第十八組期末專題
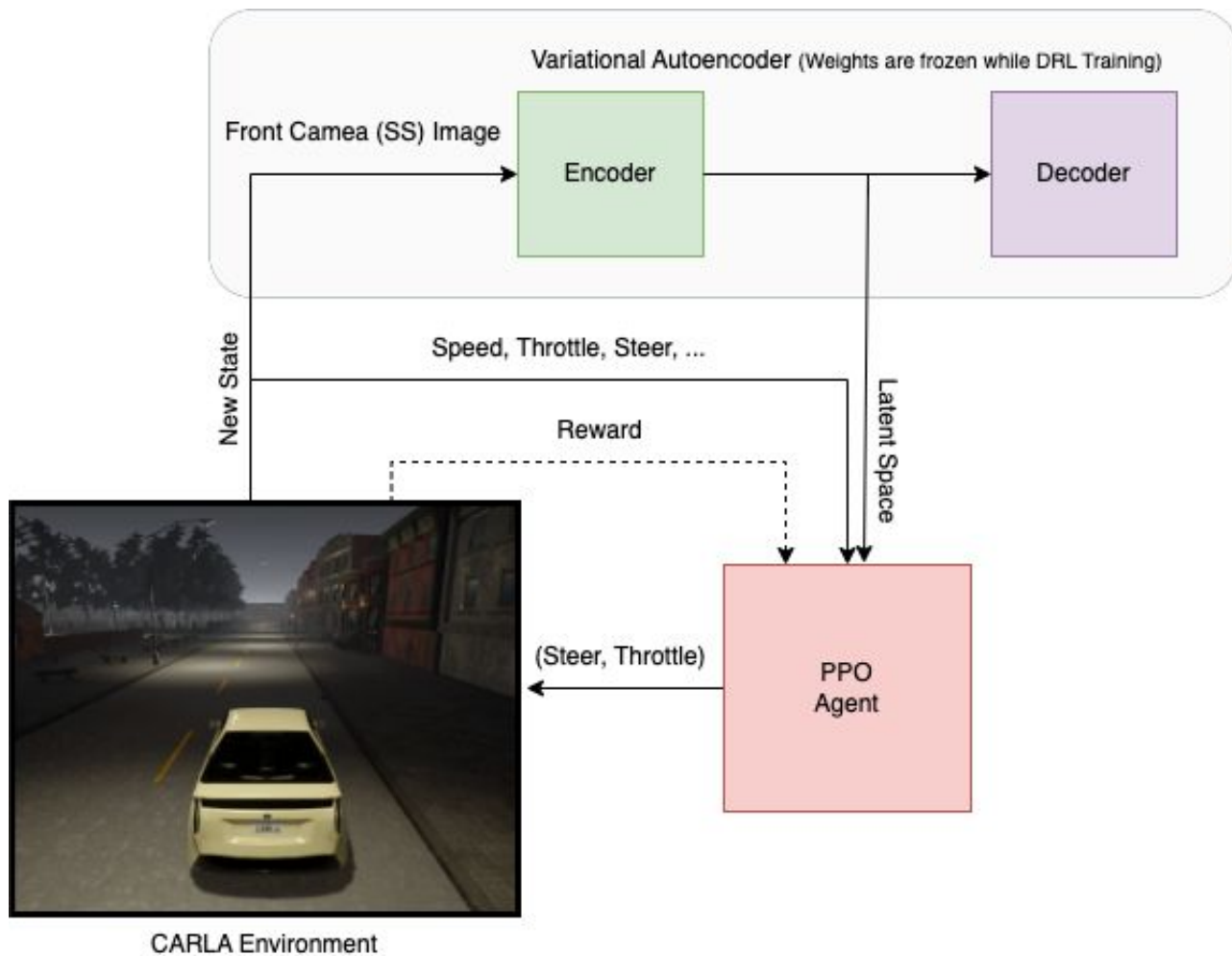
楊敦富、徐凱瑞、蘇亭云

目錄

- CARLA and RL 成果展示
- 其它
    - Omniverse Isaac with ROS2
    - Omniverse Jetbot RL training
- 總結

成果展示

架構

Variational Autoencoder (Weights are frozen while DRL Training)

Front Camea (SS) Image → Encoder → Decoder

New State

Speed, Throttle, Steer, ...

