Peyman Gholami

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CURRENT POSITION

PhD track Student, Computer Science, UBC   Sep 2020 - present
Vancouver, BC, Canada

EDUCATION

University of British Columbia

⊙ PhD.track, Computer Science   2020 - present
  ▷ M.Sc. Thesis: *Developing algorithms for the analysis of Optical Coherence Tomography images*

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", *Computers Electrical Engineering, 81, 106532*, preprint available at: arXiv:1812.07056, 2020.

⊙ 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. Kayvan-rad, "Segmentation and Measurement of Chronic Wounds for Bioprinting", *IEEE*

Journal of Biomedical and Health Informatics, 22, no. 4, pp 1269-1277, 2017.

⊙ **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.

HONORS &
AWARDS

⊙ Several study excellence awards and scholarships e.g. UW Graduate Scholarship, International Master's Student Award, Science Graduate Student Award (2017, 2018)

⊙ Best Master's Graduate Seminar award UW School of Optometry Vision Science (2017)

⊙ Best undergraduate thesis award, Biomedical Engineering Department, Amirkabir University of Technology (2015)

⊙ 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 FaceID, Face Alignment, Eyelids, and Fatigue Metrics components of the Mirametrix Attention Sensing Engine, *Mirametrix Inc., Montreal* (Nov 2018 - present)
  ▷ Designed various multi-task neural network architectures and developed analytical solutions for handling large scale datasets
  ▷ Mentored and defined projects for several interns working on deep learning and computer vision, e.g., deep 3D face alignment for automatic labeling of facial landmarks
  ▷ 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 NNs 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 confidentiality 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
> ▷ 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: 180h
> ▷ Administrated the safety standards of medical devices at the sales and marketing department

⊙ Medical instrument department of K.A Hospital, Date: Summer 2013, 60h

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

- ▷ Advanced machine learning - CPSC 540, *UBC,* 2021
- ▷ Machine learning - CPSC 340, *UBC,* 2020
- ▷ 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
  - ▷ LATEXwriting 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

⊙ Engineering Software Packages & Libraries

▷ Tensorflow	▷ Open CV	▷ Keras
▷ Labview	▷ Pytorch	▷ Altium Designer
▷ ITK - Segmentation & Registration Toolkit	▷ MxNet	▷ Perforce

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

⊙ General Software Packages
  - ▷ Microsoft Office, LATEX, 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)
⊙ Arabic (Intermediate)