

Amir Tahmasebi

Curriculum Vitae

Rotman Research Institute
Baycrest Centre for Geriatric Care
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Current Occupation

2010–present **Tanenbaum Postdoctoral Research Fellow**, *Rotman Research Institute, Baycrest Center for Geriatric Care (affiliated with University of Toronto), Canada.*

title Brain Development during Adolescence

Research Focus Brain mapping in adolescence, large-scale multi-centre population studies, multi-sensory (fMRI-EEG) functional/structural data analysis, functional connectivity, GWAS data analysis

supervisor Professor Tomas Paus (Tanenbaum Chair in Population Neuroscience, University of Toronto)

Education

2005–2010 **Ph.D. (Computer Science)**, *School of Computing, Queen's University, Canada.*

title Quantification of Inter-subject Variability in Human Brain and Its Impact on Analysis of fMRI Data

Research Focus Morphological variability in human brain, pairwise/groupwise nonlinear registration of MR images, structural segmentation, morphological classification of human brain, anatomical atlas construction, anatomical probabilistic maps, statistical group analysis of fMRI data

supervisors Dr. Purang Abolmaesumi (Department of Electrical and Computer Engineering, University of British Columbia, Canada), Dr. Ingrid S. Johnsrude (Department of Psychology, Queen's University, Canada)

2003–2005 **M.Sc. (Computer Science)**, *School of Computing, Queen's University, Canada.*

title A Haptic-based Ultrasound Examination/Training System

Research Focus Medical training simulators, multi-modality image visualization and rendering, haptic rendering, robotics

supervisors Dr. Purang Abolmaesumi (Department of Electrical and Computer Engineering, University of British Columbia, Canada), Dr. Keyvan Hashtrudi-Zaad (Department of Electrical and Computer Engineering, Queen's University, Canada)

1997–2001 **B.Sc. (Electrical Engineering)**, *Electrical and Electronics Engineering Department, Sharif University of Technology, Iran.*

title Fingerprint Enhancement and Fore/Background Segmentation

supervisor Dr. Shohreh Kasaei (Department of Computer Engineering, Sharif University of Technology, Iran)

Research and Work Experience

Rotman Research Institute, Baycrest Centre for Geriatric Care, Toronto, Canada

2010–present **Postdoctoral Research Fellow.**

- ◇ Development of analysis pipelines for large-scale multi-centre imaging studies.
- ◇ Development of a novel technique for creating functional probabilistic maps.
- ◇ Analysis of sex differences among adolescents using neural (BOLD) response measures.
- ◇ Functional connectivity analysis of brain network involved in emotional face processing using fMRI data.
- ◇ Multivariate analysis of genetics and functional connectivity: looking for sex differences in adolescence.

Medical Image Analysis Lab. (MedIA), School of Computing, Queen's University, Canada
Cognitive Neuroscience of Communication and Hearing Lab. (CONCH), Department of Psychology, Queen's University, Canada

2005–2010 **Research Assistant.**

- ◇ Development of customizable cytoarchitectonic probabilistic maps without a template.
- ◇ Design of an automatic segmentation tool for the extraction of the first Heschl's gyrus in human auditory cortex from MR images.
- ◇ Design of an automatic morphological classifier of the human brain variability.
- ◇ Development of a validation framework for probabilistic maps of the brain anatomy.
- ◇ Expertise in functional and structural MR data analysis.

Society of Graduate and Professional Students (SGPS), Queen's University, Canada

2008–2009 **Systems Manager.**

- ◇ Setup and maintenance of a file server.
- ◇ Setup and maintenance of a mail server.

Robotics and Machine Vision Lab., ECE Department, Queen's University, Canada

2003–2005 **Research Assistant.**

- ◇ Design and development of a haptic-based ultrasound training/examination simulator for radiology residents.
- ◇ Identification and analysis of dynamic Parameters for a PHANToM Haptic Device.

IT Centre, International University of Chabahr, Iran

2002–2003 **Project Manager.**

- ◇ Design, and supervision over implementation of an infrastructure for a smart student card system.

Electronic Research Centre, Sharif University of Technology, Iran

2001–2002 **Research Assistant.**

- ◇ Design and implementation of a novel technique for fingerprint image enhancement.

Teaching Assistantship Experience

School of Computing, Queen's University, Canada

- 2003–2008 **Teaching Assistant.**
 ◇ Computer Graphics, Computer Architecture, Algorithm I, Digital Image Processing.
 Electrical and Electronics Engineering Department, Sharif University of Technology, Iran
- 2000–2002 **Teaching Assistant.**
 ◇ Electrical Circuits, Electrical Engineering Mathematics, Digital Image Processing.
- Summer 2002 **Instructor.**
 ◇ MATLAB Tutorial, Image Processing Toolbox.

