to 1997/10
Consultant	University of Toronto	Knowledge Media Design Institute	1996/01 to 1996/05

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RESEARCH SUPPORT

Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support **(including NSERC grants and university start-up funds)** held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			
a) Support held in the past 4 years			
Cooperstock, J.R., Sha, X.W	Unités agenceables: Reseau d'Environnments Immersifs pour Collaboration à Distance FQRNT (Quebec Government) Projet de recherche en équipe 15 hours/month	66,550 (50%) 40,000 (50%) 40,000 (50%)	2006 2007 2008
Cooperstock, J.R.	Enhanced video for shared reality environments NSERC RGPIN 10 hours/month	20,000(100%) 20,000(100%) 20,000(100%) 20,000(100%) 20,000(100%)	2006 2007 2008 2009 2010
Cooperstock, J.R.	A Pervasive Multi-user Augmented Space for Mobile Immersive Interaction with Sound and Music NSERC New Media Initiative 20 hours/month	116,845 109,545 91,395	2006 2007 2008
Laurendeau, L. and 23 others	Quebec Network for Research in Artificial Reality (QERRAnet) FQRNT (Quebec Government) Environnements PARTagés Intelligents répartis 5 hours/month	255,000 255,000 255,000 255,000 255,000	2006 2007 2008 2009 2010

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a) Support held in the past 4 years			
Cooperstock, J.R.	Environment virtual: création de musique et de son MDEIE Programme de soutien à la recherche 5 hours/month	5,000 5,000 5,000	2007 2008 2009
McAdams, S. and 8 others	Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT) NSERC Major Resources Support 0 hours/month	28,815 28,815	2007 2008
Cooperstock, J.R. and 5 others	3-D Visualization and Gestural Interaction with Multimodal Neurological Data NSERC Strategic Projects 15 hours/month	98,000 (50%) 98,000 (50%)	2008 2009
Cooperstock, J.R.	Natural Interactive Walking MDEIE Initiatives internationales de recherche et d'innovation 15 hours/month	120,000 120,000 120,000	2008 2009 2010 2011

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a) Support held in the past 4 years

Ellaway, R. and 9 others	Health Services Virtual Organization Canarie Inc. Network Enabled Platforms 10 hours/month	1,000,000 (18%) 1,000,000 (18%)	2008 2009
Pirenne, B., Roston, J., and Cooperstock, J.R.	A Platform to Support Ocean Science Virtual Organizations Canarie Inc. Network Enabled Platforms 5 hours/month	161,500 (85%) 80,750 (85%) 80,750 (85%)	2008 2009 2010
Cooperstock, J.R.	Novel Portable Treatment Device for Lazy Eye NSERC Idea to Innovation 6 hours/month	125,000 (90%)	2008
Levine, M. and Cooperstock, J.R.	Video-Based Recognition: Algorithm and demonstration Department of National Defence 5 hours/month	47,491 (80%)	2009

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a) Support held in the past 4 years			
Cooperstock, J.R.	Digitally Merged Environments CCSIP California-Canada Strategic Initiatives Program 5 hours/month	10,500 (35%) 50,000 (35%)	2009 2010
Roston, J., Cooperstock, J.R. and Woszczyk, W.	Open Orchestra CANARIE Inc. NEP-2 15 hours/month	253,246 (45%) 404,675 (45%) 269,727 (45%)	2009 2010 2011
Cooperstock, J.R.	A Spatialized Audio Map System for Mobile Blind Users Google Google Research Awards 5 hours/month	50,000	2010
Cooperstock, J.R.	Facial Expression Recognition for Machines Honda Research Institute 5 hours/month	30,000	2010

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a) Support held in the past 4 years			
Cooperstock, J.R.	Capturing attention via spatialized audio cues HP Labs Innovation Research Program (IRP) 5 hours/month	60,950	2011
Cooperstock, J.R.	Novel Portable Treatment Device for Lazy Eye NSERC Idea to Innovation (I2I) Booster (Phase Ib) 5 hours/month	49,815 (90%)	2011
Cooperstock, J.R. (and Holoptick Technologies Inc)	Improved Parallax Barrier Autostereoscopic Display Software NSERC Engage 3 hours/month	25,000(100%)	2011
Cooperstock, J.R. and 4 others	Acoustic Sculptures Centre for Interdisciplinary Research in Music, Media & Tech CIRMMT Strategic Innovation Fund Award 2 hours/month	10,000(100%)	2011

