Mohamed Harmanani

M.Sc. Candidate, Queen's University, Kingston ◇
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Research Interests

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

Education

M.Sc. in Artificial Intelligence *Sep 2022 - Present*
Queen's University, Kingston, Canada GPA: 4.24/4.30
Advisor: Parvin Mousavi

B.Sc. in Computer Science & Philosophy *Sep 2016 - Dec 2021*
University of Toronto, Canada 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)**

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.
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. 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.

4. **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.

5. 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 *Sep 2021 - Sep 2022*
Flinks, Montréal, Canada
Topic(s): Large Language Models for Financial Categorization

Software Engineer *May 2019 - May 2020*
Venngage, Toronto, Canada
Topic(s): Probabilistic Models for Design Generation

Research Experience

Graduate Research Assistant, Vector Institute/Queen's University *Sep 2022 - Present*
Topic(s): Computer Vision, Medical Imaging
Supervisor: Parvin Mousavi

Research Intern, CSEd Research Group, University of Toronto *May 2021 - Sep 2021*
Topic(s): NLP, Automated Program Repair
Supervisor: Lisa Zhang

Research Assistant, Plant Epigenetics Lab, University of Toronto *Sep 2020 - May 2021*
Topic(s): Bioinformatics, Epigenetics
Supervisor: Katharina Braütigam

Teaching Experience

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

Teaching Assistant, Queen's University *Sep 2023 - Dec 2023*
Course: CISC452, Neural and Genetic Computing
Instructor: Hazem Abbas

Teaching Assistant, Queen's University *Jan 2023 - Apr 2023*
Course: CISC151, Introduction to Data Analytics
Instructor: Samir Mohammed

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)