Presentations as Guest Speaker

Seminar talks

- 1 **A.M. Tahmasebi**, *Face Processing Network in Adolescent Brain: Sex Differences in Brain Response and Functional Connectivity*, Philips North America, New York City, USA, 2011.
- 2 **A.M. Tahmasebi**, *Probabilistic maps of the face network in the adolescent brain: a multi-centre functional MRI study*, Rotman Rounds, Baycrest Centre for Geriatric Care, simultaneously telecasted to viewers at Toronto Western Hospital, Canada, 2011.
- 3 **A.M. Tahmasebi**, *Quantification of Inter-Subject Variability in Human Brain and its Impact on Analysis of fMRI Data*, Center for Imaging Science Seminar, Johns Hopkins University, Baltimore, USA, 2009.
- 4 **A.M. Tahmasebi**, *Reducing the Effect of Inter-subject Variability in the Analysis of fMRI Data*, Robarts Institute, University of Western Ontario, London, Canada, 2009.

Conference talks

- 1 **A.M. Tahmasebi**, *Creating Probabilistic Maps of the Face Network in the Adolescent Brain: A Multicentre Functional MRI Study*, 3rd Annual Young Researchers' Conference, Ottawa, Canada, 2011.
- 2 **A.M. Tahmasebi**, *Quantification of Inter-subject Variability in Human Brain: A Validation Framework for Probabilistic Maps*, SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging, USA, 2009.
- 3 **A.M. Tahmasebi**, *Reducing Inter-subject Anatomical Variation: Analysis of the Functional Activity in Auditory Cortex and Superior Temporal Region using HAMMER*, MIC-CAI Workshop on Statistical Registration, Australia, 2007.
- 4 **A.M. Tahmasebi**, *A Haptic-based Ultrasound Training/Examination System*, IEEE ICRA Conference, oral presentation including video presentation, Italy, 2007.
- 5 **A.M. Tahmasebi**, *Software Structure Design for A Haptic-Based Medical Examination System*, IEEE International Workshop on Haptic Audio Visual Environments and their Applications, Canada, 2005.
- 6 **A.M. Tahmasebi**, *[invited talk] Dynamic Parameter Identification and Analysis of a Phantom Haptic Device*, IEEE CCA International Conference, Canada, 2005.
- 7 **A.M. Tahmasebi**, *Automatic Fingerprint-based Identification System*, Industrial Workshop, Sharif University of Technology, Iran, 2000.

Demonstrations

- 1 **A.M. Tahmasebi**, *A Haptic-based Ultrasound Medical Training/Examination Simulator*, 15th Annual Canadian Conference on Intelligent Systems, Canada, 2005.

Publications

Refereed Journal Articles

- 1 **A.M. Tahmasebi, et al.**, *Creating probabilistic maps of the face network in the adolescent brain: a multi-centre functional MRI study*, Human Brain Mapping, Epub ahead of print, 2011.
- 2 **A.M. Tahmasebi, M. Davis, H. Hakyemez, C. Wild, J. Rodd, P. Abolmaesumi, and I.S. Johnsrude**, *Is the link between anatomical macrostructure and function equally strong at all cognitive levels of processing?*, Cerebral Cortex, under revision, 2010.
- 3 **A.M. Tahmasebi, P. Abolmaesumi, C. Wild, and I.S. Johnsrude**, *A Validation Framework for Probabilistic Maps using Heschl's Gyrus as a Model*, NeuroImage, Vol. 50, No. 2, pp. 532-544, 2010.
- 4 **A.M. Tahmasebi, P. Abolmaesumi, Z. Zheng, K. Munhall, and I.S. Johnsrude**, *Reducing Inter-subject Anatomical Variation: Effect of Normalization in Analysis of Functional Activity in Auditory Cortex and the Superior Temporal Region*, NeuroImage, Vol. 47, No. 4, pp. 1522-1531, 2009.
- 5 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *A Framework for the Design of a Novel Haptic-based Medical Diagnostic Simulator*, IEEE Trans. Information Technology in Biomedicine, Vol. 12, No. 5, pp. 658-666, 2008.
- 6 **B. Taati, A.M. Tahmasebi, and K. Hashtrudi-Zaad**, *Experimental Identification and Analysis of the Dynamics of a Phantom Premium 1.5A Haptic Device*, Presence: Teleoperators and Virtual Environments, Vol. 17, No. 4, pp. 327-343, 2008.
- 7 **A.M. Tahmasebi, S. Kasaei**, *A Novel Adaptive Approach to Fingerprint Enhancement Filter Design*, Elsevier Science Journal, Signal Processing: Image Communication, Vol. 17, pp. 849-855, 2002.
- 8 **A.M. Tahmasebi, B.A. Rezaei, S. Kasaei**, *An Adaptive Approach to Fore/Background Segmentation, Enhancement, and Ridge Extraction from Fingerprint Images*, Sharif Journal of Science and Technology, Vol. 19, No. 1, pp. 3-10, 2002.