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a) Support held in the past 4 years			
Cooperstock, J.R.	Haptic interaction with an augmented steering wheel Toyota Infotechnology Centre 5 hours/month	30,000	2012
b) Support currently held			
McAdams, S. and 23 others	Centre Interdisciplinaire de Recherche en Musique, Médias et Technologie FQRSC and FQRNT (Quebec Government) Regroupment Stratégique 5 hours/month	300,000 300,000 300,000 300,000 300,000	2008 2009 2010 2011 2012
Cooperstock, J.R.	Location-Based Spatialized Audio Interaction for the Blind and Visually Impaired Minstère des services gouvermentaux (Québec) Appui au passage à la société de l'information 10 hours/month	100,000 (80%) 100,000 (80%) (100%)	2010 2011 2012
Booth, Kellog	GRAND: Graphics, Animation, and New Media Networks of Centres of Excellence 15 hours/month	5,000,000 (1%) 5,000,000 (1%) 5,000,000 (1%) 5,000,000 (1%) 5,000,000 (1%)	2010 2011 2012 2013 2014

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Family name and initial(s) of applicant	Title of proposal, funding source and program, and time commitment (hours/month)	Amount per year	Years of tenure (yyyy)
List all sources of support **(including NSERC grants and university start-up funds)** held as an applicant or a co-applicant: a) support held in the past four (4) years but now completed; b) support currently held, and c) support applied for. For group grants, indicate the percentage of the funding directly applicable to your research. Use additional pages as required.			
b) Support currently held			
Cooperstock, J.R.	Improved Shared Reality for Multi-Party, Multimodal Simulation and Interaction NSERC Discovery Grant 35 hours/month	42,000 42,000 42,000 42,000 42,000	2012 2013 2014 2015 2016
c) Support applied for			
Cooperstock, J.R. and Shum-Tim, D.	Système de guidage par vision artificielle pour la suture automatisée dans le cadre de la réparation ou du remplacement d'une valvule cardiaque FQRNT Projects de Recherche en équipe 10 hours/month	121,120 (90%) 92,620 (90%) 92,620 (90%)	2013 2014 2015

Highly Qualified Personnel (HQP)

Provide personal data about the HQP that you currently, or over the past six years, have supervised or co-supervised.

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Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Anlauff, Jan	Doctoral (In Progress)	Supervised 2011 -	Multimodal Interaction	McGill (SRE lab member, funded by McGill MEDA scholarship)
Tordini, Francesco	Doctoral (In Progress)	Supervised 2011 -	Auditory Attention Steering	McGill (SRE lab member, funded by HP IRP award)
Viswanathan, Rajkumar	Master's (In Progress)	Supervised 2010 -	Gesture Prediction for Video Encoding	McGill (SRE lab, received McGill Entrance Scholarship)
Blum, Jeff	Res. Associate (In Progress)	Supervised 2008 -	In Situ Audio Services	McGill (SRE Lab member)
El-Shimy, Dalia	Doctoral (In Progress)	Supervised 2007 -	Gesture-Based Interaction with Augmented Environments	McGill (SRE lab member, funded by NSERC PGS D scholarship)
Olmos, Adriana	Res. Associate (Completed)	Supervised 2008 - 2012	Open Orchestra	Interaction Designer, OSIsoft
Panëels, Sabrina	Postdoctoral (Completed)	Supervised 2011 - 2011	Natural Interactive Walking and In-Situ Audio Services	Post-doc, CEA Paris
Negar Ghourchian	Doctoral (In Progress)	Supervised 2010 - 2011	Affective Evaluation (McGill MEDA scholarship)	Ph.D. student in other group
Trevor Knight	Master's (Completed)	Co-supervised 2010 - 2011	Music Visualization in Open Orchestra (CIRMMT Student	Noteloop Systems
Millet, Guillaume	Postdoctoral (Completed)	Supervised 2009 - 2011	Natural Interactive Walking	Research Engineer, UBC
To, Long	Res. Associate (Completed)	Co-supervised 2009 - 2011	Novel Portable Treatment Device for Lazy Eye	Research Engineer, Boston
Ip, Jessica	Master's (Completed)	Supervised 2008 - 2011	Augmented Reality for Interactive Play (FQRNT scholarship)	UI Designer, SAP, Montreal
Bouillot, Nicolas	Postdoctoral (Completed)	Supervised 2007 - 2011	Open Orchestra	Research Engineer, SAT
Wang, Guangyu	Postdoctoral (Completed)	Supervised 2007 - 2011	Collaboration in Immersive Shared Reality	Associate, ISG Technology Division, Morgan Stanley
Visell, Yon	Doctoral (Completed)	Supervised 2005 - 2011	Walking on virtual ground: physics, perception, & interface	Assistant Professor, Drexel University
Otis, Martin	Postdoctoral (Completed)	Supervised 2010 - 2010	Natural Interactive Walking (FQRNT scholarship)	Assistant Professor, U. Québec à Chicoutimi
Wang, Guangyi	Res. Associate (Completed)	Supervised 2010 - 2010	Undersea change detection and video mosaicing	Research Fellow, Concordia University
Dansereau, Donald	Res. Associate (Completed)	Supervised 2009 - 2010	Particle Filter Predictor for Latency Compensation	Ph.D. student, University of New South Wales, Australia
Stephane Pelletier	Postdoctoral (Completed)	Supervised 2009 - 2010	Real-time Image-based Rendering	Game Programmer, Behaviour Interactive
Darolti, Cristina	Postdoctoral (Completed)	Supervised 2008 - 2010	Lightfield Rendering for Remote Viewing	Patent Examiner, European Patent Office

