

Karen Jane Dsouza

Stockholm, Sweden | <https://www.linkedin.com/in/karen-jane-dsouza/> +971 50 1734006 | karen.dsouza@outlook.com

EDUCATION

KTH Royal Institute of Technology

Stockholm, Sweden

MSc in Systems, Control and Robotics

Graduation Date: Aug 2025

- Skills gained: Sensor Integration and robotic manipulation, Computer Vision and Image Processing, Modeling of Dynamic Systems, Python and Robot Operating System (ROS)
- Key Project: Study on robotics handover of objects based on weight and other object properties- using implicit behavioural prompts and other aspects of social robotics; Implementing a multi-robot navigation and parking system
- Thesis Project: Development of a robotic solution replicating human pipetting behaviour to create a standard testing benchmark for process accuracy. The solution includes the use of a UR5 to mimic pipetting movements while a camera vision system is developed for the detection of pipetting events and tracking of the wells of the Microtiter plates.

Heriot-Watt University

Dubai, UAE

MSc in Software Engineering

Graduation Date: Aug 2025

- Skills gained: Java, Python, SCRUM, Agile, GitHub, Unity, C#, Text Analytics and Natural Language Processing, Software design and development frameworks, Machine Learning
- Thesis Project: Involved in developing and facilitating a Robotic Orchestration Layer for a Laboratory setting. This proposed layer is supposed to create robotic missions based on the tasks proposed by a Process Orchestration Platform. This layer can also communicate with other IT/OT layers, including device interaction and infrastructure control. This project includes the development of device drivers as well as the implementation of other communication protocols for custom systems.

Heriot-Watt University

Dubai, UAE

B. Eng (Hons) in Robotics, Autonomous, and Interactive Systems Engineering

Graduation Date: May 2023

- Skills gained: Python, Java, Lua, C++, Arduino and Python, GitLab, Robotic design and building, Signal Processing, Linear control systems, robotic localization and mapping using Monte Carlo algorithm and SLAM.
- Organizations/Awards: Deputy Principal's Award, University Prize, Class Representative, WattBuds (Big Bud)
- Projects completed: Swarm robotics for poultry monitoring through wellbeing markers and disease prevention and prediction, custom-built mobile 3DOF robotic arm used within the aluminum industry

WORK EXPERIENCE

Boehringer Ingelheim

Biberach, Germany/ Dubai, UAE

Engineering Intern

06/2024-now

- Designed and developed a medicine sample tracker Power Apps solution. Use a standardized platform to track the dispensing of medicine samples to Healthcare Professionals across South Africa for Animal Health.
- Designed and developed a contract tracker Power Apps solution. The platform tracks approval and signing statuses for distributor terms across the IMETA region (India, Middle East, Turkey and Africa).
- Developing a robotic solution replicating human pipetting behaviour to create a standard testing benchmark for process accuracy. The solution includes the use of a UR5 to mimic pipetting movements while a camera vision system is developed for the detection of pipetting events and tracking of the wells of the Microtiter plates.
- Involved in developing and facilitating a Robotic Orchestration Layer for a Laboratory setting. This proposed layer is supposed to create robotic missions based on the tasks proposed by a Process

Orchestration Platform. This layer can also communicate with other IT/OT layers, including device interaction and infrastructure control.

Dexter Robotics

Summer Intern

Abu Dhabi, UAE

06/2022-09/2022

- Design, development and testing of an Android mobile app to control a custom ROS-based robot tele-operation while in a small two-person team.
- Development and testing of custom ROS-nodes to integrate all form factors of mobile controllers into the environment of the robot.
- Enhanced skills in developing user-friendly interfaces and understanding human-robot interaction.

Boehringer Ingelheim

Systems Analyst- IT(Marketing + Sales)

Dubai, UAE

05/2021-08/2021

- Supported SSO Integration for Double3 robot to simplify the process of allowing users to join in from different regions and use the robots to navigate the workplace.
- Facilitated Single-Sign On Integration with Microsoft Azure for a micro-learning platform (Axonify)- simplified the login experience for over 500 sales reps users.
- Led the design, creation, and development of Salesforce CRM platform- saved the animal health business significant development/implementation cost (approx. €175,000), value realized with good adoption rate by the business.
- Designed and developed a budget tracker Power Apps solution for marketing events. By using a single platform, budget planning process was standardized across Middle East and Africa regions for Animal Health.
- Designed and developed a Just-In-Time knowledge solution using Power Automate for Customer Value Managers and Medical Operations team across the Middle East and Africa Region.
- Performed profile cleanup on the global Veeva CRM platform to resolve an audit finding by quality. This ensured the CRM platform continued to meet and maintain GxP compliance.

KEY PROJECTS

NurseBot- Phoenix Contact Xplore Automation Award

Wheeled Mobile Robot with application in Healthcare Industry

Dubai, UAE

06/2022-10/2023

- Worked in a two-person team for the development of an autonomous non-contact vitals collection robot to address the spread of infectious disease and nurse burnout in hospitals, securing a €3,700 budget for development
- Designed and fabricated a robot powered by NVIDIA Jetson Nano, featuring LiDAR navigation, patient recognition via computer vision, and Transdermal Optical Imaging (TOI) for vitals. Used ROS melodic and Python3 for coding.