Refereed Conference Articles

- 1 **J. Calder, A.M. Tahmasebi and A. Mansouri**, *A variational approach to bone segmentation in CT images*, Proc. SPIE'11 Medical Imaging: Image Processing, Lake Buena Vista, USA, 2010.
- 2 **A.M. Tahmasebi, P. Abolmaesumi, X. Geng, P. Morosan, K. Amunts, G. Christensen, and I.S. Johnsrude**, *A New Approach for Creating Customizable Cytoarchitectonic Probabilistic Maps Without a Template*, Medical Image Computing and Computer Assisted Intervention (MICCAI), Vol. 5762, pp. 795-802, London, UK, 2009.
- 3 **A.M. Tahmasebi, P. Abolmaesumi, C. Wild, and I.S. Johnsrude**, *Quantification of Inter-subject Variability in Human Brain: A Validation Framework for Probabilistic Maps*, Proc. SPIE Medical Imaging, Biomedical Applications in Molecular, Structural, and Functional Imaging, Xiaoping P. Hu; Anne V. Clough, Editors, 726218, Vol. 7262, Orlando, USA, 2009.

- 4 **A.M. Tahmasebi, P. Abolmaesumi, C. Wild, and I.S. Johnsrude**, *A Novel Automatic Segmentation Method for ROI-based Functional Analysis*, Workshop on Analysis of Functional Medical Images, Medical Image Computing and Computer Assisted Intervention (MICCAI), pp. 89-96, New York City, USA, 2008.
- 5 **A.M. Tahmasebi, I.S. Johnsrude, C. Wild, M.H. Moghari, and P. Abolmaesumi**, *A Statistical Atlas-Based Technique for Automatic Segmentation of the First Heschl's Gyrus in Human Auditory Cortex from MR Images*, Proc. Engineering in Medicine and Biology Society (EMBS), 30th Annual International Conference of the IEEE, pp. 3920-3923, Vancouver, Canada, 2008.
- 6 **A.M. Tahmasebi, P. Abolmaesumi, Z. Zheng, K. Munhall, and I.S. Johnsrude**, *Reducing Inter-subject Anatomical Variation: Analysis of the Functional Activity in Auditory Cortex and Superior Temporal Region using HAMMER*, Workshop on Statistical Registration, Medical Image Computing and Computer Assisted Intervention (MICCAI), pp. 31-38, Brisbane, Australia, 2007.
- 7 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *A Haptic-based Ultrasound Training/Examination System (HUTES)*, Video Proc. IEEE Intl. Conf. Robotics and Automation (ICRA), pp. 3130-3131, Rome, Italy, 2007.
- 8 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *A Haptic-based Ultrasound Examination/Training System*, Medical Image Computing and Computer Assisted Intervention (MICCAI), short paper, Palm Springs, USA, 2005.
- 9 **A.M. Tahmasebi, P. Abolmaesumi, D. Thompson, and K. Hashtrudi-Zaad**, *Software Structure Design for A Haptic-Based Medical Examination System*, Haptic Audio Visual Environments and their Applications, IREE International Workshop on, pp. 88-93, Ottawa, Canada, 2005.
- 10 **[Invited paper] A.M. Tahmasebi, B. Taati, F. Mobasser, and K. Hashtrudi-Zaad**, *Dynamic Parameter Identification and Analysis of a Phantom Haptic Device*, IEEE Conf. Control Applications, pp. 1251-1256, Toronto, Canada, 2005.
- 11 **P. Abolmaesumi, K. Hashtrudi-Zaad, D. Thompson, A.M. Tahmasebi**, *A Haptic-based System for Medical Image Examination*, Proc. Engineering in Medicine and Biology Society (EMBS), 26th Annual International Conference of the IEEE, Vol. 3, pp. 1853-1856, San Francisco, USA, 2004.

