

Nourhan Bayasi PhD Student and Vanier Scholar at UBC

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ACADEMIC EDUCATION

PhD in Electrical and Computer Engineering

January 2020 – April 2025

University of British Columbia (UBC), Vancouver, Canada

Thesis: Learning Continually Under Changing Data Distributions

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)

2017 – 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.

Teaching Assistant

September 2020 – August 2024

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: Borealis 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

JOURNALS

- **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi (2024). GC²: 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. (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. Accepted.
- **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

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| • 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