Nourhan Bayasi, **Ph.D.**

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WORK EXPERIENCE

Postdoctoral Research Fellow *July 2025 – Current*

Department of Basic and Translational Research, BC Cancer Research Institute, Vancouver, Canada

- Developing state-of-the-art continual learning and physician-in-the-loop AI systems to enhance neuroimaging and PET imaging workflows and support real-time clinical decision-making.

Founder and Mentor *March 2025 – Current*

Rising Scholars Hup (RiSH) – Online

- Founded RiSH (https://risingsh.github.io/website/), a global initiative supporting early-career researchers through mentorship, workshops, and collaborative opportunities in science and health.

Graduate Teaching Assistant *September 2020 – April 2025*

University of British Columbia (UBC), Vancouver, Canada

- Assessed and graded exams, quizzes, assignments, lab reports, and project reports under the guidance of the course professor.
- Organized the setup of lab equipment for seamless execution of lab sections as per course requirements.
- Delivered effective supervision and instruction to students during lab sections, tutorial sessions, and office hours, following the directives of the course professor.

Machine Learning Engineer Intern *April 2024 – October 2024*

Cognia AI, Vancouver, Canada

- Developed fairness and bias mitigation algorithms to ensure equitable machine learning outcomes.
- Improved continual learning systems to maintain robust model performance on evolving data.
- Advanced trustworthy AI through collaborative, transparency-focused development practices.

Graduate Academic Assistant *June 2020 – August 2020*

University of British Columbia (UBC), Vancouver, Canada

- Designed a blended online course structure and assessments to support remote teaching.
- Prepared teaching materials and integrated digital tools to enhance student engagement.

Lab Instructor, Electrical Engineering Department *August 2018 – December 2019*

Higher Colleges of Technology (HCT), Sharjah, United Arab Emirates

- Instructed lab sessions across core electrical engineering subjects and supervised student projects.
- Organized and maintained lab equipment, inventory, and safety systems.
- Supported students in national science competitions, earning top-three placements six times.

Instructor, Technical Studies Program (Vocational Program) *August 2017 – July 2018*

Higher Colleges of Technology (HCT), Sharjah, United Arab Emirates

- Designed and delivered vocational training aligned with NCFE and EAL standards.
- Conducted needs assessments and developed inclusive training resources and assessments.
- Tailored instruction to diverse learner needs, enhancing accessibility and learning outcomes.

Workshop Engineer, Electrical Engineering Department *September 2015 – July 2017*

Institute of Applied Technology (IAT), Umm Al Quwain, United Arab Emirates

- Supported student graduation projects, curriculum development, and lab operations.
- Led students to multiple first-place wins in science fairs.
- Oversaw lab setup, maintenance, and equipment procurement.

ACADEMIC EDUCATION

PhD in Electrical and Computer Engineering *January 2020 – March 2025*

University of British Columbia (UBC), Vancouver, Canada

Thesis: Beyond Catastrophic Forgetting: Advancing Continual Learning for Robust and Fair Medical Image Analysis

CGPA: 94.1%

Master of Science in Electrical and Computer Engineering *September 2013 – April 2015*
Khalifa University (KU), Abu Dhabi, United Arab Emirates
CGPA: 3.7/4

Bachelor of Science in Communication Engineering *September 2009 – April 2013*
Khalifa University (KU), Sharjah, United Arab Emirates
CGPA: 3.96/4

VOCATIONAL EDUCATION

Level 3 Award in Assessing Vocationally Related Achievement *May 2017 – May 2018*
Northern Council for Further Education (NCFE), funded by Higher Colleges of Technology (HCT)

