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EDUCATION & TRAINING

2014 - 2018	PhD	Mechanical Engineering	University of Toronto,
2011- 2014	MSc	Medical BioPhysics	University of Western Ontario (UWO)
2010 - 2011	MSc-Transferred to UWO	Biomedical Engineering	Khaje Nasir University,
2004 - 2008	BSc	Electrical Engineering	Shariaty University

POSTDOCTORAL FELLOWSHIP

2021/06- 2022/08	Research fellow	Biomedical Imaging, PI: Guillermo J. Tearney	Harvard Medical School
2020/06-2021/05	Scientific Lab Manager	System developer, Signal and image processing, PI: Andreas Mandelis	University of Toronto
2019/01-2020/05	Post-Doctoral Fellow	Image and data processing, PI: Andreas Mandelis	University of Toronto

PROFESSIONAL EXPERIENCES

2022/08-Present	Assistant Professor	Biomedical Engineering Program	University of North Dakota
2022/08-Present	Visiting Scientist	Biomedical Imaging	Harvard Medical School
2015/01 -2021/04	Teaching Assistant	1- Electronics in Mechatronics, 2- Statistics, 3- Waves and its applications in Engineering	University of Toronto
2006/09 -2008/11	Teaching Assistant	1- Computer architecture, 2- Logic Circuit	Shariaty University

ADMINISTRATIVE LEADERSHIP POSITIONS

2020/06-2021/05	Lab Management	Centre for Advanced Diffusion waves and Photoacoustic Technologies, University of Toronto
2015/01-2017/04	Executive Member	Kurdish Student Association, University of Toronto
2016/01-2017/04	Board of Director	Iranian Association at University of Toronto
2018/05-2019/05	Social Vice President	Association of Mechanical and Industrial Engineering Graduate Students, University of Toronto

SCHOLARSHIP, AWARDS AND ACHIEVEMENTS

2018/07	**Best Doctoral Presentation Award, On-DuTy AGM**
2018/10	**MIE Doctoral Completion Scholarship, University of Toronto**
2018/05	**Student Graduate studies Conference grant**
2018/09	**Mechanical and Industrial Engineering conference award**
2014/09-2018/09	**Mechanical and Industrial Engineering Fellowship-University of Toronto**
2014	**Milligan fellowship**
2013	**SPIE Conference Award**
2011-14	**University of Western Ontario Fellowship**
2007	**Shariaty Top Student Award**

EDITORIAL ACTIVITIES

Reviewer for Journals

Infrared Physics and Technology, 2019.
International Journal of Thermophysics, 2017, 2019.
Journal of Neurophotonics/SPIE, 2016.
Photoacoustics, 2019.
Journal of Applied Physics, 2020/06
Journal of Imaging, 2020/06
Journal of Information, MDPI, 2021/02

Conference Judges

[1] MIE Graduate Research Symposium, Department of Mechanical and Industrial Engineering, University of Toronto (07/2019)
[2] Undergraduate Engineering Research day, Faculty of applied science & Engineering, University of Toronto (08/2019)
[3] Undergraduate Engineering Research day, Faculty of applied science & Engineering, University of Toronto (08/2020)

PEER-REVIEWED PUBLICATIONS

[1] Welch, R., Sivagurunathan, K., **Tavakolian, P.,** Mandelis, A. "Three-dimensional thermophotonic image optimization modalities of truncated correlation photothermal coherence tomography" J. of Biophotonics, 15 (7), e202200018 (2022).

[2] Thapa D., Welch R., Dabas R.P., Salimi M., **Tavakolian P.**, Sivagurunathan K., Ngai K., Huang B., Finer Y., Abrams S., Mandelis A., and Tabatabaei, N. "Comparison of Long-Wave and Mid-Wave Infrared Imaging Modalities for Photothermal Coherence Tomography of Human Teeth" IEEE Transaction of Biomedical Engineering (2022).

