

Peyman Gholami

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- CURRENT POSITION Computer Vision Scientist, Mirametrix Inc. Sep 2018 - present
Montreal, QC, Canada
- EDUCATION University of Waterloo
- ⊙ M.Sc. Vision Science & System Design Engineering 2016 - 2018
 - ▷ M.Sc. Thesis: *Developing algorithms for the analysis of Optical Coherence Tomography images*
 - Amirkabir University of technology (Tehran Polytechnic)
 - ⊙ B.Sc. Biomedical Engineering (with Honours) 2011 - 2016
 - ▷ B.Sc. Thesis: *Design and Production of an Image Processing Tool for Wound Geometry Measurement and Implementation for Bioprinting*
- RESEARCH INTERESTS Machine Learning, Computer Vision, Image Processing, Deep Learning, Medical Imaging, Pattern Recognition, Artificial Intelligence
- PUBLICATIONS
- ⊙ **P. Gholami**, P. Roy, M.K Parthasarathy, V. Lakshminarayanan, “OCTID: Optical Coherence Tomography Image Database”, in press: *Computers and Electrical Engineering Journal*, preprint available at: [arXiv:1812.07056](https://arxiv.org/abs/1812.07056), 2019.
 - ⊙ A. Gueddana, **P. Gholami**, V. Lakshminarayanan, “Can A Universal Quantum Cloner Be Used to Design an Experimentally Feasible Near-Deterministic CNOT Gate?”, *Quantum Information Processing* 18 (7), 221, 2019.
 - ⊙ **P. Gholami**, M. Sheikh-hasani, M.K Parthasarathy, J. Zelek, V. Lakshminarayanan, “Classification of Optical Coherence Tomography images for diagnosing different ocular diseases”, in *Proc. SPIE BiOS 10483: Multimodal Biomedical Imaging XIII, 1048705*, 2018.
 - ⊙ **P. Gholami**, P. Roy, M.K Parthasarathy, J. Zelek, V. Lakshminarayanan, “Intra-retinal segmentation of Optical Coherence Tomography images using active contours with a dynamic programming initialization and an adaptive weighting strategy”, in *Proc. SPIE 10487: Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXII, 104832M*, 2018.
 - ⊙ P. Roy, **P. Gholami**, M.K Parthasarathy, J. Zelek, V. Lakshminarayanan, “Automated intraretinal layer segmentation of Optical Coherence Tomography images using graph-theoretical methods”, in *Proc. SPIE BiOS 10483: Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXII, 104832U*, 2018.
 - ⊙ **P. Gholami**, M.A. Ahmadi-Pajouh, N. Abolfathi, G. Hamarneh, M. Kayvanrad, “Segmentation and Measurement of Chronic Wounds for Bioprinting”, *IEEE Journal of Biomedical and Health Informatics*, 2017, vol. PP, no. 99, pp. 1-1.
 - ⊙ **P. Gholami** and S. Gorji Kandi, “Color Extraction of Textured Images using Discrete Wavelet Transform”, in: *Proceeding of the 6th international congress on color and coating (ICCC2015)*, Tehran, pp. 77-78, 2015.

Submitted Manuscripts

- ⊙ **P. Gholami**, A. Gueddana, V. Lakshminayanan “Fully automated identification of Ocular diseases using Optical coherence tomography images”, under submission to *Medical Image Analysis journal*
- ⊙ A. Bakroon, R. Burman, **P. Gholami**, V. Lakshminarayanan, “Is Global Motion Perception Affected in Adults with Autism When Form-from Motion Stimulus is Embedded ?”, in review: *Research in Autism Spectrum Disorders*, 2018.

HONORS & AWARDS

- ⊙ Best Master’s Graduate Seminar award, University of Waterloo School of Optometry & Vision Science (2017)
- ⊙ Several study excellence awards and scholarships e.g. UW Graduate Scholarship, International Master’s Student Award, Student Graduate Experience Award (2017, 2018)
- ⊙ Ranked top 0.2% among approximately 360,000 participants in Nationwide Iranian University Entrance Exam in the field of Mathematics & Physics (2011)
- ⊙ Qualified the 2nd stage of computer, literature, mathematics Science Olympiads of Iran (2010)
- ⊙ Ranked 2nd in annual swimming championship of Amirkabir UoT. (2014)

WORK & RESEARCH EXPERIENCE

- ⊙ Principal Investigator of the Face Alignment, Eyelids, and Fatigue Metrics components of the Mirametrix Attention Sensing Engine, *Mirametrix Inc., Montreal* (Nov 2018 - present)
 - ▷ Designed the structure and fined tuned various neural networks for facial landmark localization
 - ▷ Mentored and defined projects for several interns working in machine learning, e.g., deep 3d face alignment for automatic labeling task
 - ▷ Designed and built a ground truth system for the accurate evaluation of face and head tracking systems
- ⊙ Research Assistant at the Vision and Image Processing (VIP) Lab, *University of Waterloo* (Jan 2017 - Sep 2018)
 - ▷ Developed brand-new image processing and machine learning algorithms for the analysis of different medical/natural images
 - ▷ Decoded big collection of medical data using batch scripts and constructed a platform for training deep neural networks for tracking retinal health
- ⊙ Research Assistant at the Theoretical & Experimental Epistemology Lab (TEEL), *University of Waterloo* (Sep 2016 - Sep 2018)
 - ▷ Designed and implemented several visual perception experiments, e.g., relative judgment for autistic subjects, motion coherence, reverse phi phenomenon, etc.
 - ▷ Formulated and introduced a brand-new active contour-based image segmentation algorithm
 - ▷ Collected and set up an open access OCT image database
- ⊙ Administrative and financial co-ordinator, *University of Waterloo Optometry Clinic* (Sep 2017 - Sep 2018)
 - ▷ Organized optometry clinic schedule by prioritizing workload in the clinic and handling the collaboration between the interns and optometrists, and handling electronic medical records
 - ▷ Completed several clinical work requirements, including patient confidential-

