Temasek Polytechnic

School of Informatics & IT

**Diploma in Applied Artificial Intelligence (AAI)**

**AY22/23 SEMESTER**

MP Terms of Reference

**Project Particulars**

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| **MP Supervisor** | Mr Tan Sio Poh |
| **Project Title** | Nvidia TX1 Autonomous vehicle |
| **Student Matric Card Number** | 2102869A, 2101726D |
| **Student Name** | Maximilian See, Chan Ryu |

**1. Introduction**

Autonomous vehicles have transcended the realm of science fiction. This transformation is driven by advancements in cutting-edge technologies such as sensors, cameras, and LiDAR systems, democratizing access to autonomous vehicles and robots for corporations and consumers alike.

In this project we aim to uncover how such vehicles work and develop one in the process to develop a deeper understanding of such products. We took inspiration from Nvidia Drive Labs and came up with a simplified proof of concept vehicle. Our focus is not on novelty, but to bring more understanding and transparency to the technology as well as hopefully spark some inspiration in the public.

**2. Objectives of the Project**

For our project, we tasked ourselves with programming the TX1 paired with Arduino and Polulu boards to perform image recognition on the robots. Our primary objective was to program the new vehicle to recognize and respond to various signs, including the Forward, Left, and Right signs, utilizing a deep learning model.

**3. Scope of the Project**

* To create an image classification Model using Deep Learning specifically using Neural Networks like VGG19, CNN (Convolutional Neural Network).
* Deploying the trained model onto a Edge Device (Nvidia TX1) to get a real time prediction of the left, right and straight.

**4. Project Plan (bigger version in a separate pdf)**