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Rahatara Ferdousi

Link: LinkedIn| GitHub|Google Scholar | Medium |Huggingface Spaces

Objective

Seeking to contribute to cutting-edge advancements through research, development, and collaborative innovation in AI-focused roles across academia or industry.

Education

—**Doctorate in Philosophy Electrical and Computer Engineering**
Focus: AI integrated Digital Twin for Railway Defect Inspection
University of Ottawa

—**Master of Computer Science**
Focus: AI integrated Digital Twin for Healthcare and Well-being
University of Ottawa

Publications (500 + citations|7 Journal Papers| 11 Conference Papers|2 Book Chapters)

1. **Ferdousi, Rahatara**, Laamarti, Fedwa, Yang, Chunsheng, El Saddik, Abdulmotaleb, *A reusable AI-enabled defect detection system for railway using ensembled CNN*, Applied Intelligence, **54**(20), 9723-9740, 2024. *Springer US New York*.
2. **Ferdousi, Rahatara**, Hossain, M Anwar, Yang, Chunsheng, Laamarti, Fedwa, Hossain, M Shamim, El Saddik, Abdulmotaleb, *Generative Model-Driven Synthetic Training Image Generation: An Approach to Cognition in Railway Defect Detection*, Cognitive Computation, January 2024. *Springer US New York*.
3. **Ferdousi, Rahatara**, Laamarti, Fedwa, El Saddik, Abdulmotaleb, *Artificial Intelligence Models in Digital Twins for Health and Well-being*, *Digital Twin for Healthcare*, pp. 121136, 2023. *Academic Press*.
4. **Ghaboura, Sara**, **Ferdousi, Rahatara**, Laamarti, Fedwa, Yang, Chunsheng, El Saddik, Abdulmotaleb, *Digital Twin for Railway: A Comprehensive Survey*, IEEE Access, **11**, pp. 120237-120257, 2023. *IEEE*.

View all publications

Research Experience

Research Assistant
Multimedia Communications Research Laboratory, University of Ottawa |Sep 2020 – December 2024 | Ottawa, Canada

—Designed and developed AI models for railway defect detection, collaborating with the National Research Council Canada.

—Led the development of a large language model-assisted Digital Twin Framework for railway defect inspection.

Collaborating Research Student

National Research Council Canada (AI4 Logistic Program) |Sep 2021 – April 2023| Ottawa, Canada

— Conducted research on AI4Logistics, fine-tuning generative models for real-world railway defect detection applications.

Research Assistant (Awarded through International Experience Scholarship)

Remote Project, King Saud University

Jan 2020 – Jan 2022 | Riyadh, Saudi Arabia (remotely from Ottawa)

— Developed AI models for large-scale healthcare data analysis and well-being applications.

Teaching Experience

Instructor/Teaching Assistant

University of Ottawa

Sep 2021 – Present

— Taught Introduction to AI and Python Programming courses, creating curriculum and leading tutorials.

Part-time Professor

Alpha College of Business and Technology

Jan 2022 – August2024 | Toronto, Canada

— Instructed courses in AI and software development.

Skills

— **Language:** English (Fluent), Bengali (Native), Hindi (Communicative)
French (Beginner), Spanish (Beginner),

— **Technical Skills:** Machine learning model development, fine-tuning, and evaluation (TensorFlow, PyTorch), Python (advanced), version control (Git), workflow tools, cloud platforms, collaborative tools (GitHub, Jupyter Notebooks, Overleaf LaTeX)

— **Soft-Skill:** Fast-learner, dedicated, self-motivated, empathic, active listener.

— **Public Speaking:** Technical Talk, Workshop

Voluntary

— Technical Committee Member, IEEE Consumer Technology Society (CTSoc). Committee Category: Machine learning, Deep learning and AI in CE (MDA)

— Technical Committee Member, IEEE Gaming, Entertainment and Media conference, 2025.

— Technical Committee Member, IEEE International Conference On Consumer Electronics - Taiwan (Ieee Icce-Tw 2025)

— Organizer, Google Developer Group, Ottawa (Organized Tech Conferences and Talk-Sessions)

–On-Call AI/ML trainer (Attended 13 conferences as a speaker/ trainer)

Awards and Achievements

— **2025** – Nominated for North America Women in AI Awards 2025 (Category: AI for Good)

— **2021-2023**– Awarded admission scholarship, Special merit scholarship, International doctoral scholarship, Nomination for the best thesis award by the University of Ottawa