Highly Qualified Personnel (HQP)

Provide personal data about the HQP that you currently, or over the past six years, have supervised or co-supervised.

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Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Benovoy, Mitchel	Doctoral (Not Completed)	Supervised 2007 - 2010	Biosignals analysis and pattern recognition	unknown
Law, Alvin	Master's (Completed)	Supervised 2007 - 2010	Natural Interactive Walking	Applications Engineer, Lumerical Solutions
Qi, Zhi	Doctoral (Completed)	Supervised 2004 - 2009	High-Resolution Mosaicing with Limited Camera Overlap	Assistant Professor, ECE, Southeast University, China
Pelletier, Stéphane	Doctoral (Completed)	Supervised 2003 - 2009	Preconditioners for Video Super-Resolution (Precarn scholar)	Game Programmer, Behaviour Interactive
Audet, Samuel	Master's (Completed)	Supervised 2005 - 2007	Real-time Shadow Removal (NSERC PGS-M scholar)	Engineer, Fixstars (Japan)
Yin, Jianfeng	Doctoral (Completed)	Supervised 2000 - 2007	Video Synthesis from Multiple Camera Views	Component Design Engineer, Intel
Kiewe, Howard	UI Developer (Completed)	Supervised 2005 - 2006	Undersea Window	Consultant for User Experience (UX)
Rudzicz, Frank	Master's (Completed)	Supervised 2004 - 2006	Language in Multimodal Interaction (FQRNT scholar)	Post-doctoral fellow, IATSL, University of Toronto
Wozniewski, Michael	Master's (Completed)	Supervised 2003 - 2006	A framework for interactive 3D sound and spatial audio	Ph.D. student at Concordia & Research engineer at SAT
Sun, Wei	Doctoral (Completed)	Supervised 2002 - 2006	Multi-camera Object Segmentation using Disparity Contours	Intel Corporation
Arseneau, Shawn	Doctoral (Completed)	Supervised 2000 - 2006	Kinetic Occlusion Detection	Chief Engineer, Laser Shot, Houston
Stephen Spackman	Res. Associate (Completed)	Supervised 2000 - 2006	Ultra-Videoconferencing	Google, Mountain View, California
Cayouette, Francois	Doctoral (Not Completed)	Supervised 2003 - 2005	Real-time human motion tracking (NSERC PGS-D scholarship)	Game Programmer, Artificial Mind & Movement, Montreal
Rioux, Francois	Master's (Completed)	Supervised 2003 - 2005	Parsing and Interpreting Gestures (NSERC PGS-M scholarship)	Ph.D. student, Université Laval
Boussemart, Yves	Master's (Completed)	Supervised 2002 - 2005	Framework for Immersive Environment in a Shared Context	Post-doctoral fellow, MIT
Chan, Siu Chi	Master's (Completed)	Supervised 2002 - 2005	Hand and Fingertip Tracking for Gesture Recognition	Software Developer, IBM Toronto Software Laboratory
Hilario, Nadia	Master's (Completed)	Supervised 2002 - 2005	Occlusion Detecion in Front Projection (FQRNT scholarship)	Software Developer, CAE
Perez, Michael	Master's (Completed)	Supervised 2002 - 2005	Multimodal Human-Computer Interaction for a Public Kiosk	IT consultant for medical industry
(Name withheld)	Master's (Completed)	Supervised 2002 - 2005	Design of a Multi-Projector Display System	Programmer, Artificial Mind & Movement, Montreal