Accepted/Published Abstracts

- 1 **A.M. Tahmasebi, et al.**, *Functional Connectivity in the Face Network during Adolescence: Sex Difference and Sex-Steroid Genes*, Human Brain Mapping, Quebec City, Canada, 2011.
- 2 **E.W. Dikie, A.M. Tahmasebi, et al.**, *Personality of male adolescents predicts functional connectivity while viewing social stimuli*, Human Brain Mapping, Quebec City, Canada, 2011.
- 3 **C. Gray, A.M. Tahmasebi, et al.**, *Neural response to body images in adolescents*, Human Brain Mapping, Quebec City, Canada, 2011.
- 4 **A.M. Tahmasebi, H. Hakyemez, C. Wild, J. Rodd, M. Davis, and I.S. Johnsrude**, *High-dimensional anatomical normalization is more effective at compensating for inter-subject variability in the location of fMRI activation in sensory than in higher-level association areas*, Auditory Processing: Perception, Action, and Behavior, Society for Neuroscience Conference, San Diego, USA, 2010.

- 5 **A.M. Tahmasebi, P. Abolmaesumi, S. Vikal, and I.S. Johnsrude**, *An Automatic Model-based Segmentation Technique for the Extraction of the First Heschl's Gyrus in Human Auditory Cortex from MR Images*, Human Brain Mapping Conference, NeuroImage, 4(1), pp. S175, San Francisco, USA, 2009.
- 6 **A.M. Tahmasebi, P. Abolmaesumi, P. Morosan and I.S. Johnsrude**, *Customized probabilistic maps of primary auditory cortex, with quantification of the goodness of fit*, British Society of Audiology short papers meeting, UK, 2009.
- 7 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *HUTES: A Haptic-based Ultrasound Training/Examination System*, First Canadian Student Conf. on Biomedical Computing (CSCBC), Canada, 2006.

Posters

- 1 **A.M. Tahmasebi, H. Hakyemez, C. Wild, J. Rodd, M. Davis, and I.S. Johnsrude**, *Is the link between function and anatomical structure equally strong at all cognitive levels of processing?*, 3rd Annual Young Researchers' Conference, Ottawa, Canada, 2011.
- 2 **A.M. Tahmasebi, et al.**, *Functional Connectivity in the Face Network during Adolescence: Sex Difference and Sex-Steroid Genes*, Human Brain Mapping, Quebec City, Canada, 2011.
- 3 **E.W. Dikie, A.M. Tahmasebi, et al.**, *Personality of male adolescents predicts functional connectivity while viewing social stimuli*, Human Brain Mapping, Quebec City, Canada, 2011.
- 4 **C. Gray, A.M. Tahmasebi, et al.**, *Neural response to body images in adolescents*, Human Brain Mapping, Quebec City, Canada, 2011.
- 5 **A.M. Tahmasebi, H. Hakyemez, C. Wild, J. Rodd, M. Davis, and I.S. Johnsrude**, *High-dimensional anatomical normalization is more effective at compensating for inter-subject variability in the location of fMRI activation in sensory than in higher-level association areas*, Auditory Processing: Perception, Action, and Behavior, Society for Neuroscience Conference, San Diego, USA, 2010.
- 6 **A.M. Tahmasebi, P. Abolmaesumi, S. Vikal, and I.S. Johnsrude**, *An Automatic Model-based Segmentation Technique for the Extraction of the First Heschl's Gyrus in Human Auditory Cortex from MR Images*, Human Brain Mapping Conference, NeuroImage, 4(1), pp. S175, San Francisco, USA, 2009.
- 7 **A.M. Tahmasebi, P. Abolmaesumi, C. Wild, I.S. Johnsrude**, *A Novel Segmentation Technique for Automatic Extraction of the First Heschl's Gyrus in Human Auditory Cortex from MR Images*, 7th Annual Imaging Ontario Symposium, Toronto, Canada, 2008.
- 8 **A.M. Tahmasebi, P. Abolmaesumi and I.S. Johnsrude**, *Automatic Classification of Variability in Human Brain Anatomy Across Subjects*, Institute for Robotics and Intelligent Systems (IRIS)/Precarn Conf., Quebec City, Canada, 2006.
- 9 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *A User Study for the Evaluation of a Haptic-based Medical Diagnostic Simulator*, Second Canadian Student Conf. Biomedical Computing (CSCBC), London, Canada, 2006.
- 10 **A.M. Tahmasebi, P. Abolmaesumi, and K. Hashtrudi-Zaad**, *HUTES: A Haptic-based Ultrasound Training/Examination System*, First Canadian Student Conf. Biomedical Computing (CSCBC), Kingston, Canada, 2006.