Reward

Latent Space

(Steer, Throttle) ← PPO Agent
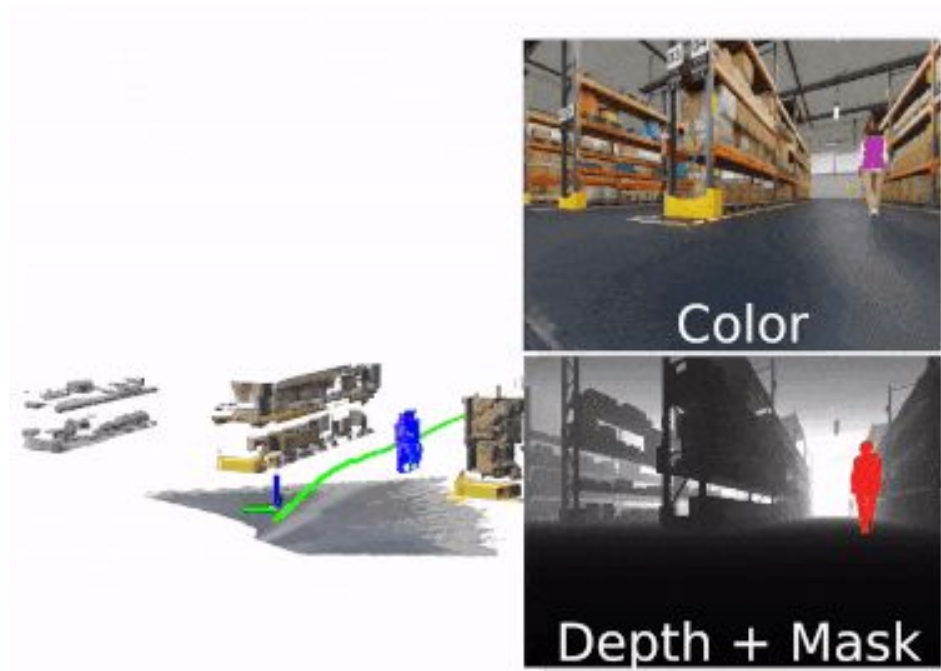
CARLA Environment

期末專題製作過程

- Omniverse Isaac with ROS2
- Omniverse Isaac Jetbot
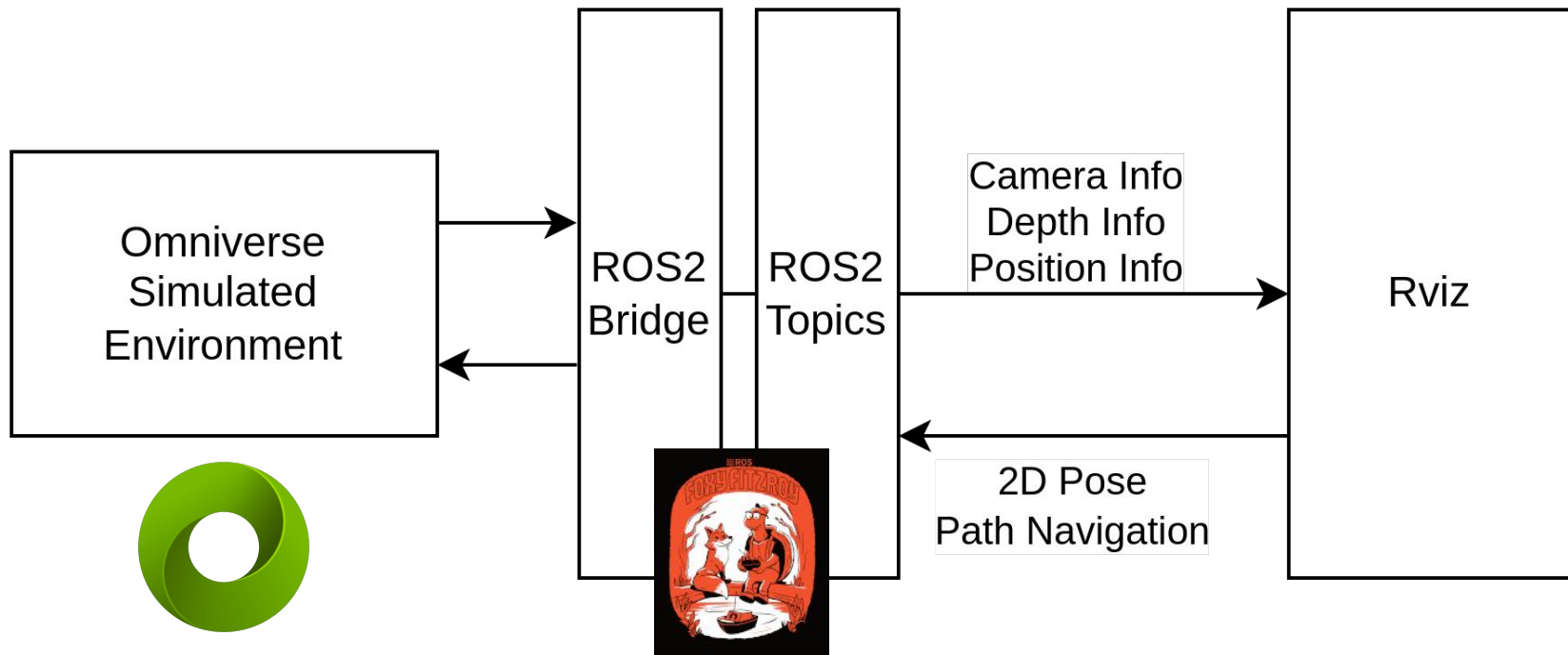- CARLA and RL
- ❌ 整合在一起