Most Significant Contributions

- I led the technical development of **Ultra-Videoconferencing** (`ultravideo.mcgill.ca`), which permits near-simultaneous network-based interaction between distributed individuals, with extremely high quality and robustness. This work was recognized by *Distinction Award* from the Audio Engineering Society and the *Award for Most Innovative Use of New Technology* from ACM/IEEE Supercomputing, following a demonstration of low-latency multi-stream transmission of high-definition audio and video between Montreal and Seattle. Our software has been downloaded by over 600 users internationally, employed in numerous high-profile research demonstrations, influenced the design of similar commercial telepresence systems by HP, Cisco, and Polycom, and presently serves as the video transport for the World Opera project.
- My work in the EU FP-7 project **Natural Interactive Walking** (`www.cim.mcgill.ca/sre/projects/niw`) investigated new technologies for multimodal interaction with virtual ground surfaces. This resulted in important findings of ground material discrimination ability from the tactile haptic channel [J3] and the ability of vibrotactile stimulation to influence our perception of material properties such as compliance [J13], published in PLoS One. Another outcome, our "Ecotile" prototype (patent filing under review [P2]) has been showcased in prominent venues such as SIGGRAPH, IEEE Haptics, and Eurohaptics, and attracted considerable interest for simulation and rehabilitation applications. Additional publications include [J7, 57, J19, C17, C12, C13, C14, C6, C10, J13, B3, B2].
- Collaborating with ophthalmologist Robert Hess, I developed a patented prototype **Mobile Treatment Device for Amblyopia** [P1], addressing this prevalent visual disorder with an incidence of approximately 2% of the population. The approach employs autostereoscopic display technology to provide differential contrast to the two eyes, and utilizes several information-splitting strategies to ensure that both eyes participate successfully in the visual task. Initial trials in university labs [J2], based on the popular Tetris game, provided highly promising early results [J12, J4]. We are now preparing for clinical trials through PEDIG and advancing toward commercialization.
- I led the technical development of **Open Orchestra** (`openorchestra.cim.mcgill.ca`), which provides effective orchestral training of professional and semi-professional musicians, even without the rest of the ensemble physically present. This is done by immersing users in a three-screen high-fidelity panoramic view with multi-channel mixed audio, both rendered from the appropriate perspective for the particular choice of instrument. At present, our Open Orchestra "workstations" are installed at five institutions across Canada, with initial recordings of jazz, classical, and choral works. My work on this project has included the user interface, client and server software, evaluation of listening position preferences [C5], visualization approaches, [C3], streaming mechanisms for multichannel audio and video delivery [C11], and pedagogical considerations.
- My lab developed **In-Situ Audio Services** (`isas.cim.mcgill.ca`), an "eyes-free" application that offers the blind and visually impaired community a rich representation of their environment [J6, C9] (best paper). The system, recognized with an *Impact Award* from the Canadian Internet Registry Association, effectively conveys direction and distance to objects in the user's vicinity through a spatiialized audio display, allowing them to obtain further information concerning points of interest on demand. Preliminary feedback from user trials indicates tremendous enthusiasm for the system. We are presently working toward a release of the system through the Apple app store and via an Android platform download.

