Nourhan Bayasi **MSc., Ph.D.**

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ACADEMIC EDUCATION

PhD in Electrical and Computer Engineering (Focus: Deep Learning) *January 2020 – February 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

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

WORK EXPERIENCE

Machine Learning Engineer Intern *April 2024 – October 2024*
***Cognia AI**, Vancouver, Canada*
- Developed and implemented algorithms for fairness and bias mitigation, ensuring ethical and equitable outcomes in machine learning models.
- Enhanced continual learning frameworks by improving systems that adapt and learn from new data, maintaining model robustness in dynamic environments.
- Promoted trustworthy AI practices through collaboration on projects that increased transparency, accountability, and reliability of AI systems, aligning with industry standards for ethical AI development.

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.

Graduate Academic Assistant *June 2020 – August 2020*
***University of British Columbia (UBC)**, Vancouver, Canada*
- Facilitated professor's transition to online teaching by designing a comprehensive course blueprint.
- Implemented a seamless blend of asynchronous and synchronous learning, selecting and integrating suitable tools for optimal course delivery.
- Prepared and organized presentation slides to enhance online teaching effectiveness.
- redesigned assessments to introduce flexibility and adapt to the online learning environment.

Lab Instructor, Electrical Engineering Department *August 2018 – December 2019*
***Higher Colleges of Technology (HCT)**, Sharjah, United Arab Emirates*
- Contributed to the development of labs and provided essential support for students in utilizing laboratory machinery, tools, and equipment.
- Assisted students in the resourcing and implementation phase of various student projects.
- Engaged with students in Science Fairs and Emirates Skill Competition (secured top-three placements six times).
- Managed the reception, installation, and maintenance of laboratory equipment and supplies.
- Implemented a preventative maintenance schedule for equipment, maintaining comprehensive manuals and logs.

• Demonstrated the proper use of machines, tools, and equipment within the lab.
• Oversaw consumable materials inventory, ensuring adequate stock levels for supplies.
• Established and maintained systems for tracking borrowed equipment and tools.
• Reinforced safety protocols and housekeeping procedures within the laboratory.
• Taught various labs, including Digital Circuits, Electrical Circuits, Electronics I, Electronics II, PCB, Communication Systems, SDP, etc.

Instructor, Technical Studies Program (Vocational Program) *August 2017 – July 2018*
Higher Colleges of Technology (HCT), *Sharjah, United Arab Emirates*
• Led curriculum development efforts, planning, designing, and developing training materials and assessment instruments compliant with NCFE and EAL requirements.
• Conducted thorough needs assessments to identify learner needs, crafted effective learning options to address them.
• Delivered high-standard training aligned with qualification specifications, ensuring learners achieved defined learning outcomes.
• Utilized a variety of training aids and resources tailored to suit learner needs.
• Planned and executed assessment activities in accordance with program standards.
• Updated training curriculum based on feedback and evolving business needs, including preparation of materials and training rooms for workshops.
• Tailored workshop resources to accommodate learners with diverse backgrounds, learning styles, and special needs.

Workshop Engineer, Electrical Engineering Department *September 2015 – July 2017*
Institute of Applied Technology (IAT)*, Umm Al Quwain, United Arab Emirates*
• Played a pivotal role in students' graduation projects, actively engaging in the entire process from planning to implementation.
• Participated in Science Fairs (won first prize four times).
• Assisted course instructor in developing and implementing teaching modules and projects.
• Contributed to the development of labs and provided essential support for students in utilizing laboratory machinery, tools, and equipment.
• Managed the reception, installation, and maintenance of laboratory equipment and supplies.

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
• **Runner-Up, Women in MICCAI (WiM) Best Oral Presentation Award**, BiasPruner's MICCAI Paper 2024
• **Winner, Women in MICCAI (WiM) Best Health Equity Paper Award**, BiasPruner's MICCAI Paper 2024
• **Shortlisted for MICCAI Best Paper Award**, BiasPruner's MICCAI Paper 2024
• **Shortlisted for MICCAI Young Scientist Award**, BiasPruner's MICCAI Paper 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 Scholarship,** Canada's most prestigious PhD scholarship (**Ranked Top 1**) 2022 – 2025
• **Four Year Fellowship (4YF) for PhD**, 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
• **Travel Award,** Recipient of MICCAI Student Travel Grant 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 11, updated December 2024)

JOURNALS

• **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

• **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. @ISIC Medical Image Analysis Workshop, MICCAI. 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

- **Doctoral Programs Officer,** MICCAI Student Board 2025
- **Workshop Organizer & Program Committee Member,** 11th Workshop on Medical Computer Vision @ CVPR 2025
- **Reviewer,** Journal of Expert Systems with Applications 2024
- **Conference Reviewer & Emergency Reviewer**, IEEE WACV 2024
- **Program Committee & Reviewer**, ISIC Medical Image Analysis Workshop @MICCAI 2023 – 2024
- **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