

Curriculum Vitae

Ms. Deniz Jafari

1. EDUCATION

- [2022 – Present] PhD, Biomedical Engineering, Biomedical Engineering Institute, Faculty of Medicine, University of Toronto, Toronto, Canada. Supervisor: Dr. Alex Mihailidis. Design and Development of Modular Upper Limb Rehabilitation Platform.
- [2019 – 2022] MSc, Rehabilitation Sciences, Rehabilitation Sciences Institute, Faculty of Medicine, University of Toronto, Toronto, Canada. Supervisor: Dr. Yana Yunusova, Co-Supervisor: Dr. Babak Taati. Artificial Intelligence-based Automatic Assessment of Motor Deficits in Neurodegenerative Diseases.
- [2016 – 2019] MHSc, Clinical Engineering, Institute of Biomaterials and Biomedical Engineering, Faculty of Medicine, University of Toronto, Toronto, Canada. Supervisor: Dr. Cari Whyne, Co-Supervisor: Dr. Albert Yee. Development and Evaluation of Navigation Workflow for Radiofrequency Ablation of Spinal Metastases.
- [2011 – 2016] BAsC, Engineering Science- Aerospace Option with Certificate in Entrepreneurship, University of Toronto, Toronto, Canada. Supervisor: Dr. Brain Courtney. Imaging Technology for Chronic Total Occlusions.

2. HONOURS AND AWARDS

- [Sept. 2023 – Apr. 2026] **NSERC – PGS D Scholarship**, University of Toronto, \$101,000
- [Sept. 2020 – Apr. 2022] **Toronto Rehabilitation Institute Student Scholarship**, Toronto Rehabilitation Institute, University of Toronto, \$18,000
- [Sept. 2015 – Apr. 2016] **Spirit of EngSci Award**, Division of Engineering Science, University of Toronto, No monetary value.
- Sept. 2014 – Mar. 2015] **The Game Competition**, Institute for Leadership Education in Engineering, University of Toronto, \$5,000.
- [May 2014 – Aug. 2014] **NSERC - USRA Award**, University of Toronto Institute for Aerospace Studies, \$6,000.
- [Sept. 2013 – Apr. 2013] **Ryn Pudden Memorial Scholarship**, University of Toronto, \$2,000.
- [May 2013 – Aug. 2013] **NSERC - USRA Award**, Electrical and Computer Engineering Department, University of Toronto, \$6,000.

3. PEER REVIEWED PUBLICATIONS

- **Jafari, D.** Lopez, D. Simmatis, L. Bouvier, L. Taati, B. Yunusova, Y. 3D Video Tracking Technology in the Assessment of Oro-facial Impairments in Neurological Disease: Clinical validation. Journal of Speech, Language, and Hearing Research. 2023.
- Simmatis, L. Alavi Naeini, S. **Jafari, D.** Xie, M. Tanchip, C. Taati, N. McKinlay, S. Sran, R. Truong, J. Guarin, D. Taati, B. Yunusova, Y. Analytical Validation of a Webcam-Based Assessment of Speech Kinematics: Digital Biomarker Evaluation following the V3 Framework. Digital Biomarkers, 2023. [Contributed to the methodology development and performed preliminary data analysis – 30%]
- Naeini, S., Simmatis, L. **Jafari, D.** Guarin, D. Yunusova, Y. Taati, B. Automated Temporal Segmentation of Orofacial Assessment Videos. Proceedings of 2022 IEEE EMBS International Conference on Biomedical & Health Informatics (BHI). IEEE, 2022 [Performed partial data analysis – 20% contribution]

4. PRESENTATIONS

ORAL

- **Jafari, D.** Artificial Intelligence-based Automatic Assessment of Motor Deficits in Neurodegenerative Diseases. Student Seminar, Rehabilitation Sciences Institute, University of Toronto, Toronto, 2020
- **Jafari, D.** Development and Evaluation of Navigation Workflow for Radiofrequency Ablation of Spinal Metastases. Student Seminar, Institute of Biomaterials and Biomedical Engineering (IBBME), University of Toronto, Toronto, 2017