Research Contributions and Practical Applications

In almost all co-authored work with researchers under my supervision (names in bold), I ask them to be first author(s). For timely dissemination, I emphasize publication in peer reviewed conferences.

Articles in Refereed Publications

[J1] **D. Dansereau**, N. Brock, and J. R. Cooperstock. "A Particle Filter for Predicting an Orchestral Conductor's Baton Movements." In: *Computer Music Journal, to appear* (2013).

[J2] J. M. Black, R. F. Hess, J. R. Cooperstock, **L. To**, and B. Thompson. "The measurement and treatment of suppression in amblyopia." In: *J. Visualized Experiments (in press)* (2012).

[J3] B. L. Giordano, **Y. Visell**, H. Yao, V. Hayward, J. R. Cooperstock, and S. McAdams. "Identification of walked-upon materials in auditory, kinesthetic, haptic and audio-haptic conditions." In: *Acoustical Society of America* 131.5 (May 2012).

[J4] R. F. Hess, B. Thompson, J. M. Black, G. Maehara, P. Zhang, W. R. Bobier, **L. To**, and J. R. Cooperstock. "An iPod for treating amblyopia: a pilot study." In: *Optometry (in press)* (2012).

[J5] **A. Olmos**, **N. Bouillot**, **T. Knight**, **N. Mabire**, and J. R. Cooperstock. "A High-Fidelity Orchestra Simulator for Individual Musicians' Practice." In: *Computer Music Journal* 36.2 (2012), pp. 55–73.

[J6] **D. El-Shimy**, F. Grond, **A. Olmos**, and J. R. Cooperstock. "Eyes-Free Environmental Awareness for Navigation." In: *Multimodal User Interfaces* (2012), 11 pages.

[J7] **G. Cirio**, M. Marchal, A. Lécuyer, and J. R. Cooperstock. "Vibrotactile Rendering of Splashing Fluids." In: *Transactions on Haptics (in press)* (2012).

[J8] **S. Pelletier** and J. R. Cooperstock. "Preconditioning for Edge-Preserving Image Super-Resolution." In: *IEEE Transactions on Image Processing* 21.1 (Jan. 2012).

[J9] **S. Pelletier** and J. R. Cooperstock. "Real-time free viewpoint video from a range sensor and color cameras." In: *Machine Vision and Applications* (2012).

[J10] **Z. Qi** and J. R. Cooperstock. "Toward Dynamic Image Mosaic Generation With Robustness to Parallax." In: *IEEE Transactions on Image Processing* 21.1 (Jan. 2012), pp. 366–378.

[J11] J. R. Cooperstock. "Multimodal Telepresence Systems: Supporting Demanding Collaborative Human Activities." In: *IEEE Signal Processing* 28.1 (Jan. 2011), pp. 77–86.

[J12] **L. To**, B. Thompson, **J.R. Blum**, G. Maehara, R. Hess, and J. R. Cooperstock. "A game platform for treatment of amblyopia." In: *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 19.3 (June 2011), pp. 280–289.

[J13] **Y. Visell**, B. Giordano, **G. Millet**, and J. R. Cooperstock. "Vibration Influences Haptic Perception of Surface Compliance During Walking." In: *PLoS ONE* 6.3: e17697 (2011).

[J14] **R. Pellerin**, **N. Bouillot**, **T. Pietkiewicz**, M. Wozniewski, Z. Settel, E. Gressier-Soudan, and J. R. Cooperstock. "SoundPark: Exploring Ubiquitous Computing through a Mixed Reality Multi-player Game Experiment." In: *Studia Informatica Universalis (Best Papers from NOTERE 2009)* 8.3 (2010), 21 pages.

[J15] R. H. Ellaway, D. Topps, K. Lachapelle, and J. R. Cooperstock. "Integrating Simulation Devices and Systems." In: *Studies in Health Technology and Informatics* 142 (Jan. 2009). Ed. by J. D. Westwood, S. W. Westwood, R. S. Haluck, H. M. Hoffman, G. T. Mogel, R. Phillips, R. A. Robb, and K. G. Vosburgh, pp. 88–90.

[J16] V. N. Salimpoor, **M. Benovoy**, G. Longo, J. R. Cooperstock, and R. J. Zatorre. "The Rewarding Aspects of Music Listening are Related to Degree of Emotional Arousal." In: *PLoS ONE* 4.10 (June 2009), e7487.

