TITLE: Open set object detection (for autonomous driving section)

Supervisor: Professor Liam Paull (liam.paull@umontreal.ca)

PROJECT PLAN

TEAM MEMBER:

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Description of the Project:

- Motivation:
  - Computer Vision (CV) and especially Object Detection (OD) are one of the main fields in AI where many top schools and top research centers invest a lot of money (for human resource, computer resource, etc.) to create and improve those models, with the final goal to minimize the prediction's error and maximize the accuracy. However, we spent a lot of money to train our models to detect object in our dataset, but what happens if we see something on the road and it's not from our training dataset? To answer this question, we would like to introduce the concept of "**Open dataset Object Detection**".
- Objectives:
  - Being able to load and preprocess image for autonomous driving dataset.
  - Understand concept of SOTA model for Object Detection
  - Create a pipeline to detect objects not from dataset (based on context of autonomous driving)

Milestones

- Search and understand basic knowledges of Computer Vision (CV).
- Read and review research articles about state-of-the-art (SOTA) algorithm for Object Detection (OD).
- Find and ingest dataset of object detection for autonomous driving.
- Create a **pipeline** to detect out-of-distribution object.
- **Evaluate the accuracy** of the detection, show embeddings plot.
- Extension to continuous learning of OD

Challenges

- It’s my very first-time work with Object Detection project, but I’ll learn a lot and that’s great.
- Lost-and-found dataset seems like a challenging dataset.
- Limited computer resource to scale the pipeline (because I use Google Colab to run my pipeline)

Progress

- Weekly meeting with prof and team to brainstorm, discuss and report the progress.