[3] Risheh A., **Tavakolian P**., Mandelis, A., "Infrared Computer vision in non-destructive imaging: Sharp delineation of subsurface defect boundaries in enhanced truncated correlation photothermal coherence tomography images using K-means clustering" J. of NDT & E International, 125, 102568 (2022).

[4] Roointan S., **Tavakolian P**., Sivagurunathan K., Mandelis A., Abrams S.H., "Detection and Monitoring of Controlled Dental Caries and Erosion Using Three-Dimensional enhanced Truncated Correlation Photothermal Coherence Tomography (eTC-PCT) Imaging, J. of Biomedical Optics, 26(4), 046004 (2021).

[5] **Pantea Tavakolian,** Sohrab Roointan, Andreas Mandelis 'Non-Invasive In-Vivo 3-D Imaging of Small Animals Using Spatially Filtered Enhanced Truncated-Correlation Photothermal Coherence Tomography' Scientific Reports, 13743,10 (2020).

[6] **Pantea Tavakolian**, Roointan S., Sivagurunathan K., Mandelis A., "3D Thermophotonic Imaging Informs Biomedicine," BioPhotonics Magazine Page: 28-33, (Sep/Oct 2020).

[7] **Pantea Tavakolian,** Elnaz B. Shokouhi, Stefano Sfarra, Gianfranco Gargiulo, Andreas Mandelis, 'Non-destructive Imaging of Ancient Marquetries using Enhanced Truncated-Correlation Photothermal Coherence Tomography' J. of Cultural Heritage, 1296-2074, Pages:1-6 (2020).

[8] **Pantea Tavakolian**, Sohrab Roointan, Koneswaran Sivagurunathan, Marie Floryan, Andreas Mandelis, Stephen Abrams, "3D Dental Subsurface Imaging Using Enhanced Truncated-Correlation Photothermal Coherence Tomography," Scientific Report **9**, 16788 (2019).

[9] **Pantea Tavakolian,** Hai Zhang, Andreas Mandelis, Wei Shi, Fei-Fei Liu, "Truncated-correlation photothermal coherence tomography derivative imaging modality for small animal in vivo early tumor detection" Optics letters, 44(3), pp. 675-678 (2019).

[10] **Pantea Tavakolian**, Stefano Sfarra, Koneswaran Sivagurunathan, and Andreas Mandelis, "Photothermal coherence tomography for 3-D visualization and structural non-destructive imaging of a wood inlay" Journal of Infrared Physics, 91(2018), 206-213.

[11] **Pantea Tavakolian**, Andreas Mandelis, "Perspective: Principles and Specifications of Photothermal Imaging Methodologies and Their Applications to Non-Invasive Biomedical and Non-Destructive Materials Imaging," Journal of Applied Physics, 124, 160903 (2018).

[12] **Pantea Tavakolian**, Koneswaran Sivagurunathan, and Andreas Mandelis, "Enhanced truncated-correlation photothermal coherence tomography with application to deep subsurface defect imaging and 3-dimensional reconstructions" Journal of Applied Physics, 122(2),023103 (2017).

THESIS AND DISSERTATION

[1] Ph.D. Dissertation: Development of Enhanced Truncated Correlation Photothermal Coherence Tomography system for non-invasive biomedical and non-destructive materials imaging. She defended in 2018 at the University of Toronto.

[2] MSc. Thesis: Potential for Photoacoustic Imaging of Neonatal Brain. Defended in 2014 at the University of Western Ontario

GRANTED PATENT

Pantea Tavakolian, Sivagurunathan, K., Andreas Mandelis, Systems and Methods for Performing enhanced Truncated Correlation Photothermal Coherence Tomography.

CONFERENCE PROCEEDINGS

[1] **Pantea Tavakolian**, Jeffrey J.L. Carson, "Effects of the skull on photoacoustic signals and images," Podium presentation at Artimino Ultrasound Conference, Lake Rosseau, Ontario (2013).

