

# Amir Tahmasebi

## Curriculum Vitae

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### Education

- 2005–present **Ph.D. (Computer Science)**, *School of Computing, Queen's University, Canada.*  
*title* Automatic Classification of Variability in Human Brain Anatomy Across Subjects  
*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 (School of Computing), Dr. Ingrid S. Johnsrude (Department of Psychology)
- 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 (School of Computing), Dr. Keyvan Hashtrudi-Zaad (Department of ECE)
- 1997–2001 **B.Sc. (Electrical Engineering)**, *Electrical and Electronics Engineering Department, Sharif University of Technology, Iran.*  
*title* Fingerprint Enhancement and Fore/Background Segmentation  
*Research Focus* Image enhancement, image segmentation, feature extraction, morphological filtering  
*supervisor* Dr. Shohreh Kasaei (Department of Computer Engineering)

### Research and Work Experience

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–present **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.

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## 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.

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## Publications

Refereed Journal Papers

- 1 **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*, in Press, NeuroImage, May 2009.
- 2 **J. Calder, A.M. Tahmasebi, and A. Mansouri,** *A Variational Approach to Bone Segmentation in CT Images*, submitted to IEEE Trans. Image Processing, May 2009.
- 3 **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.

- 4 **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.
- 5 **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.
- 6 **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, 2002.

#### Journal Papers in Progress

- 1 **A.M. Tahmasebi, P. Abolmaesumi, C. Wild, and I.S. Johnsrude**, *A Novel Automatic Segmentation Technique for Region-of-Interest-based Functional Analysis*, to be submitted.
- 2 **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*, to be submitted.

#### Refereed Conference Papers

- 1 **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*, accepted in Human Brain Mapping Conference, San Francisco, USA, 2009.
- 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*, accepted in Medical Image Computing and Computer Assisted Intervention (MICCAI), 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.

#### Posters (presented orally)

- 1 **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.
- 2 **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.
- 3 **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.
- 4 **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.
- 5 **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.
- 6 **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.

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## Awards

- 2009-2011 inclusive Natural Sciences and Engineering Research Council Industrial R&D Fellowship (NSERC IRDF)
- 2008-2010 inclusive Natural Sciences and Engineering Research Council Scholarship (NSERC PGS-D)
- 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
- 2005-2008 inclusive Queen's Discretionary Conference Award
- 2005 Best Technical Demonstration Award, 2<sup>nd</sup> place  
Institute of Robotics and Intelligent Systems (IRIS) Conference, Quebec City, QC, Canada
- 2004-2005 inclusive Huntly Macdonald Sinclair Tuition Fellowship
- 2003-2009 inclusive Queen's Graduate Award

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## Computer Skills

- Operating Systems Linux, Windows
- High-level languages C, C++, Visual C++ .Net, Pascal
- Algorithm development environments MATLAB
- Advanced Libraries GHOST SDK, VTK, ITK, Qt
- Software Packages SPM, FSL, Paraview, Brainsuite, MRICron, 3D Slicer

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## Community Activities and Professional Memberships

- 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.

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## References

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