Omniverse ISAAC ROS2

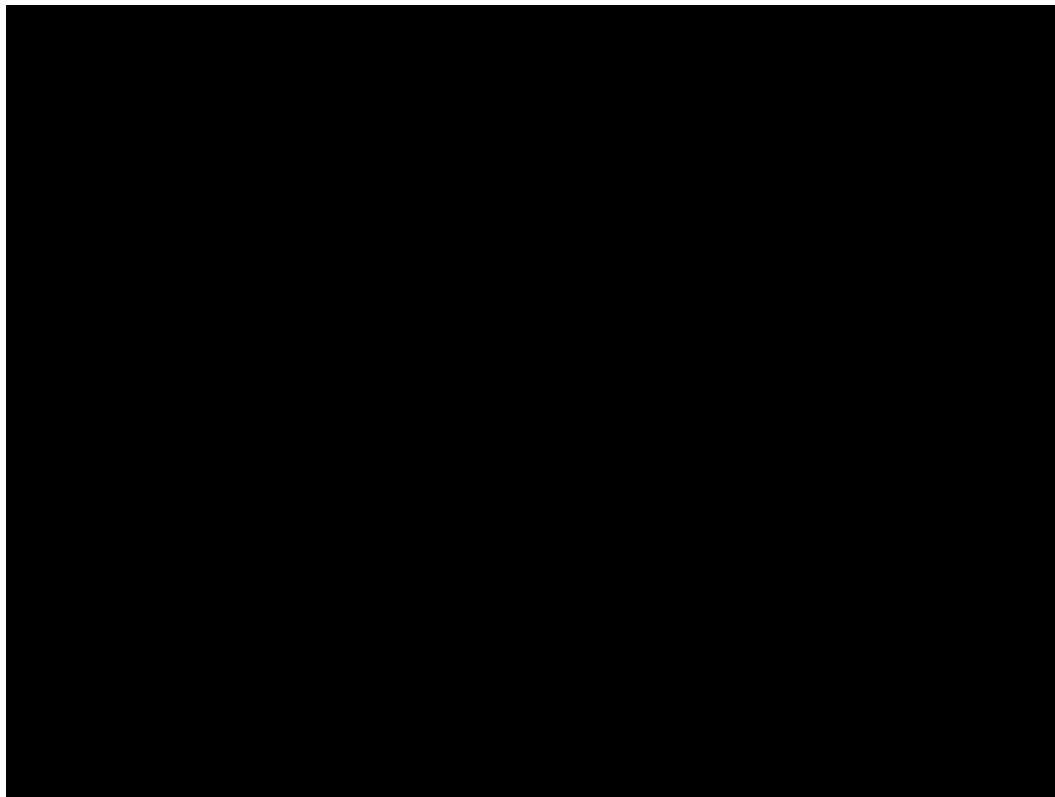Real-time processes depth, point cloud and camera image in 3D scene with Omniverse

