Dear Sir/Madam,

Reference: Robotics Engineer

I'd like to highlight some of my experience and skills and why I believe that I am a good fit for the role. I have recently completed my **MSc** in **Robotics** at **Cranfield University** with a focus on **industrial mobile robots** and **manipulators**. I have completed my **bachelor's degree** in **Mechatronics Engineering** with a strong influence in **robotics, electronics** and **electromechanical systems**. With my expertise in **SOLIDWORKS** during the final year of my undergraduate studies, I with a team of three capable mechatronics engineers carried out a **research project** based on mobile robots and **robot manipulators** named "*Design and Development of Mobile Manipulator for Warehouse Application*", keeping in mind the aim of reducing production loss, due to different factors like time, manual mistakes and much more. In addition to the design, I have also taken sole responsibility in the **Embedded Electronics (Hardware)** section. My experience in **electronics** has helped me select all the electronic components for the mobile robot including brainstorming different **motors** and **sensors** based on **calculations** of **torque, force** and much more. On the **software** side of this project, using different **plugins, libraries,** and a bit of **C++ programming** I have also worked **on robot path planning** and **obstacle avoidance** in **Unity 3D**, considering the different factors like **wheel friction**, **slippage**, and **reaction force**. During my postgraduate studies, my experience in **CAD** helped me **design** a **robot end-effector** for an **academic project** titled *"Engine Case Assembly Using Industrial Robot Manipulators"*. The end effector was used to pick up the engine cases, place them on top of one another, and secure them with nuts and bolts. Another **academic project** titled *"Human-Robot Interaction of Mobile Robots in Industrial Applications"* was an opportunity for me to again showcase my **CAD** and **electronics** skills by innovating the mobile robot I designed during my undergraduate studies. I introduced a **Human-Robot Interaction (HRI)** feature for intuitive communication between the workers in the warehouse and the robot. Besides the HRI system, I have also upgraded the electronic systems with much more powerful yet power-efficient components. During the **MSc group project** titled "Robot Room Service" I worked on **robot obstacle avoidance, detection,** and **path planning**. For robot obstacle avoidance, detection, and path planning, the **local and the global path planning systems** are important to consider. I have worked with a couple of different local and global path planning systems like **A* Algorithm, TEB local planner,** and **DWA local planner**. The project was simulated on **Robot Operating System (ROS)**. My work on this project has helped me to brush up on my **ROS knowledge** and **sharpen** m**y skills** in **ROS**. I finally concluded my MSC with an **individual research** project titled "Hybrid framework for autonomous mobile robot collision avoidance". The project was about how **robot path planning** and **obstacle avoidance** in a **dynamic environment** could be made much more optimised and promising using the combination of **Machine Learning** with already available **traditional approaches**. A traditional approach like the **A* algorithm** was used for path planning and for obstacle avoidance, due to dynamic environmental complexities, machine learning was used. When compared to traditional approaches being used for obstacle avoidance, it was seen that due to the **learning-based approach** of the robot, the **robot performed better** with the machine learning approach. The project was solely carried out in ROS. This project has helped me dig deep and understand the concepts of ROS and Machine Learning. Additionally, I use my free time to gain more knowledge and sharpen my skills in **ROS, MATLAB, CAD software, electronics (hardware), physics** and **mathematics**. During my undergraduate studies, I have undergone academic training in **Embedded Electronics, Internet of Things,** and **Industrial Manufacturing**. I have also shared my knowledge with students new to topics like designing and autonomous systems through interactive seminars giving them a basic understanding of how things get done and helping them take their first step toward designing, developing, and building.

Apart from the inclusion in the MSc Robotics Curriculum at Cranfield University, I've completed an online course on **Industrial Robotics ABB** using **ABB RobotStudio** that not only brushed up my knowledge but also taught me how to **control and program an ABB robot** using the **Teach Pendant**. I have also learned all the functionalities of the Teach Pendant and its use in controlling the robot in both automatic and manual modes in detail.

I'm currently employed with Carl Zeiss Microscopy Ltd as a Final Test Engineer. I'm working on different High Resolution Field Emission Scan Electron Microscopes (FE-SEMs) Manufactured, Assembled and Tested by the High Quality Imaging and Advanced Analytical Microscopy section of Carl Zeiss, the pioneer of science in optics and optoelectronics . Final testing of all the High Precision aspects, before it's being delivered to the customer. The skills I've gained on this job role are: **Mechanical Testing**, **Electronic Testing**, Electron Optics, **Automated Software Testing**, **High Precision Testing**, Automation, Mechatronics. My experience in working with mechatronics and automation systems have helped me to secure this job.

The core values of the company are in line with the qualities I am looking for in a job and an employer. I believe that this alignment, together with my existing experience and improved technical skills through the undertaking of my MSc and a bachelor's degree would enable me to contribute immediately and significantly to the role moving forward.
*Please view my projects and analyse my practical efficiency via the link below:*
**https://github.com/anomitra18/anomitramukhopadhyay.git**

I enclosed my CV for your attention and am happy to provide any further information in support of my application. I appreciate your thought and effort, and I hope to hear from you soon.
Yours faithfully,
Anomitra Mukhopadhyay