



## **ROBOTICS WITH NIRYO NED 2**

### **PROJECT TITLE: PRODIGI COBOT**

*Under The Guidance of*

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## **ABSTRACT**

This report presents a novel application of the Robot Operating System (ROS) in conjunction with an infrared (IR) sensor to control a Niryo robot for automating a pick-and-place process in the context of chocolates. The objective of this project is to enable the Niryo robot to autonomously detect chocolates using the IR sensor and accurately manipulate them using a pick-and-place mechanism. To facilitate the transportation of chocolates to a predefined position, a conveyor system is integrated into the script, offering control over speed and direction. It has the following methodologies used:-

### *Pick and Place:*

The core functionality of the system is the implementation of a pick-and-place process, which enables the Niryo robot to perform autonomous chocolate handling. The pick-and-place poses, carefully defined to ensure precise manipulation of chocolates, are used to guide the robotic arm's orientations during the process. This functionality allows the robot to pick up chocolates from one location and accurately place them at another designated position, streamlining the chocolate handling workflow.

### *Conveyor System:*

In addition to the pick-and-place capability, the script incorporates a conveyor system into the setup. The conveyor system plays a crucial role in transporting chocolates to a specified location before initiating the pick-and-place process. With control over the conveyor's speed and direction, the system ensures that chocolates are positioned optimally for efficient pick-and-place operations. This integration enhances the overall efficiency and throughput of the chocolate handling process.

### *Infrared Sensor (IR):*

A key component of the system is the infrared (IR) sensor, specially designed for chocolate detection. The IR sensor is capable of detecting the presence of chocolates within its range. When a chocolate is detected, the script triggers the pick-and-place operation, initiating the Niryo robot's movement to pick up the chocolate and accurately place it at the predefined location. This seamless integration of the IR sensor with the robotic system enables precise and reliable chocolate detection.

The combined functionality of the pick-and-place process, conveyor system, and IR sensor demonstrates the efficiency and autonomy achieved in the chocolate handling process. The proposed

system can find practical applications in the confectionery industry, where automated pick-and-place processes are sought after to optimize production and reduce human involvement in repetitive tasks. Additionally, this project showcases the potential of ROS as a versatile and robust platform for controlling robotic systems with various sensors, making it a valuable contribution to the field of robotics and automation.

Furthermore, it is designed to be user-friendly and can be easily packed, making it a collaborative robot (cobot) that can be effortlessly utilized by users. The ROS framework, along with the IR sensor and conveyor system, empowers the Niryo robot allows for efficient and execute seamless chocolate autonomous detection, transportation, and manipulation during the pick-and-place process. It's essential functionalities, showcasing its effectiveness in automating the pick-and-place operation for chocolates, thereby enhancing productivity and efficiency in relevant applications.

GITHUB LINK TO OUR REPOSITORY:-

<https://github.com/Vignesh16200/Robotics-Using-Ned2-Prodigi-cobot.git>