- 11 **A.M. Tahmasebi, P. Abolmaesumi, D. Thompson, K. Hashtrudi-Zaad**, *A Haptic-based Ultrasound Examination/Training System*, 5th Annual Imaging Ontario Symposium, Toronto, Canada, 2006.
- 12 **A.M. Tahmasebi, P. Abolmaesumi, K. Hashtrudi-Zaad and D. Thompson**, *Medical Ultrasound Remote Diagnostic System for Space Applications*, Institute for Robotics and Intelligent Systems (IRIS)/Precarn Conf., Ottawa, Canada, 2004.

Scientific Reviewership

- 2011 Human Brain Mapping Journal
- 2011 Human Brain Mapping Conference
- 2008-2011 Medical Image Computing and Computer-Assisted Interventions (MICCAI)
- 2008-2011 IEEE Engineering in Medicine and Biology Conference (EMBC)
- 2010 International Journal of Computer Assisted Radiology and Surgery (JCARS)
- 2009 International Journal of Automation and Computing (IJAC)
- 2008-2009 Canadian Student Conference on Biomedical Computing (CSCBC)

Awards

- 2011 Best Oral Presentation Award, 3rd Young Researchers' Conference
- 2010 Best Ph.D. Thesis Research Award, IEEE Kingston Section
- 2010 Jack and Rita Catherall Research and Travel Award
- 2010 Scholarship for UCLA Advanced Neuroimaging Summer Program
- 2010-2012 Rotman Research Institute Postdoctoral Fellowship
inclusive
- 2010-2012 Natural Sciences and Engineering Research Council Industrial R&D Fellowship (NSERC IRDF)
inclusive
- 2008-2010 Natural Sciences and Engineering Research Council Scholarship (NSERC PGS-D)
inclusive
- 2007-2008 Ontario Graduate Scholarship (OGS)
- 2007 IEEE Conference Travel Award
International Conference on Robotics and Automation (ICRA), Roma, Italy
- 2006 IRIS/Precarn Graduate Scholarship
Institute of Robotics and Intelligent Systems (IRIS) Conference, Victoria, BC, Canada
- 2006 Canadian Student Conference on Biomedical Computing, Honorable mention, Best Poster Award
- 2005-2009 Queen's Discretionary Conference Award
inclusive
- 2005 Best Technical Demonstration Award, 2nd place
Institute of Robotics and Intelligent Systems (IRIS) Conference, Quebec City, QC, Canada
- 2004-2005 Huntly Macdonald Sinclair Tuition Fellowship
inclusive
- 2003-2009 Queen's Graduate Award
inclusive

Computer Skills

Operating Systems	Linux, Windows
Programming languages	Shell, C++, Visual C++ .Net
Algorithm development environments	MATLAB
Advanced Libraries	GHOST SDK, VTK, ITK, Qt
Software Packages	PLS, FreeSurfer, SPM, FSL, CARET, Paraview, Brainsuite, MRICron, SPSS

Community Activities and Professional Memberships

- 2010-present **Elected Member**, *Board of Directors*, Condominium TSCC 1738, Toronto, ON, Canada.
- Summer 2008 **Volunteer**, *Focus group to help in marketing strategies for recruitment*, Graduate studies and Marketing & Communication, Queen's University, Canada.
- Winter 2006 **Session Referee, Board Member**, *Scientific Committee*, First Canadian Students Conference on Biomedical Computing (CSCBC), Queen's University, Canada.
- since 2006 **Student Member**, *Institute of Electrical and Electronics Engineers (IEEE) Society*.
- 2005-2006 **Representative**, *Society of Graduate and Professional Students (SGPS)*, Queen's University, Canada.
- Summer 2004 **Organizer/Presenter**, *Image Registration Seminar Series*, School of Computing, Queen's University, Canada.
- Fall 2003 **Volunteer**, *Organizer of social events*, International Center (QUIC), Queen's University, Canada.
- 2000-2001 **Vice-Chair**, *IEEE Student Branch*, Electrical and Electronics Engineering Dept., Sharif University of Technology, Iran.
- 1999-2000 **Vice-Chair**, *Industrial affairs committee*, IMSEE'2000 (International Millennium Seminar on Electrical Engineering), Electrical and Electronics Engineering Dept., Sharif University of Technology, Iran.

References

Tomas Paus, Professor
Tanenbaum Chair in Population Neuroscience
Professor of Psychology and Psychiatry
University of Toronto
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Purang Abolmaesumi, Associate Professor
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Keyvan Hashtrudi-Zaad, Associate Professor
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Shohreh Kasaei, Associate Professor
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