# Yasien Ghalwash

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## Education

- **Queensland University of Technology** — Brisbane, Australia
  *Ph.D in Information Technology* — *Sep 2024 – Present*
  - **Thesis:** Rethinking Energy Harvesters as Sensors: A New Paradigm for Continuous Motion Tracking
  - **Supervisors:** Sara Khalifa and Raja Jurdak
- **Cairo University, Faculty of Engineering** — Cairo, Egypt
  *Bachelor of Biomedical Engineering, GPA: 3.5/4.0* — *Sep 2018 – Jul 2023*
  - **Courses:** Machine Learning, Computer Vision, Computer Graphics, Probability, Statistics, Calculus, Linear Algebra, Digital Signal Processing, Data Structures, Algorithms, Databases, Embedded Systems

## Research and Industry Experience

- **Hamburg University of Technology (TUHH)** — Australia & Germany
  *Research Collaborator, UA–DAAD Joint Research Project* — *Jan 2026 – Present*
  - Contributing to the UA–DAAD funded Australia–Germany joint research project: *Intermittently Powered & Configurable Machine Learning for Water Monitoring.*
  - Developing intermittently powered machine learning systems for energy-constrained environmental sensing platforms.
  - Collaborating with interdisciplinary researchers from QUT and TUHH on system design, implementation, and experimental evaluation.
  - Investigating adaptive and energy-aware ML algorithms for continuous sensing using energy harvesting devices.
- **Queensland University of Technology** — Brisbane, Australia
  *Sessional Academic (Applied Internet of Things - IAB330)* — *Jul 2025 – Nov 2025*
  - Facilitated weekly practical sessions for undergraduate students, focusing on the design, deployment, and hardware-software integration of IoT systems.
  - Guided students in sensor interfacing, cloud connectivity, and data visualization using edge computing platforms.
  - Provided technical mentorship on student project prototypes, troubleshooting networking and hardware constraints.
- **Inspire for Solutions Development** — Cairo, Egypt
  *AI Engineer* — *Nov 2023 – Aug 2024*
  - Fine-tuned Large Language Models (LLMs) using advanced NLP techniques to translate Saudi dialect Arabic into Modern Standard Arabic with high accuracy.
  - Implemented model compression techniques, including quantization and pruning, improving inference efficiency for resource-constrained deployments.
- **Astute Imaging** — Remote
  *R&D Engineer* — *Jul 2022 – Aug 2023*
  - Designed and developed a CAD system architecture integrated with PACS to automate AI-based clinical decision workflows using Orthanc and FastAPI.
  - Optimized deep learning models for CPU/GPU deployment, reducing inference time from 3 minutes to 30 seconds (6× speedup).
  - Containerized system components using Docker and managed deployment on Microsoft Azure Virtual Machines.
  - Developed medical imaging models using U-Net, Attention U-Net, and EfficientNet architectures.
  - **Tools:** PyTorch, TensorFlow, FastAPI, OpenCV, Orthanc, Docker, Microsoft Azure

## Projects

- Computer-Aided Breast Cancer Lesion Segmentation & Classification (PACS, DICOM, FastAPI, Docker, TensorFlow, Azure) End-to-end PACS-integrated system for automatic segmentation and classification of breast cancer ultrasound images. Integrated with a DICOM viewer providing image processing tools for physicians. (2023)
- Face Recognition using Variational AutoEncoders (TensorFlow, VAE) Facial detection model that learns latent variables in face datasets to adaptively re-sample training data for improved performance. (2022)
- LSTM Music Generator (TensorFlow, RNN, LSTM) Trained an LSTM model to predict the next character in song sequences and generate new music compositions. (2022)
- GI Tract Image Segmentation (TensorFlow, U-Net) Developed a segmentation model for MRI scans to isolate the stomach and intestines, enabling more precise radiation therapy and protecting healthy tissues.
- Autonomous Driving Car Detection (TensorFlow, YOLO) Implemented the YOLO algorithm to extract bounding boxes and identify the real-time positions of vehicles for autonomous navigation systems.

## Publications

- **Ghalwash, Y.**, Khamis, A., Sandhu, M., Khalifa, S., Jurdak, R., & S. K. Das. "From power to position: Continuous trajectory tracking with wearable solar harvesters." IEEE Transactions on Mobile Computing, under review 2026
  *[D1 Journal]*

- **Ghalwash, Y.**, Khamis, A., Sandhu, M., Khalifa, S., & Jurdak, R. "SolarTrack: Exploring the Continuous Tracking Capabilities of Wearable Solar Harvesters." In Proc. IEEE PerCom. 2026
  *[A* Conference]*

- **Ghalwash, Y.** "Rethinking Energy Harvesters as Sensors: A New Paradigm for Continuous Motion Tracking." In Proc. IEEE PerCom PhD Forum. 2026
  *[A* Conference]*

- Salem, S., Mostafa, A., **Ghalwash, Y.**, et al. "Computer-Aided System for Breast Cancer Lesion Segmentation and Classification Using Ultrasound Images." In Proc. IEEE EHB. 2023

## Honors and Awards

- Student Travel Grant, IEEE PERCOM 2026
- Best Poster Award, QUT Energy Transition Centre Retreat 2025
- Best Presentation Award, IS Doctoral Consortium, School of Information Systems, QUT 2025
- HDR Accomplishment Award, School of Information Systems, QUT 2025

## Presentations

- IEEE PERCOM (Main Track) 2026
- IEEE PERCOM (PhD Forum) 2026
- QUT Energy Transition Centre Retreat 2025
- IS Doctoral Consortium, School of Information Systems, QUT 2025

## Leadership and Community Service

- **QUT Energy Transition Centre (ETC)** Brisbane, Australia
  *HDR Representative* *2026 – Present*
  - Represent Higher Degree Research (HDR) students within the centre, contributing to governance, feedback, and community-building initiatives.
  - Facilitate communication between HDR students and centre leadership, supporting research culture and collaboration.

- **Resala Charity Organization** Cairo, Egypt
  *Volunteer Team Lead* *Jul 2016 – Aug 2022*
  - Led a team of 10 volunteer in the building and renovation of mosques and schools across Cairo over six years of sustained community service.
  - Coordinated fundraising campaigns and managed public-relations activities supporting the organisation's educational and infrastructure programs.

- **STP (Science, Technology, Projects)** Cairo, Egypt
  *Internet of Things Instructor* *Sep 2020 – Oct 2021*
  - Designed the IoT curriculum and practical workshop content in coordination with the instructional team.
  - Mentored participant teams through 10+ hands-on embedded systems and IoT projects.
  - Designed and led the capstone design competition in which participants built a smart parking system.

## Skills Summary

- Languages Python, C/C++, Java, SQL
- Frameworks & Libraries FastAPI, PyQt, Vtk.js, Scikit-learn, Pandas, PyTorch, TensorFlow, OpenCV, MONAI, WandB, Django, Flask
- Software Development OOP, Design Patterns, Git, Docker
- IoT & Embedded Systems STM32, ESP8266, Arduino, Raspberry Pi