Design and Development of a Swarm-Based Robotics Solution for Livestock Wellbeing

Monitoring and Early Disease Detection in the Poultry Industry

Swarm Robots with application in Poultry Farming

Dubai, UAE

09/2022-04/2023

- Development of Arduino Uno and Raspberry Pi based prototype for the creation of a custom robot for measuring ground level atmospheric data such as Ammonia, Carbon Dioxide, pH, Temperature and Humidity to understand biomarkers within poultry farms. - [Link to Profile](#)
- Deriving insights of possible disease detection and prevention based on obtained data points.
- Development of ROS-based prototype using Arduino UNO and ROSBot2 PRO robots.
- Identification of dead chickens based on ultrasonic sensors, PI sensors and Temperature Sensors.

Development of PLC-based mobile 3 degrees of freedom Robotic Arm

Industrial Robot

Dubai, UAE

02/2023-03/2023

- Fabricated a PLC-based industrial robot featuring a mobile base and a 3 DoF robotic arm, integrating 16 sensors, 3 linear actuators, 1 DC motor, 1 stepper motor, and motor drivers.

- Used a Weidmuller Automation Controller to drive the motors of the arm and used their web IDE to create a web-based application for remote control of robot and receiving of sensor information from the robot.
- The designed robot is robust and can survive hostile environments with temperatures up to 80°C and magnetic fields of up to 500 gauss.

ACHIEVEMENTS

Phoenix Contact – 1st Place in Xplore Automation Award **2023**
This is awarded for the best project in the Social and Health Category. The project submitted was the NurseBot for automated Triage. The award included a cash prize as well.

Jame Dyson Award- National Runner Up **2023**
This is awarded for development in product design, industrial design and engineering.

Phoenix Contact Middle East - Automation Award (Year 4) **2022-2023**
This is awarded to the outstanding Final Year Project in Automation for the degree of Electrical and Electronic Engineering or the degree of Robotics, Autonomous and Interactive Systems.

Deputy Principal's Award (Year 4) **2022-2023**
This Award is presented to students who have achieved Grade A in six or more courses studied as part of their undergraduate degree programme during an academic year.

Deputy Principal's Award (Year 3) **2021-2022**
This Award is presented to students who have achieved Grade A in six or more courses studied as part of their undergraduate degree programme during an academic year.

Deputy Principal's Award (Year 2) **2020-2021**
This Award is presented to students who have achieved Grade A in six or more courses studied as part of their undergraduate degree programme during an academic year.

University Prize (Year 2) **2020-2021**
This Award is presented to students who have scored the highest Aggregate marks during an academic year.

Sheikha Fatima Award **2017-2018**
This Award is presented to the student who have achieved the highest aggregate grade along with extracurricular activities and volunteering opportunities.

Global Village Victory Project **2017-2018**
Won 1st place on behalf of my school. The objective of the project was to showcase our artistic skills while displaying the values and the culture of the UAE.

Principal's Award **2017-2018**
This Award is presented to the student who have achieved the highest aggregate grade along with extracurricular activities and volunteering opportunities.

PUBLICATIONS

Karen Jane Dsouza, Senthil A Muthukumaraswamy, "A Robotics-Based Surveillance System for Livestock Wellbeing and Early Disease Detection in Poultry Farms", *2023 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), IEEE*, 26,05,2023

Adwaith Sajikumar, **Karen Jane Dsouza** , Prashant Kumar Soori, "PLC-Based Control of General-Purpose 3 Degrees of Freedom Industrial Robotic Arm", *Journal of Pharmaceutical Negative Results*, pp. 5832–5842, Dec. 2022.

Karen Jane Dsouza, Adwaith Sajikumar, Senthil A Muthukumaraswamy, “On the Analysis and Application of Bio-Inspired Algorithms for Smart Navigation in Mobile Healthcare Robots”. 2024 *International Conference on Electrical, Control and Instrumentation Engineering (ICECIE)*, IEEE, 24,11,2024

Karen Jane Dsouza, Senthil A Muthukumaraswamy, Girish Balasubramaniam, “On the Analysis of Swarm Robotics in Sensor-Based Environmental Monitoring for Sustainable Poultry Farming”. 2024 *International Conference on Information and Communication Technology for Competitive Strategies (ICTCS)* (Accepted to publish)

Karen Jane Dsouza, Parag Khanna, Chunyu Wang, Mårten Björkman, Claes Christian Smith, “YCB-Handovers Dataset: Analyzing Object Weight Impact on Human Handovers to Adapt Robotic Handover Motion.”. (Under Review)

SKILLS & INTERESTS

Robotics & Control Systems

Robot Operating System (ROS), Sensor Integration, Robotic Manipulation, SLAM, Motion Planning, Multi-Robot Coordination, Industrial Robotics, PLC-based Systems, UR5, Robotic Orchestration

Software & Programming

Python, Java, C/C++, C#, Lua, Arduino, MATLAB, Git/GitHub/GitLab, Power Automate, Power Apps, Unity

Computer Vision & AI

OpenCV, Image Processing, Machine Learning, Time Series Data Analysis, Text Analytics, NLP, Bio-Inspired Algorithms,

Tools & Platforms

Salesforce CRM, Veeva CRM, Jetson Nano, Raspberry Pi, Arduino, Weidmuller Controllers, Android Studio, Azure DevOps, Microsoft Power Platform, Microsoft Office, JIRA, Docker

Development Methodologies

Agile, SCRUM, Software Design Patterns, Version Control, Unit and Integration Testing, Rapid Prototyping and Iteration

Interdisciplinary & Applied Experience

Healthcare Robotics, Swarm Robotics, Autonomous Navigation, Environmental Monitoring, HRI (Human-Robot Interaction), Industrial Automation, Social Robotics

Soft Skills

Project Management, Technical Writing, Cross-functional Collaboration, Knowledge Presentation through Conferences and Knowledge Hours