# Nourhan Bayasi PhD Student and Vanier Scholar at UBC

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## ACADEMIC EDUCATION

**University of British Columbia – Canada** *Expected Graduation: June 2024*
*PhD in Electrical and Computer Engineering (Learning Continually Under Changing Data Distributions)*
CGPA: 94.1%

**Khalifa University – United Arab Emirates** *2013 – 2015*
*Master of Science in Electrical and Computer Engineering*
CGPA: 3.7/4

**Khalifa University – United Arab Emirates** *2009 – 2013*
*Bachelor of Science in Communication Engineering*
CGPA: 3.96/4

## VOCATIONAL EDUCATION

**Northern Council for Further Education (NCFE)** *2018 – 2019*
*Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice,* funded by Higher Colleges of Technology (HCT)

**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

**University of British Columbia,** Vancouver, Canada *June 2020 – Present*
***Teaching Assistant***
• 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.

**University of British Columbia,** Vancouver, Canada *June 2020 – August 2020*
***Graduate Academic Assistant***
• 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.

**Higher Colleges of Technology,** Sharjah, UAE *August 2018 – December 2019*
***Lab Instructor, Electrical Engineering Department***
• 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.

**Higher Colleges of Technology,** Sharjah, UAE *August 2017 – July 2018*

***Instructor, Technical Studies Program (Vocational Program)***

• 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 and 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.

**Institute of Applied Technology,** Umm Al Quwain, UAE *September 2015 – July 2017*

***Workshop Engineer, Electrical Engineering Department***

• 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

• **Best Paper Award**, ISIC Medical Image Analysis Workshop @MICCAI 2023
• **Best Paper Award**, ISIC Medical Image Analysis Workshop @ECCV 2022
• **Vanier Scholarship,** Canada's most prestigious PhD scholarship (Ranked Top 1) 2022
• **Four Year Fellowship (4YF) for PhD,** University of British Columbia 2022
• **Dr. and Mrs. Brandwajn Graduate Award in Electrical and Computer Engineering**, University of British Columbia 2021
• **Faculty of Applied Science Graduate Award,** University of British Columbia 2021
• **President's Academic Excellence Initiative PhD Award,** University of British Columbia 2021
• **Travel Award,** Recipient of MICCAI Student Travel Grant 2021
• **International Student Award,** University of British Columbia 2021 – 2023
• **Scholarship Award, PhD Studies,** University of British Columbia 2020 – 2025
• **Best Paper Award,** IEEE Transactions on Very Large-Scale Integration 2016
• **Best Prototype Award, 2nd Place,** Engineering Student Renewable Energy Competition @UAE University 2013
• **Leadership Award, Best Student Category,** Khalifa University 2013

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- **Scholarship Award, Master Studies,** Khalifa University 2013 – 2015
- **President List Award,** College of Engineering, Khalifa University 2009 – 2013
- **Scholarship Award, Bachelor Studies,** Khalifa University 2009 – 2013

## SELECTED PUBLICATIONS

**JOURNALS**

• **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. Continual-Zoo: Leveraging Zoo Model for Continual Medical Image Classification. Submitted to IEEE TMI in Nov. 2023.

• **Nourhan Bayasi**, Ghassan Hamarneh, Rafeef Garbi. GC2: A Novel Framework for Generalizable Continual Classification of Medial Data. Submitted to IEEE TMI in Nov. 2023.

• **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 (VLSI) Systems. 24(5): 1962-1974 **[Best Paper Award]**

**CONFERENCE PAPERS**

• **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. Springer. In proceedings of Medical Image Computing and Computer Assisted Intervention (MICCAI).

• 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). Med- ical 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 Ar- rhythmia Event. United States. Patent no. 9717438. Issued.

## OTHER ACTIVITIES

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| • **Program Committee & Reviewer**, ISIC Medical Image Analysis Workshop @MICCAI | 2023 |
| • **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 |