

Mohamed Harmanani

M.Sc. Candidate, Queen's University, Kingston ◇
harmanani.com ◇ mohamed.harmanani@queensu.ca

Research Interests

Computer Vision, Deep Learning, Medical Imaging, Trustworthy AI, Uncertainty Quantification

Education

M.Sc. in Artificial Intelligence
Queen's University, Kingston, Canada
Advisor: Parvin Mousavi

Sep 2022 - Present
GPA: 4.24/4.30

B.Sc. in Computer Science & Philosophy
University of Toronto, Canada

Sep 2016 - Dec 2021
GPA: 3.43/4.00

Publications

★, † indicates equal contribution

Peer Reviewed Journal Publications

1. **M. Harmanani**, P.F.R. Wilson, M.N.N. To, M. Gilany, A. Jamzad, F. Fooladgar, B. Wodlinger, P. Abolmaesumi★, P. Mousavi★.
TRUSWorthy: Towards Clinically Applicable Deep Learning for Confident Detection of Prostate Cancer in Micro-Ultrasound.
Under review at: **Int. J. Comput. Assist. Radiol. Surg. (IJCARS), 2024. (IF: 3.0)**
2. P.F.R. Wilson, **M. Harmanani**, M.N.N. To, M. Gilany, A. Jamzad, F. Fooladgar, B. Wodlinger, P. Abolmaesumi, P. Mousavi.
Towards Confident Prostate Cancer Detection using Ultrasound: A Multi-Center Study.
Int. J. Comput. Assist. Radiol. Surg. (IJCARS), 2024. (IF: 3.0)

Peer Reviewed Conference and Workshop Publications

1. M. Gilany, **M. Harmanani**, P.F.R. Wilson, A. Jamzad, M.N.N. To, B. Wodlinger, P. Abolmaesumi, P. Mousavi.
UP-Label: Uncertainty-driven Pseudo Labeling to Overcome Test-time Distribution Shifts in Micro-Ultrasound Prostate Cancer Detection.
Under review at: **Medical Image Computing and Computer Assisted Intervention (MICCAI), 2024.**
2. P.F.R. Wilson, M.N.N. To, A. Jamzad, M. Gilany, **M. Harmanani**, T. Elghareb, F. Fooladgar, B. Wodlinger, P. Abolmaesumi, P. Mousavi.
ProstNFound: Integrating Foundation Models with Ultrasound Domain Knowledge and Clinical Context for Robust Prostate Cancer Detection.
Under review at: **Medical Image Computing and Computer Assisted Intervention (MICCAI), 2024.**

3. M.N.N. To, F. Fooladgar*, P.F.R. Wilson*, **M. Harmanani***, M. Gilany, A. Jamzad, S. Sojoudi, S. Chang, P. Black, P. Mousavi†, P. Abolmaesumi†.
LensePro: Label Noise-Tolerant Prototype-Based Network for Improving Cancer Detection in Prostate Ultrasound with Limited Annotations.
Information Processing in Computer Assisted Interventions (IPCAI), 2024.
4. **M. Harmanani**, P.F.R. Wilson, F. Fooladgar, A. Jamzad, M. Gilany, M.N.N. To, B. Wodlinger, P. Abolmaesumi, P. Mousavi.
Benchmarking Image Transformers for Prostate Cancer Detection from Ultrasound Data.
SPIE Medical Imaging 2024.
5. **M. Harmanani.**
Modelling the Spread of COVID-19 in Indoor Spaces using Probabilistic Automated Planning.
Scheduling and Planning Applications woRKshop (SPARK) — International Conference on Automated Planning and Scheduling (ICAPS), 2023.
6. S. Fujimori, **M. Harmanani**, O. Siddiqui, L. Zhang.
Using Deep Learning to Localize Errors in Student Code Submissions.
ACM Technical Symposium on Computer Science Education (SIGCSE), 2022.

Industry Experience

Data Scientist	<i>Sep 2021 - Sep 2022</i>
Flinks, Montréal, Canada	
Topic(s): Large Language Models for Financial Categorization	
Software Engineer	<i>May 2019 - May 2020</i>
Vennage, Toronto, Canada	
Topic(s): Probabilistic Models for Design Generation	

Research Experience

Graduate Research Assistant , Vector Institute/Queen's University	<i>Sep 2022 - Present</i>
Topic(s): Computer Vision, Medical Imaging	
Supervisor: Parvin Mousavi	
Research Intern , CSEd Research Group, University of Toronto	<i>May 2021 - Sep 2021</i>
Topic(s): NLP, Automated Program Repair	
Supervisor: Lisa Zhang	
Research Assistant , Plant Epigenetics Lab, University of Toronto	<i>Sep 2020 - May 2021</i>
Topic(s): Bioinformatics, Epigenetics	
Supervisor: Katharina Braütigam	

Teaching Experience

Head Teaching Assistant , Queen's University	<i>Jan 2024 - Present</i>
Course: CISC365, Algorithms I	
Instructor: Ting Hu	

Teaching Assistant, Queen's University
Course: CISC452, Neural and Genetic Computing
Instructor: Hazem Abbas

Sep 2023 - Dec 2023

Teaching Assistant, Queen's University
Course: CISC151, Introduction to Data Analytics
Instructor: Samir Mohammed

Jan 2023 - Apr 2023

Honours and Awards

Vector Research Grant, Vector Institute (\$4,000) *Jun 2023*

2nd Place, MediCREATE Central Line Challenge *Jun 2023*

Robert Sutherland Fellowship, Queen's University *Sep 2022*
\$15,000 over 1 year awarded to distinguished students from a minority group

Undergraduate Research Award, University of Toronto (\$1,000) *Dec 2022*

Undergraduate Entrance Award, University of Toronto (\$3,000) *Sep 2016*

Talks, Abstracts, Presentations

Towards Trustworthy AI for Prostate Cancer Detection in Ultrasound
Centre for Health Innovation, Kingston, Canada *Apr 2024*

Multi-objective Transformers for Improving Prostate Cancer Detection in Ultrasound
Vector Institute Research Symposium 2024, Toronto, Canada *Feb 2024*
Imaging Network of Ontario (ImNO 2024), Mississauga, Canada *Mar 2024*

Skills

Programming Languages and Frameworks

Python, PyTorch, C, SQL, R, MATLAB, Java, JavaScript, HTML, CSS

Languages

English (fluent), French (fluent), Arabic (fluent), Spanish (intermediate)