## Autonomous vehicle navigation in a city

## Project Final Report [Jinxin Hu – CSE494, fall, 2018]

# Abstract

The main project of this project is to automatically find and avoid obstacles in the city and at the scene of the accident. The project implements the obstacle avoidance in most cases and the function of finding the path when the path is known by a simple algorithm.

# Introduction

Undoubtedly, autonomous driving will become a major disruptive innovation in human society since the invention of the car. In view of its huge potential impact on the automobile industry and social ethics, the discussion on autonomous driving has not only stayed at the desk research level of the investment industry and industry, but also became a forum for discussion in the community.

Regarding the prediction of the development of autonomous driving, the industry generally agrees that autonomous vehicles will start a round of explosive growth around 2025. By 2035, half of the vehicles on the human social road will be self-driving. At that time, the total revenue of auto-driving vehicles and related equipment and applications will exceed 500 billion US dollars, and the invisible social income will be about 10%. Savings in total social travel costs.

The transformation of the positioning of automotive products is the first priority. The original intention of human society to invent cars is to realize the displacement of people or things. Since its birth, cars have always been "simple" means of transport for pulling people, and the people who live there are also divided into passengers and drivers according to their functions. member. In an era when autonomous driving technology became mainstream. The system can basically complete all driving operations. The driver will be freed from the tedious task of observing, monitoring and adjusting the driving state of the car. Office, life and entertainment have become the new activity choices for users in the car movement.

# Work performed

In this project I used webots as my simulation system. I used the 64-layer radar system inside to make a judgment on the distance between the car and the obstacle. I used python to write this project. At the same time, the radar system can give me the direction in which the obstacles are located. I can judge whether the car will hit it if it continues to move forward by the direction of the obstacle and the distance of the car in the obstacle. Then give the car the option to let the car turn. The angle of the turn is fixed.

# Status and lessons learned

I learned a lot in this project. For example, how to plan a path. How to get the car to avoid using some simple methods to avoid obstacles. There may be many better algorithms available. I will try it in a later course. The learning of modeling ideas is considered to be the most important in this project.

# Conclusions

Although this project is completed, it can barely achieve results, but in many aspects it needs to be improved and improved. In the future study, I will make my logic more perfect and make better results.