TECHNICAL SKILLS

Software Programming
- Python
- Matlab
- C++

Hardware Programming
- Synopsys Custom Flow
- Verilog
- SystemVerilog

Simulation
- Tinkercad
- Multisim
- Simulink

HONORS AND AWARDS

- **Borealis AI Global Fellowship**, RBC's AI Research Institute 2024
- **2nd Place Winner,** Women in MICCAI (WiM) Best Oral Presentation Award, MICCAI conference 2024
- **1st Place Winner,** Women in MICCAI (WiM) Best Health Equity Paper Award, MICCAI conference 2024
- **Shortlisted,** MICCAI Best Paper Award, MICCAI Conference 2024
- **Shortlisted,** MICCAI Young Scientist Award, MICCAI conference 2024
- **Society Registration Grant**, MICCAI Conference 2024
- **Best Paper Award**, ISIC Medical Image Analysis Workshop @MICCAI Conference 2023
- **Best Paper Award**, ISIC Medical Image Analysis Workshop @ECCV Conference 2022
- **Vanier Canada Graduate Scholarship** (**Ranked Top 1, Nationwide**) 2022 – 2025
- **Four Year Doctoral Fellowship (4YF),** UBC 2022 – 2026
- **Dr. and Mrs. Brandwajn Graduate Award in Electrical and Computer Engineering**, UBC 2021
- **Faculty of Applied Science Graduate Award,** UBC 2021
- **President's Academic Excellence Initiative PhD Award,** UBC 2021
- **Student Travel Grant,** MICCAI Conference 2021
- **International Student Award,** UBC 2020 – 2022
- **Scholarship Award, PhD Studies,** UBC 2020 – 2023
- **Best Paper Award,** IEEE Transactions on Very Large-Scale Integration Systems 2016
- **Best Prototype Award, 2nd Place,** Engineering Student Renewable Energy Competition @UAE University 2013
- **Best Poster Award, 1st Place**, Undergraduate Research Conference on Applied Computing @Zayed University 2013
- **Leadership Award, Best Student Category,** KU 2013
- **Scholarship Award, Master Studies**, KU 2013 – 2015
- **President List Award,** College of Engineering, KU 2009 – 2013
- **Scholarship Award, Bachelor Studies**, KU 2009 – 2013

SELECTED PUBLICATIONS (h-index 12, updated August 2025)

JOURNALS

- **Nourhan Bayasi,** Jamil Fayyad, Alceu Bissoto, Ghassan Hamarneh, Rafeef Garbi. (2025). BiasPruner: Mitigating bias transfer in continual learning for fair medical image analysis. *Medical Image Analysis (MedIA)* – IF 11.8. p.103764.
- **Nourhan Bayasi,** Ghassan Hamarneh, Rafeef Garbi (2024). GC^2: Generalizable Continual Classification of Medical Images. *IEEE Transactions on Medical Imaging (TMI).*
- **Nourhan Bayasi**, Temesghen Tekeste, Hani Saleh, Ahsan H. Khandoker, Baker Mohammad, Mohammed Ismail. (2019). A Novel Algorithm for the Prediction and Detection of Ventricular Arrhythmia. *Analog Integrated Circuits and Signal Processing (Springer).* PP 413–426.
- **Nourhan Bayasi**, Temesghen Tekeste, Hani Saleh, Baker Mohammad, Ahsan Khandoker, Mohammed Ismail. (2015). Low-power ECG-based Processor for Predicting Ventricular Arrhythmia. *IEEE Transactions on Very Large-Scale Integration Systems (VLSI).* 24(5): 1962-1974 **[Best Paper Award]**

CONFERENCE PAPERS

• Jamil Fayyad, **Nourhan Bayasi**, Ziyang Yu, Homayoun Najjaran. (2025). LesionGen: A Concept-Guided Diffusion Model for Dermatology Image Synthesis. In proceedings of Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop (ISIC Skin Image Analysis). **[Oral]**

• Mohamed Elkhayat, Mohamed Mahmoud, Jamil Fayyad, Nourhan Bayasi. (2025). Foundation Models as Class-Incremental Learners for Dermatological Image Classification. In proceedings of Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop (EMERGE). **[Oral]**

• **Nourhan Bayasi**, Jamil Fayyad, Ghassan Hamarneh, Rafeef Garbi, Homayoun Najjaran. (2024). Debiasify: Self-Distillation for Unsupervised Bias Mitigation. In proceedings of IEEE/CVF Winter Conference on Applications of Computer Vision (WACV).

• **Nourhan Bayasi**, Jamil Fayyad, Alceu Bissoto, Ghassan Hamarneh, Rafeef Garbi. (2024). BiasPruner: Debiased Continual Learning for Medical Image Classification. In proceedings of Medical Image Computing and Computer Assisted Intervention (MICCAI). **[Early Accept, Oral]**

• **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2024). Continual-Zoo: Leveraging Zoo Models for Continual Classification of Medical Images. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) CLVISION Workshop.

• **Nourhan Bayasi**, Siyi Du, Ghassan Hamarneh, Rafeef Garbi. (2023). Continual-GEN: Continual Group Ensembling for Domain-agnostic Skin Lesion Classification. In proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop (Eighth ISIC Skin Image Analysis).

• Siyi Du, **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2023). AViT: Adapting Vision Transformers for Small Skin Lesion Segmentation Datasets. In proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop (Eighth ISIC Skin Image Analysis) **[Best Paper Award]**

• Siyi Du, **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2023). MDViT: Multi-domain Vision Transformer for Small Medical Image Segmentation Datasets. In proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).