使用 Omniverse 搭建場景、工廠機器車移動，透過 ROS2 輸出即時影像、深度圖片

Color

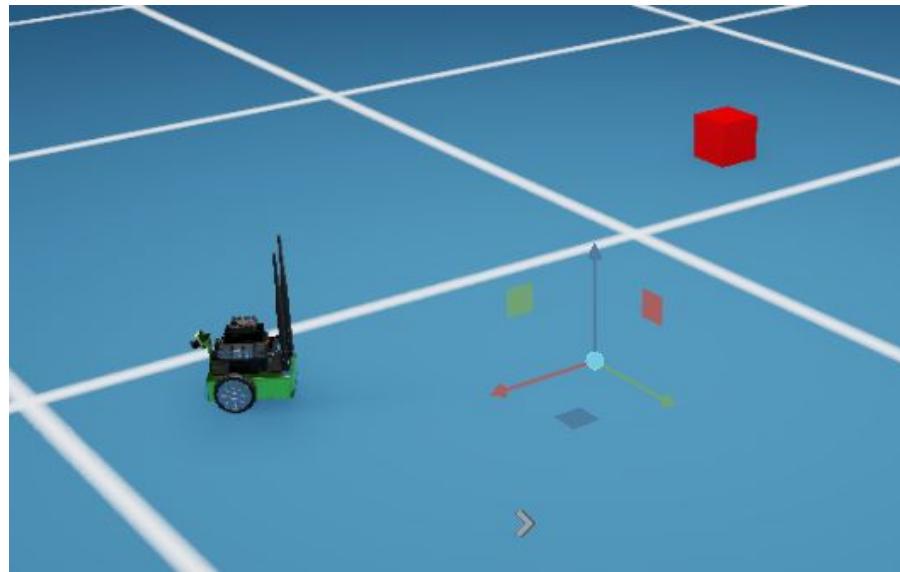Depth + Mask

Omniverse ISAAC ROS2 整體架構

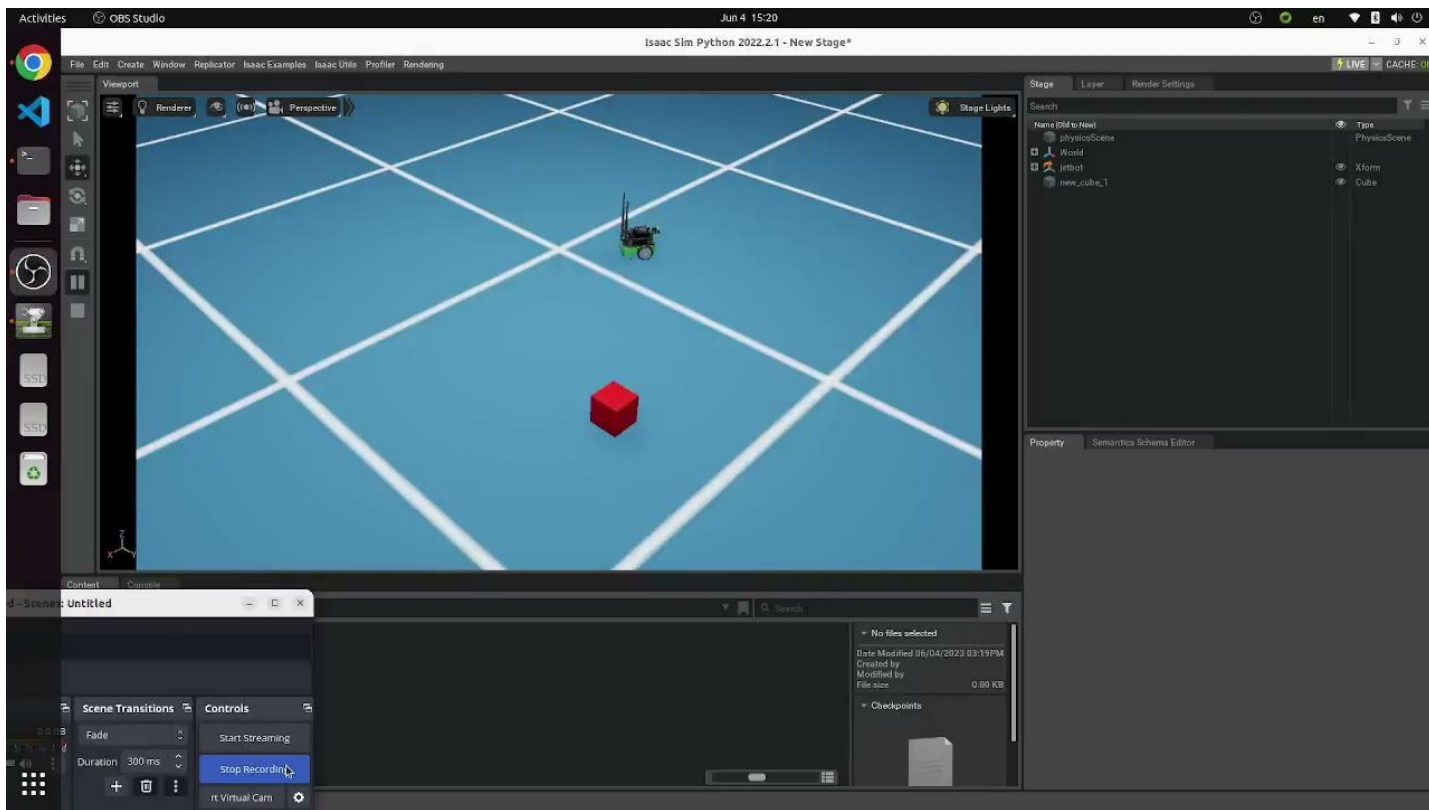# Omniverse ISAAC ROS2 目前結果展示

Omniverse Jetbot

透過強化式學習控制 Jebot 遙控車取得
紅色方塊

Omniverse Jetbot 成果展示

参考資料

- [GitHub - NVIDIA-ISAAC-ROS/isaac_ros_nvblox: Hardware-accelerated 3D scene reconstruction and Nav2 local costmap provider using nvblox](#)
- [GitHub - idreesshaikh/Autonomous-Driving-in-Carla-using-Deep-Reinforcement-Learning](#)
- [Jetbot Sample Applications - NVIDIA Docs](#)