ity policies, Tri-council ethics, and privacy and safety training

- ⊙ Research Assistant at the Diabetes & Metabolic Diseases Clinic of Endocrinology and Metabolism Research Institute, *Tehran, Iran* (Nov 2015 - Aug 2016)
 - ▷ Designed and prototyped a visual feedback for controlling bioprinter robot
 - ▷ Proposed a computer vision protocol for wound depth estimation using disparity map
- ⊙ Research Assistant at Color Control Lab - *Amirkabir University of Technology* (May 2015 - Aug 2016)
 - ▷ Analyzed the effect of texture on the perceived color of textured
 - ▷ Conducted research on color vision, color perception, and color spaces
- ⊙ Research assistant at the Wound & Ostomy Clinic, *Erfan Hospital of Tehran* (Dec 2015 - Jun 2016)

INTERNSHIP

- ⊙ MRI section of the exclusive representation of General Electric Company in Iran Pishrafteh Co. (TPPGEMS), Date: Summer 2014, Duration: 180 hours
 - ▷ Assisted on the installation, trouble shooting, and maintenance of different medical imaging devices, e.g. MRI, CT Scan, XRay at the customer service department.
- ⊙ X-Ray section of the exclusive representation of General Electric Company in Iran Pishrafteh Co. (TPPGEMS), Date: Summer 2013, Duration: 180 hours
 - ▷ Administrated the safety standards of medical devices at the sales and marketing department
- ⊙ Medical instrument department of K.A Hospital, Date: Summer 2013, 60 hours

PROFESSIONAL SOCIETY ACTIVITIES & MEMBERSHIPS

- ⊙ Peer reviewer
 - ▷ Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization (Taylor & Francis), 2019
 - ▷ Journal of Medical Imaging (JMI), 2018
 - ▷ Biomedical Optics Express (Optical Society), 2018
 - ▷ Heliyon (Elsevier), 2018
 - ▷ Burns & Trauma (Springer), 2018
- ⊙ Supervisor of the research team and editor of Tapesh Journal's bioelectric group (the student journal of Biomedical Department of Amirkabir university of Technology) (2014 - 2016)
- ⊙ Director of Amirkabir University Music House (2012-2013)
- ⊙ Member of the executive committee in the *19th & 21th* Iranian Conference on Biomedical Engineering (ICBME 2012 & 2014).
- ⊙ Member of the Chamber Orchestra of Tehran - violin musician (2002- 2016)
- ⊙ American Academy of Optometry (AAO) student member
- ⊙ The International Society for Optical Engineering (SPIE) student member
- ⊙ Professional Engineers Ontario (PEO) & Ontario Society of Professional Engineers (OSPE) student member

TEACHING EXPERIENCE

- ⊙ Teaching Assistant
 - ▷ Visual Optics, *University of Waterloo*, 2017,2018
 - ▷ Ophthalmic Optics I, *University of Waterloo*, 2016,2017

- Demonstrated the theory and procedure of lab tutorials for Optometry Doctorate (OD) students: different optical experiments e.g., spherical aberration, chromatic aberration, etc.
- Analyzed the performance of more than 100 students and providing effective feedback

▷ Principles of Radiology & Radiotherapy, *Amirkabir UoT*, 2015

▷ Signal & System Analysis, *Amirkabir UoT*, 2015

▷ Computer Programming (C++), *Amirkabir UoT*, 2014

- Simplified illustrating sophisticated medical imaging concepts for students by using different means of media, resulting in 20% increase in the average of the class.
- Proposed a new teaching method for computer programming tutorials, in the form of teamwork activities, resulting in a 15% increase in the average of the class

⊙ Workshop Instructor

▷ General MATLAB Course

▷ Advanced MATLAB - Digital Image Processing

▷ L^AT_EX writing workshop

⊙ Other experiences

▷ Mathematics teacher at Salam High School (2012)

▷ Private Tutoring: teaching mathematics, physics, chemistry and English to high school students (2011 - 2016)

▷ Educational Consultant at Cultural Center of Education & Salam High School (2013 - 2015)

COMPUTER
SKILLS

⊙ Programming Languages

▷ C++, Python, MATLAB

⊙ Engineering Software Packages

▷ MATLAB: General MATLAB, Digital Image Processing, Digital Signal Processing, SIMULINK, SISOTOOL, Neural Network, Psychtoolbox

▷ Tensorflow ▷ Open CV ▷ Keras

▷ Labview ▷ Pytorch ▷ Altium Designer

▷ ITK - Segmentation & Registration Toolkit ▷ 3D slicer ▷ Perforce

⊙ General Software Packages

▷ Microsoft Office, L^AT_EX, Adobe Photoshop, Adobe Audition.

TECHNICAL
CERTIFICATES

⊙ ISO 13485 Internal Audit Training Course, Certificated by Oxfordcert.

Registration Number: TIA1341201219

2014

⊙ Technical Observers of Medical instruments Training Course, Certificated by Ministry of Health and Medical Education.

License Code: Nv266

2013

LANGUAGE
PROFICIENCY

⊙ English (Fluent)

⊙ Persian (Native)

⊙ French (Intermediate)

⊙ Arabic (Intermediate)