Gokulan Nithianandam

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## Education

**University of Bath** **September 2021 – September 2022**

**MSc Robotics and Autonomous systems (IET Accredited)**

- Achieved an Upper Second-Class Honours.
- Dissertation: Non-Invasive Motor Imagery Classification using deep learning models
- Modules include Robotics platform, Robotics software, Autonomous systems, Embedded systems design, Reinforcement learning, Sensors and instrumentation.

**University of Brighton** **September 2014 – June 2018**

**BENG (Hons) Electrical and Electronics Engineering (With integrated placement year) (IET Accredited)**

- Achieved a First-Class Honours.
- Dissertation: High voltage DC transmission using voltage source convertor.
- Modules include Digital electronics, analogue electronics, High voltage power, distribution and utilization, Mathematics and control.

## Work Experience

**Brillopak Limited – East Peckham, UK.**

**Controls engineer** **September 2020 – Present**

- Demonstrated expertise in developing high-speed pick and place robotic systems from concept to completion using EV+ and C# programming languages.
- Designed and executed control systems for multiple industries, including manufacturing, agriculture, and food production.
- Programmed robotic arms, such as articulated, delta, and cartesian robotic arms, to ensure maximum efficiency of the robotic systems.
- Developed and implemented functional designs for safety PLC, control system, and interface to ensure the highest level of safety and efficiency of the robotic systems.
- Successfully implemented a 2D vision system to check the quality and position of up to 120 packs per minute, enabling the robots to pick non-uniform products and place them in the desired position.
- Developed and implemented a vision system to detect damaged fruits inside a package using a pre-trained deep learning model, achieving 97% accuracy.
- Involved in customer P&ID and FAT phases of the project..
- Successfully managed commissioning and installation phases of multiple projects worth over ¬£2 million and completed them before the proposed deadline.

**Graduate controls engineer** **September 2018 – September 2020**

- Conducted simulations and tests to validate system design and performance prior to sales, ensuring product functionality and quality.
- Tested sensors and actuators from various manufacturers to identify the most effective components for improving system performance and accuracy.
- Provided technical support to customers to improve system performance and resolve system issues, ensuring customer satisfaction and product reliability.

**Webster Griffin Limited – Crowborough, UK.**

**Trainee electrical design engineer** **July 2016 – July 2017**

- Designed single-phase and three-phase control systems using Solidworks Electrical and AutoCAD software packages, and created bills of materials using Microsoft Dynamics NAV.
- Streamlined the design process and reduced design timescale by developing macros for standard systems and implementing electrical schematic design and panel layout design in one software package.
- Improved system design by introducing line drawing and terminal configuration drawing, enhancing understanding of system wiring and sensor positions.
- Conducted research on communication protocol enabled sensors and motor starters, and successfully implemented them in real-time systems, resulting in fault-free wiring and reduced wiring time.
- Developed a simulation software using Python language to demonstrate the system's working concept to clients, enabling the company to showcase the system's functionality and effectiveness.

## Technical Skills

PLC programming (Omron's Sysmac studio, Codesys)

PLC programming languages (Structured text, Ladder logic, Sequential function chart)

Robots (Omron's Adept)

Network architecture (Ethernet/IP, Ethercat, IO-Link)

Programming languages (C#, Python)

Simulation and modeling (Gazebo, CoppeliaSim)

## Projects

- Successfully implemented an autonomous lunar lander using reinforcement learning methods, including Deep Q Learning and Sarsa, demonstrating strong proficiency in artificial intelligence and robotics.
- Designed and implemented an autonomous turret using OpenCV vision library and Raspberry Pi hardware to detect human movement, showcasing expertise in computer vision and embedded systems.
- Implemented pre-trained deep learning model MobileNetV2 to realize transfer learning technique and data augmentation methodology to detect wildfires using UAV. The MobileNetV2 is trained and validated with the help of the MATLAB software's Deep Network Designer.
- Programmed bolt-making machines using Omron PLC, exhibiting technical proficiency in industrial automation and control systems.

## Other Skills and Interest

Volunteered with the Crowborough Pantomime Club as an actor in pantomime shows and assisted with various technical activities to support the organization's productions. Participated in running events as a member of the Crowborough Running Club, demonstrating a passion for community involvement and physical activity. Actively engaged in volunteering as a member of the Bath University Triathlon Club, showcasing a commitment to contributing to extracurricular activities and supporting fellow students.

## References

Available upon request.