• Siyi Du, Ben Hers, **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2022). FairDisCo: Fairer AI in Dermatology via Disentanglement Contrastive Learning. In proceedings of European Conference on Computer Vision (ECCV) Workshops. **[Best Paper Award]**

• **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2022). BoosterNet: Improving Domain Generalization of Deep Neural Nets Using Culpability-Ranked Features. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR).

• **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. (2021). Culprit-Prune-Net: Efficient Continual Sequential Multi-Domain Learning with Application to Skin Lesion Classification. In proceedings of Medical Image Computing and Computer Assisted Intervention (MICCAI). **[Early Accept]**

• Temesghen Tekeste, **Nourhan Bayasi**, Hani Saleh, Ahsan Khandoker, Baker Mohammad, Mahmoud Al-Qutayri, Mohammed Ismail. (2015). Adaptive ECG Interval Extraction. In proceedings of IEEE International Symposium on Circuits and Systems (ISCAS).

• **Nourhan Bayasi**, Temesghen Tekeste, Hani Saleh, Baker Mohammad, Mohammed Ismail. (2015). A 65-nm Low Power ECG Feature Extraction System. In proceedings of IEEE International Symposium on Circuits and Systems (ISCAS).

• **Nourhan Bayasi**, Hani Saleh, Baker Mohammad, Mohammed Ismail. (2014). 65-nm ASIC Implementation of QRS Detector based on Pan and Tompkins Algorithm. In proceedings of the International Conference on Innovations in Information Technology (IIT).

• **Nourhan Bayasi**, Temesghen Tekeste, Hani Saleh, Ahsan Khandoker, Baker Mohammad, Mohammed Ismail. (2014). Adaptive Technique for P and T Wave Delineation in Electrocardiogram Signals. In the 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS).

• **Nourhan Bayasi**, Hani Saleh, Baker Mohammad, Mohammad Ismail. (2013). The Revolution of Glucose Monitoring Methods and Systems: A Survey. In the IEEE 20th International Conference on Electronics, Circuits, and Systems (ICECS).

BOOK CHAPTERS

• Hani Saleh, **Nourhan Bayasi**, Baker Mohammad, Mohammed Ismail. (2018). Self-powered SoC Platform for Analysis and Prediction of Cardiac Arrhythmias. Springer.

• Mohammad Alhawari, Dima Kilani, Temesghen Habte, Yonatan Kifle, **Nourhan Bayasi**, Nicholas Halfors, Baker Mohammad, Hani Saleh, Mo- hammed Ismail. (2019). Self-Powered SoC Platform for Wearable Health Care. The IoT Physical Layer. Springer.

US PATENTS

• **Nourhan Bayasi**, Temesghen Habte, Hani Saleh, Ahsan Khandoker, Mohammed Ismail. (2020). Medical Device and Method for Detecting a Ventricular Arrhythmia Event. United States. Patent no. 10548499. Issued.

• Temesghen Habte, **Nourhan Bayasi**, Hani Saleh, Ahsan Khandoker, Baker Mohammad, Mahmoud Al-Qutayri, Mohammed Ismail. (2019). Medical Device having Automated ECG Feature Extraction. United States. Patent no. 10194821. Issued.

• **Nourhan Bayasi**, Temesghen Habte, Hani Saleh, Ahsan Khandoker, Mohammed Ismail. (2017). Medical Device for Detecting a Ventricular Arrhythmia Event. United States. Patent no. 9717438. Issued.

OTHER ACTIVITIES

- **Public Outreach and Membership Officer,** Women in MICCAI — 2025 – current
- **Doctoral Programs Officer,** MICCAI Student Board — 2025 – current
- **Scientific Member,** 11th Workshop on Medical Computer Vision @ CVPR — 2025
- **Reviewer,** Journal of Expert Systems with Applications, MICCAI, CVPR — 2024 – current
- **Conference Reviewer & Emergency Reviewer**, IEEE WACV — 2024 – current
- **Program Committee & Reviewer**, ISIC Medical Image Analysis Workshop @MICCAI — 2023 – current
- **Journal Reviewer**, Artificial Intelligence in Medicine — 2022 – 2023
- **Journal Reviewer**, Computerized Medical Imaging and Graphics — 2022 – 2023
- **Electronics Expert**, Emirates Skills National Competition, UAE — 2017
- **Standard Leader**, AdvancED Academic Accreditation, Institute of Applied Technology, UAE — 2016
- **STEAM Program Developer**, Engineering, Institute of Applied Technology, UAE — 2016
- **Chairman**, IEEE Khalifa University Student Branch — 2010

PERSONAL INFORMATION

- Nationality: Canadian
- DOB 1992-JAN-15