POSTER

- **Jafari, D. Milailidis, A.** Multi-Modal Merged Reality Exergame for Upper Limb Stroke Rehabilitation: Real-time Movement Tracking and Haptic Feedback to Reduce Compensatory Patterns Poster Presentation. AGEWELL Annual Conference, Montreal, 2025
- **Jafari, D. Milailidis, A.** Engaging Home-Based Upper Limb Rehabilitation Post Stroke: A Modular Robotic Platform. The 47th Annual International Conference of the IEEE Engineering in Medicine and Biology Society EMBC 2025, Copenhagen, 2025
- **Jafari, D. Milailidis, A.** Gamification of Upper Limb Remote Rehabilitation in Post Stroke. Poster Presentation. Canadian Stroke Congress, Calgary, 2024
- **Jafari, D. Milailidis, A.** Design and Development of a Gamified Robotic Platform for Home-Based Upper Limb Stroke Rehabilitation. Poster Presentation. AGEWELL Annual Conference, Edmonton, 2024
- **Jafari, D. Zimmermann, H. Thiele, S. Milailidis, A.** Development of a Collaborative and Gamified Robotic Rehabilitation Platform to Enhance Patient Motivation and Engagement Post Stroke with Upper Limb Impairments – Study Plan. Poster Presentation. AGEWELL Annual Conference, Toronto, 2023
- **Jafari, D.** Simmatis, L. Taati, B. Yunusova, Y. Validation of facial kinematic features with respect to the perceptual clinical scores provided by trained clinicians for individuals with oro-facial impairments due to neurological disorders. Poster Presentation. Research Day. Rehabilitation Sciences Institute, University of Toronto, Toronto, 2022
- **Jafari, D.** Simmatis, L. Lopez, D. Bandini, A. Taati, B. Yunusova, Y. 3D Video Tracking Technology in the Assessment of Oro-facial Impairments in Neurological Disease: Clinical validation. Motor Speech Conference, Charleston, SC, USA, 2022
- Simmatis, L. **Jafari, D.** Lopez, D. Taati, B. Yunusova, Y. A Novel Multimodal Assessment Platform – VirtualSLP: Technical Validation Study. Motor Speech Conference, Charleston, SC, USA, 2022
- **Jafari, D.** Hardisty, M. Robert, N. Yee, A. Whyne, C. Development and Evaluation of Navigation Workflow for Radiofrequency Ablation of Spinal Metastases. SpineFEST Conference, Division of Orthopaedic Surgery, University of Toronto, Toronto, 2018
- **Jafari, D.** Hardisty, M. Robert, N. Yee, A. Whyne, C. Development and Evaluation of Navigation Workflow for Radiofrequency Ablation of Spinal Metastases. Gallie Day Conference, Department of Surgery, University of Toronto, Toronto, 2018
- **Jafari, D.** Hardisty, M. Robert, N. Yee, A. Whyne, C. Development and Evaluation of Navigation Workflow for Radiofrequency Ablation of Spinal Metastases. Imaging Network Ontario (ImNO) 2018 Conference, Toronto, 2018

5. PATENTS

- Intravascular imaging catheters and methods of use thereof, Inventors: Brian Courtney, Isaac Jourard, Deniz Jafari. (2016). Patent number: 11051761.
- Imaging Probe with Rotating Core, Inventors: Brian Courtney, Alan Soong, Deniz Jafari. (2016). Publication number: 20190374196.

6. RESEARCH, TEACHING AND EMPLOYMENT

[Sept. 2022 – Present] Graduate Researcher (PhD), University of Toronto
Developing a new modular design for the upper limb rehabilitation platform for customized rehab therapy post-stroke

[Jan. – Apr. 2026] Teaching Assistant, Introduction to Reinforcement Learning, Faculty of Art and Science,

University of Toronto

Created tutorials and lab exercises for students to complete, explained fundamental concepts during tutorials, provided feedback, and graded submissions. Provided guidance and explained course content during online office hours.