[2] **Pantea Tavakolian**, Ivan Kosik, Astrid Chamson-Reig, Keith St. Lawrence, and Jeffrey J.L. Carson, "Potential for photoacoustic imaging of the neonatal brain," SPIE Photons Plus Ultrasound, San Francisco, USA (2013).

PRESENTATIONS AND TALKS

Regional

[1] **Pantea Tavakolian**, "Thermal imaging for Medical applications" MIE Symposium, University of Toronto June 2018.

[2] **Pantea Tavakolian**, "Enhanced truncated-correlation photothermal coherence tomography for early detection of dental caries" MIE Symposium, University of Toronto, Toronto, ON, Canada (2017).

[3] **Pantea Tavakolian**, "Photoacoustic imaging of the neonatal brain," London Health Research Day (2012).

[4] **Pantea Tavakolian**, H. Gharaee "A New 5-bit BCSE Method for Implementing Low Complexity and Low Power Reconfigurable FIR Filters," Iranian Conference on Electrical Engineering ICEE2009_2640 (2009).

[5] **Pantea Tavakolian**, Low Complexity, and Low Power OTR-UWB Baseband, ICEE, pp.348-352 (2009).

National

[6] **Pantea Tavakolian,** Lecturer for a session on "Ultrasound," University of North Dakota, Grand Forks, USA.

[7] **Pantea Tavakolian**, “Thermal imaging for non-Destructive testing of an art sample” oN DuTy AGM, Montreal, June 2019.

[8] **Pantea Tavakolian**, “Dynamic Frequency-Domain Photothermal Imaging Methodologies for Non-Destructive Evaluation of Industrial Materials: A Review of the State-of-the-Art” Canadian Institute for Non-destructive Evaluation Conference, Halifax, June 2018.

[9] **Pantea Tavakolian**, “Thermal imaging for non-Destructive testing in the industry” oN DuTy AGM, Quebec City, June 2018.

[10] **Pantea Tavakolian**, Ivan Kosik, Keith St. Lawrence, and Jeffrey J.L. Carson, "Investigation of photoacoustic imaging of the neonatal brain, "Poster presentation at Imaging Network Ontario (ImNO), Toronto, Canada (2014).

[11] **Pantea Tavakolian**, "Effects of the skull on photoacoustic signals and images," Podium presentation at Artimino Ultrasound Conference, Lake Rosseau, Ontario (2013).

International

[12] **Pantea Tavakolian**, “Enhanced truncated-correlation photothermal coherence tomography for non-destructive imaging of metals” ICPPP19, Bilbao, Spain (2017).

[13] **Pantea Tavakolian**, "Potential for photoacoustic imaging of the neonatal brain," SPIE Photons Plus Ultrasound, San Francisco, USA (2013).

[14] **Pantea Tavakolian**, "Development of neonatal skull mimicking phantom for photoacoustic brain imaging," SPIE Photons Plus Ultrasound, San Francisco, USA (2013).

TRAININGS

11/2019- 5/2021	Machine learning (Different Coursera certificate)
11/2019-01/2021	Python online courses (Took many Lynda and Coursera certificates)
06/2019	LabView Programming.
09/2018-12/2018	Teaching in Higher Education Course.
09/2018	Foundations of Project Management.
05/2018	CAD software (CATIA).
04/2018	The art and science of positive networking.
11/2018	Scientific and Technical Writing Skills.
06/2018	Non-Destructive testing with different modalities.
11/2013	Proactive and Practical Communications and Teamwork
06/2012	CAD software (Spaceclaim)
08/2013	Public speaking skills.

TRAINED STUDENTS

7/2022-8/2022	Sudiksha Singhal	Senior High school	Harvard Medical School

9/2018- 12/2018	Dr. Guo Xinxin	Research Associate	University of Toronto
9/2018- 12/2018	Dr. Alexander Melnikov	Research Associate	University of Toronto
1/2020-5/2021	Ali Risheh	BSc student	Intern student at University of Toronto
9/2017-5/2019	Sohrab Roointan	MSc students	University of Toronto
5/2017-9/2017	Maria Floryn	BSc student	University of Toronto