

# **Chapter 1: Introduction**

## **1.1 Background of Project**

When one is driving, either a car or a motorcycle, the wind changes can be felt when overtaking another vehicle or overtaken by another; or when moving along side another vehicle. This is due to the changes of aerodynamic flow around the vehicles. These aerodynamic changes are much more significance when there are larger difference between the size of the vehicles, and when the vehicles are moving with different speed.

## **1.2 Problem Statement**

The aerodynamic changes from one vehicle can affect the other car when they are in proximity to each other when moving on the road. A vehicle generates a turbulence unsteadiness which can cause additional or reduced forces acting on another vehicle. This can cause the driver to lose control and crash. Lighter vehicle such as motorcycle will certainly feel more of the wake from larger heavier vehicles and this situation is dangerous to the motorcyclist and other lighter vehicle as well. Therefore, understanding the effect of this vehicle affecting aerodynamic changes could help in minimizing the risk of an accident.

## **1.3 Objectives**

- To investigate the aerodynamic around a vehicle.
- To study the effect of the speed of the vehicle on the aerodynamics.
- To investigate the effect of an aerodynamic changes caused by a vehicle and another in proximity with each other at a different distances.

#### **1.4 Scope of the Project**

- Prepare wind tunnel scale model of vehicle that suited the size of the available wind tunnel.
- Prepare a wind tunnel that accommodates more than one model.
- Study the aerodynamics around the model vehicle.
- Run wind tunnel test on scale model vehicle when another model is in the flow field.