- [Jan. – Apr. 2021 – 2026] Teaching Assistant, Entrepreneurship and Business Management Course, Faculty of Applied Science and Engineering, University of Toronto
Created quizzes, provided feedback, and graded business reports. Provided guidance and explained course contents during online tutorials and office hours.
- [Sept. – Dec. 2024 – 2025] Teaching Assistant, Robot Control and Modelling, Faculty of Applied Science and Engineering, University of Toronto
Supervised students in the lab setting, answered questions during the lab hours, marked in lab and pre-lab work, marked final exams
- [Sept. – Dec. 2020 – 2022] Teaching Assistant, Entrepreneurship and Small Business Course, Faculty of Applied Science and Engineering, University of Toronto
Created quizzes, provided feedback, and graded term reports. Provided guidance during online office hours.
- [Sept. 2019 – Aug. 2022] Graduate Researcher (MSc), University of Toronto
Developed clinically interpretable machine learning methods to track and analyze facial movements and predict clinical scores
- [Jan. 2020 – Apr. 2020] Teaching Assistant, Praxis III - Engineering Foundation Design Course, Division of Engineering Science, University of Toronto
Created quizzes, provided feedback, and graded engineering reports. Provided guidance and problem-solving techniques during weekly labs and office hours.
- [Sept. 2016 – Aug. 2019] Graduate Researcher (MHSc), University of Toronto
Developed a navigation workflow for vertebral RFA procedure of spinal metastases, collaborated with a diverse group of clinicians, biophysicists, scientists, and engineers, and implemented the software using Python in 3D Slicer platform. Spearheaded research in RFA navigation workflow by conceiving, designing, and conducting validation studies and protocols to assess the accuracy and reproducibility of the developed software, and analyzing data.
- [May. 2018 – Sept. 2018] Clinical Engineering Intern, Vancouver General Hospital
Performed literature review, conducted interviews of the involved stakeholders, analyzed the province's database, gathered and compiled a list of criteria, presented the findings and the solution proposal to the wide range of groups from the province decision makers to the technologist responsible of collecting and inputting data
- [Feb. 2015 – Apr. 2016] Undergraduate Researcher, Sunnybrook Health Sciences Centre
Conceived, designed, developed, and evaluated biocompatible intra-cardiac catheters for diagnostic and treatment use in minimally invasive cardiovascular procedures
- [Sept. 2014 – Feb. 2015] Hybrid Control Engineer Intern, Canadian Regional Engineering Centre, General Motors
Developed control and diagnostic strategies using Simulink and MATLAB. Integrated the new cooling pump into the existing control architecture of GM cars to replace the old pump starting 2017.
- [May 2014 – Aug. 2014] Research Assistant, Flow Control and Experimental Turbulence lab, University of Toronto Institute for Aerospace Studies
Characterized an anechoic chamber, including background-noise measurements. Designed and implemented Phase Locked Loop for synthetic jet actuators by first creating a simulation in MATLAB and implementing the final design using LabVIEW
- [June 2012 – Feb. 2014] Software/Hardware Developer, Centre of Applied Power Electronics, University of Toronto
Developed and validated control systems using LabVIEW software for multiple NI Compact-RIOs
- [May 2013 – Aug. 2013] Research Assistant, Physics Department, University of Toronto
Expanded laboratory capabilities by designing a new experimental apparatus using AutoCAD, developing a GUI via LabVIEW to improve lab procedures, and exploring different options for

automating a critical experimental set-up

[June 2012 – Feb. 2014]

Research Assistant, Colibri Technologies Inc.
Reconstructed imagery data obtained from Intravascular Ultrasound and Optical Coherence Tomography techniques and performed the cross-sectional alignment of histology images with the reconstructed imagery data of arterial segments.