[J17] **G. Wang**, L. Mercier, D. L. Collins, and J. R. Cooperstock. "A Comparative Study of Monoscopic and Stereoscopic Display for a Probe-Positioning Task." In: *Studies in Health Technology and Informatics* 142 (Jan. 2009). Ed. by J. D. Westwood, S. W. Westwood, R. S. Haluck, H. M. Hoffman, G. T. Mogel, R. Phillips, R. A. Robb, and K. G. Vosburgh, pp. 417–419.

[J18] **N. Bouillot**, E. Cohen, J. R. Cooperstock, A. Floros, N. Fonseca, R. Foss, M. Goodman, J. Grant, K. Gross, S. Harris, B. Harshbarger, J. Heyraud, L. Jonsson, J. Narus, M. Page, T. Snook, A. Tanaka, J. Trieger, and U. Zanghieri. "AES White Paper AESTD1003V1: Best Practices in Network Audio." In: *Journal of the Audio Engineering Society* 57.9 (Sept. 2009), pp. 729–741.

[J19] **Y. Visell**, **A. Law**, and J. R. Cooperstock. "Touch Is Everywhere: Floor Surfaces as Ambient Haptic Interfaces." In: *IEEE Transactions on Haptics* 2.3 (July 2009), pp. 148–159.

[J20] **W. Sun** and J. R. Cooperstock. "An Empirical Evaluation of Factors Influencing Camera Calibration Accuracy Using Three Publicly Available Techniques." In: *Machine Vision and Applications Journal* 17.1 (Feb. 2006), pp. 51–67.

Refereed Conference Publications (of 68 total in the past 6 years)

[C1] K. Kim, J. Bolton, A. Girouard, J. Cooperstock, and R. Vertegaal. "TeleHuman: Effects of 3D Perspective on Gaze and Pose Estimation with a Life-size Cylindrical Telepresence Pod." In: *CHI*. Austin, Texas: ACM, May 2012, pp. 2531–2540.

[C2] **D. El-Shimy**, T. Hermann, and J. R. Cooperstock. "A Reactive Environment for Dynamic Volume Control." In: *NIME*. Ann Arbor, May 2012.

[C3] **T. Knight**, **N. Bouillot**, and J. R. Cooperstock. "Visualization feedback for musical ensemble practice: A case study on phrase articulation and dynamics." In: *Visualization and Data Analysis*. IS&T/SPIE Symposium on Electronic Imaging, Jan. 2012, 9 pgs.

[C4] F. Bérard, **G. Wang**, and J. R. Cooperstock. "On the Limits of the Human Motor Control Precision: the Search for a Device's Human Resolution." In: *INTERACT*. Lisbon, Portugal, Sept. 2011, pp. 107–122.

[C5] **A. Olmos**, P. Rushka, D. Ko, G. Foote, W. Woszczyk, and J. R. Cooperstock. "Where do you want your ears? Comparing performance quality as a function of listening position in a virtual jazz band." In: *Sound, Music and Computing*. July 2011, 6 pgs.

[C6] **G. Millet**, **M. Otis**, **G. Chaw**, and J. R. Cooperstock. "Initial Development of a Variable-Friction Floor Surface." In: *Canadian Medical & Biological Engineering*. June 2011, 4 pgs.

[C7] **G. Wang**, M. McGuffin, F. Bérard, and J. R. Cooperstock. "Pop-up Depth Views for Improving 3D Target Acquisition." In: *Graphics Interface*. St. John's, May 2011, pp. 41–48.

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Book Chapters

[B1] **M. Wozniewski**, Z. Settel, and J. R. Cooperstock. "Sonic Interaction via Spatial Arrangement in Mixed Reality Environments." In: *Sonic Interaction Design (in press)*. Ed. by K. Franinovic and S. Serafin. MIT Press, 2012.

[B2] **Y. Visell**, **R. Rajalingham**, and J. R. Cooperstock. "A review of nonvisual signatures of human walking with applications to person tracking in augmented environments." In: *Walking with the senses: Perceptual techniques for walking in virtual environments*. Ed. by Y. Visell and F. Fontana. Logos Verlag, 2012.

