Self-Driving Simulations: Develop Autonomous Car with Python

by Chris Raharja

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Whom This Course is Intended for?

Automotive Enthusiast

People who are interested in the latest trend in automotive industry which is self driving technology and curious to understand how it works from the technical perspective

Aspiring Software Engineer

People who are planning to be a software engineer and particularly interested in improving Python programming skills through building projects with real use cases

Tools, IDE, and Libraries

Tools

Programming Language:
Python 3.0

IDE

- Visual Studio Code
- Sublime Text
- Pycharm

Libraries

- Pygame
- Neat

Introduction to Autonomous Cars

What?

A car with self driving capability where it can operate on the road without human supervision

Technologies

- Neural network
- Reinforcement learning
- Machine learning

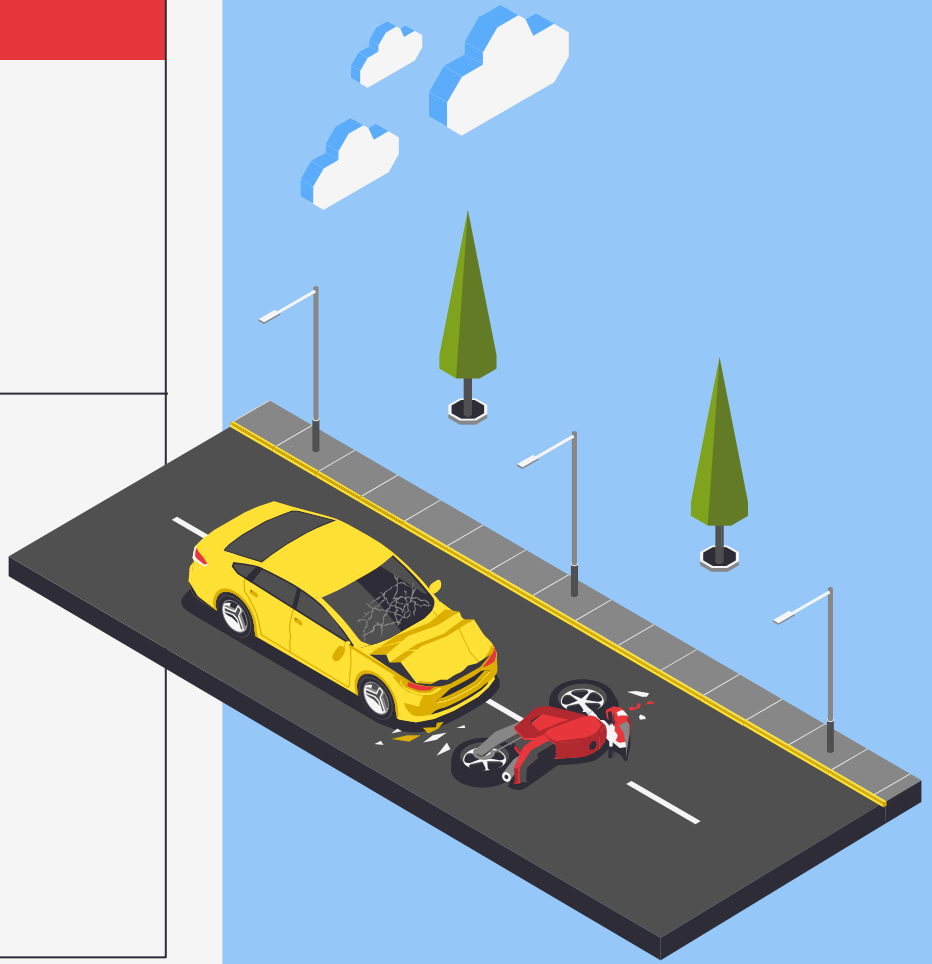
Capabilities

- Real time decision making
- Accurate sensor system

Limitations

- Limited human like intuition
- Complex & unpredictable situation

How Autonomous Car Works?



Setting Up All Required Tools

01

Visual Studio Code

https://code.visualstudio.com/

02

Python

https://www.python.org/downloads/

03

Neat

https://neat-python.readthedocs.io/en/latest/

04

Pygame

https://pypi.org/project/pygame/

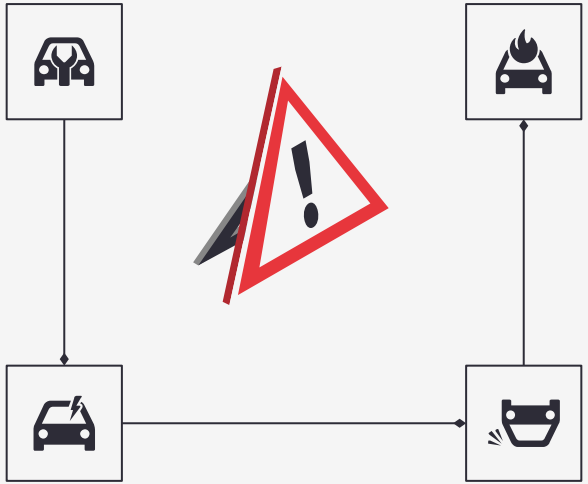
Basic Python Training Session

Data Types

Learning different data types/variables in Python

Class

Learning how to create class in python and understanding how it works



Function & Parameter

Learning how to create function and pass down parameter to the function

Basics of Pygame

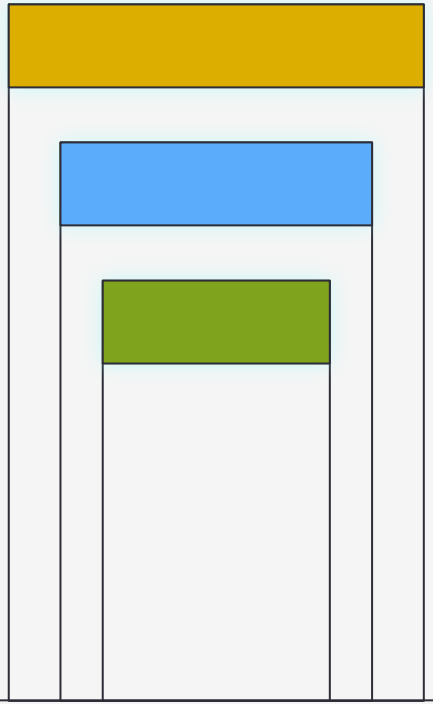
Learning the basic concepts of Pygame

Building the Project

Self Driving Autonomous Car Simulation

- https://www.gimp.org/tutorials/Draw_A_Paint_Brush/
- https://neat-python.readthedocs.io/__/downloads/en/stable/pdf/

Testing Self Driving Features



Decision Making Ability

Car can navigate lanes, handle intersections, change lanes, and react to dynamic scenarios in a reliable and robust manner

Sensor Integration

Test the perception system of the autonomous car simulation by examining its ability to accurately detect and interpret objects, road markings, traffic signs

Collision Prevention

Test the collision avoidance capabilities of the self-driving car simulation

Conclusion & Summary

Testing is Essential

Always make sure to test your project to ensure it works the way you expected

Be Creative & Innovative

There are limitless opportunities you can potentially do with this expertise and always think outside the box

Game Projects

Creating your own real self driving car might sound a bit unrealistic but what about creating your own self driving car game?

Code Quality & Documentation

When it comes to writing code, always make sure that your code is readable and easy to understand

Thank You