Mounting An AGX ORIN Onto A Reachy Robot

## Overall goal

## The internship focused on integrating a Jetson AGX Orin Developer Kit with the Reachy robot by learning both platforms, programming Reachy in Python, designing a 3D-printed holder for the Orin, and creating a step-by-step integration guide. An efficient communication method between the two computers was also implemented for seamless interaction.

## Background

## Before integrating the two computers, I reviewed Reachy’s documentation to understand its components and connection methods. Using a workstation PC and Wi-Fi, I developed code for teleoperation with an Xbox controller and tested waypoints and basic arm movements.

## I also built CAD skills in Onshape to design a custom holder for mounting the AGX Orin to Reachy’s base and researched compatible wires and batteries to power it.

## Equipment

The following equipment was used in the process of mounting the AGX Orin onto Reachy:

* Nvidia Jetson Orin AGX
* K&F Concept 99Wh Battery
* SZRMCC USB-C to DC Power Cable  
  Ethernet cable
* PLA filament
* HDMI cable
* Monitor
* 4 × 3 mm × 40 mm screws, 4 × 3 mm nuts, 4 × 3 mm washers
* 2 × 3.5 mm × 15 mm screws, 2 × 3 mm nuts, 2 × 3 mm washers

## Process

## CAD model

To mount the AGX Orin, I designed a 3D-printed holder composed of four main parts:

1. Tray – Holds the AGX Orin with a dedicated slot for the power buttons to prevent accidental triggering, as well as an opening to access all ports.
2. Clamp Piece 1 – Attaches to Reachy’s support pole and, together with Clamp Piece 2, secures the tray in place.
3. Clamp Piece 2 – Reinforces the attachment around the pole.
4. Legs – Elevates the tray to ensure it does not obstruct the LIDAR sensor, which is essential for collision detection.

## Process – Setting up the Reachy

1. Connect the reachy to monitor (HDMI).
2. Assign a static IP (I used ping 192.168.100.1) to Reachy.
3. Disconnect the Reachy from the Monitor

## Process – Setting up the AGX

1. Connect the AGX Orin to the K&F battery (DC cable) and a monitor (HDMI).
2. Using the initial startup flash the AGX’s system
3. Then install **Python 3.8** along with the **Reachy SDK** and **ROS 2**.
4. Assign a static IP (I used ping 192.168.100.100) to the AGX.

## Process – Physical Mounting

1. Connect AGX Orin to Reachy via an Ethernet cable.
2. Verify connectivity by pinging Reachy from the AGX Orin.
3. Place the K&F battery inside Reachy’s base and secure it with Velcro, ensuring the power cable reaches the AGX Orin through the gap around the pole.
4. Assemble the 3D-printed holder:

* Attach Clamp Piece 1 (part 2) and Legs (part 4) to the Tray (part 1) using 3 mm screws, washers, and nuts.
* Attach the holder onto the support pole using Clamp Piece 2 (part 3) with 3.5 mm screws, washers, and nuts.

1. Insert the AGX Orin into the holder to complete the mounting process.