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Patents

[P1] J. R. Cooperstock, **L. To**, and R. Hess. "Binocular vision assessment and/or therapy." Pat. 8,057,036 (United States). Nov. 2011.

[P2] J. R. Cooperstock, Y. Visell, **A. Law**, and K. Franinovic. "Floor-based haptic communication system." Pat. 12/794,045, in review (United States). June 2009.

Other Evidence of Impact and Contributions

- Gold Prize (Brainstorming Round), Mozilla & NSF Ignite Challenge (2012)
- Impact Award (applications category), Canadian Internet Registry Association (2012)
- Voting Member, IEEE Communication Society Multimedia Comm. (IEEE MMTC) (2010)
- Theme Leader, Enabling Technologies, Graphics Animation and New Media (GRAND) Networks of Centres of Excellence (2010-present)
- Nominee, NSERC Brockhouse Prize (2009, 2010)
- Virtual Member, Center of Excellence Cognitive Interaction Technology (CITEC), Bielefeld University, Germany (2009)
- Invited Visiting Professor, Bang & Olufsen, Denmark (May-June 2009)
- Invited Visiting Scholar, Arts, Media and Engineering, Arizona State University (Feb. 2008)
- Most Innovative Use of New Technology, ACM/IEEE Supercomputing (2005)
- Keynote lectures, World Conference on Educational Multimedia, Hypermedia and Telecommunications, and Canadian Higher Education and Information Technology Conference (2005)
- Associate Editor, Audio Engineering Society (AES) (2008-present)
- Chair, AES Technical Committee for Network Audio Systems (2001-2009); founder, AES Technical Committee for Human Factors in Audio, organized several tutorials and workshops

Contributions to the Training of HQP

My lab follows a style from the early days of Xerox PARC, in which all researchers spend part of their time involved in a project other than their own. This fosters a highly cooperative team spirit, in which expertise is shared and novel research activities are often initiated directly by students. Our problems emphasize multidisciplinary research, often involving several HQP working closely together. My research group is one of the largest in our faculty and consulted regularly by colleagues both within and outside the faculty. Our HQP are called upon at least twice per month to give research demonstrations to visitors from academia and industry, including the Vice-President (East Coast) of Google and a delegation from Cirque du Soleil, both of whom visited to discuss research collaborations with my lab. These interactions are highly energizing for the team and provide excellent opportunities to practice presentation skills. In the past five years, our reputation has helped recruit a large number of scholarship recipients: **D. El-Shimy** and **M. Benovoy** (NSERC PGS D), **S. Audet** (NSERC PGS M), **M. Otis** (PDF from FQRNT Québec), **J. Anlauff** and **N. Ghourchian** (McGill Engineering Doctoral Award), **M. Benovoy**, **T. Knight** and **F. Tordini** (CIRMMT Student Award), and **R. Viswanathan** (McGill Recruitment Scholarship). Our HQP have earned significant recognition for their successes in projects such as Ultra-Videoconferencing (AES Distinction Awards received by **A. Xu** and **S. Spackman**), Natural Interactive Walking (e.g., **Yon Visell**'s best paper award from IEEE Haptics Symposium 2010 and significant media exposure following from our demonstration at SIGGRAPH 2009), Audioscape (**N. Bouillot**'s best paper at NOTERE), and In-Situ Audio Services (our best paper award from Mobiquitious and Best Application Award from the Canadian Internet Registry Assocation). We also host a number of visiting graduate students from labs of our international collaborators, and undergraduate summer interns, the latter typically supported by NSERC scholarships. In the last five years, I have graduated six Ph.D. and five M.Eng. students, and supervised four PDFs. Six of these graduates have taken up faculty positions (**Z. Qi**, **M. Otis**, **F. Rudzicz**, and **Y. Visell**), post-doctoral fellowships, and Ph.D. studies at other institutions. The remainder have gone on to various industrial positions, largely in the multimedia and information systems high-tech sector, as listed in Part I of Form 100.

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SEND ONE ORIGINAL ONLY DO NOT PHOTOCOPY

APPENDIX A
Personal Data
(Form 100)

Complete this appendix (i) if you are an applicant or co-applicant applying for the first time; (ii) if you need to update information submitted with a previous application; or (iii) if you do not hold an appointment at a Canadian postsecondary institution. For updates, include only the revised information in addition to the date, your name and your PIN.

This information will be used by NSERC primarily to contact applicants and award holders. It may also be used to identify prospective reviewers and committee members, and to generate statistics. It will not be seen or used in the adjudication process.

Date: 2012/12/03

Family name	Given name	Initial(s) of all given names	Personal identification no. (PIN)
Cooperstock	Jeremy	R	**Valid** 130832

Position and complete mailing address if your primary place of employment is not a Canadian postsecondary institution or if your current mailing address is temporary

3480 University Street

Montreal QC H3A2A7
CANADA

If address is temporary, indicate:

Starting date

Leaving date

Telephone number	Facsimile number	E-mail address
(514) 398-5992	(514) 398-7348	jer@cim.mcgill.ca

Telephone number (alternate)

Give an alternate telephone number only if you can be reached at that number during business hours.

Gender (completion optional): [X] Male [ ] Female

LANGUAGE CAPABILITY

English	Read [X]	Write [X]	Speak [X]
French	Read [X]	Write [X]	Speak [X]

I wish to receive my correspondence: in English [X] in French [ ]

AREA(S) OF EXPERTISE

Provide a maximum of 10 key words that describe your area(s) of expertise. Use commas to separate them. If you have expertise with particular instruments and techniques, specify which one(s).

computer augmented environments, communications protocols, ubiquitous computing, reactive environments, network audio systems, image processing applications, multimodal interaction, 3D visualization

Research subject code(s)

Primary: 2710

Secondary: 2721

Appendix D (Form 100)
Consent to Provide Limited Personal Information About Highly Qualified Personnel (HQP) to NSERC

NSERC applicants are required to describe their contributions to the training or supervision of highly qualified personnel (HQP) by providing certain details about the individuals they have trained or supervised during the six years prior to their current application. HQP information must be entered on the Personal Data Form (Form 100). This information includes the trainee's name, type of HQP training (e.g., undergraduate, master's, technical etc.) and status (completed, in-progress, incomplete), years supervised or co-supervised, title of the project or thesis, and the individual's present position.

Based on the federal *Privacy Act* rules governing the collection of personal information, applicants are asked to obtain consent from the individuals they have supervised before providing personal data about them to NSERC. In seeking this consent, the NSERC applicant must inform these individuals what data will be supplied, and assure them that it will only be used by NSERC for the purpose of assessing the applicant's contribution to HQP training. To reduce seeking consent for multiple applications, applicants will only need to seek consent one time for a six-year period. If the trainee provides consent by e-mail, the response must include confirmation that they have read and agree to the text of the consent form.

When consent cannot be obtained, applicants are asked to not provide names, or other combinations of data, that would identify those supervised. However, they may still provide the type of HQP training and status, years supervised or co-supervised, a general description of the project or thesis, and a general indication of the individual's present position if known.

An example of entering HQP information on Form 100 (with and without consent):

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Consent Received from Marie Roy				
Roy, Marie	Undergraduate (Completed)	Supervised 1994 - 1997	Isotope geochemistry in petroleum engineering	V-P (Research), Earth Analytics Inc., Calgary, Alberta
Consent Not Obtained from Marie Roy				
(name withheld)	Undergraduate (Completed)	Supervised 1994 - 1997	Isotope geochemistry	research executive in petroleum industry - western Canada

Consent Form

Name of Trainee

Applicant Information

Name Cooperstock, Jeremy R

Department	Postsecondary Institution
Electrical and Computer Engineering	McGill

I hereby allow the above-named applicant to include limited personal data about me in grant applications submitted for consideration to NSERC for the next six years. This limited data will only include my name, type of HQP training and status, years supervised or co-supervised, title of the project or thesis and, to the best of the applicant's knowledge, my position title and company or organization at the time the application is submitted. I understand that NSERC will protect this data in accordance with the *Privacy Act*, and that it will only be used in processes that assess the applicant's contributions to the training of highly qualified personnel (HQP), including confidential peer review.

Trainee's signature _____ Date _____

Note: This form must be retained by the applicant and made available to NSERC upon request.