Over the past few years, the number of self-driving automobiles has increased steadily. As they being developed more stable and more reliable, have you ever wondered how self-driving cars navigate? In fact, there is an essential, powerful software in their computer making them avoid obstacles and reach a destination. This process is called 'path planning,' and it's the focus of my research. Right now, I’m working on helping small robots find the best path to move from one point to another and of course, without hitting any obstacles. My goal is to create a system that allows these robots to travel safely and efficiently. I’ll explain more details as we go along."

Imagine you are crossing a road, facing a crowd of people in opposite direction. Although it’s hard to pass, but we usually can go through the crowd without hitting anybody right? This situation may happen in many office workers’ daily life, and it is not a really difficult task to our human. However, this is always a challenging stuff to self-driving cars or mobile robots. In fact, robots can’t predict others’ behavior by detecting their slightly different movement. They can’t do any human’s inherent communication such as facial expression or eye contact either. So, how to make a robot avoid moving obstacles? Robots have to predict obstacles’ future location by their current position and heading. This mean that engineers have turned this into a math problem, and all we have to do is try to make robot computer solve the question is a relatively fast way. Therefore, my research goal is to create a system that allows robots to travel without hitting anybody and move efficiently.

Imagine you’re crossing a busy street. There’s a crowd of people walking toward you, but somehow, you manage to weave through without bumping into anyone. This might happen every day for many of us, and we don’t even think about it. But for self-driving cars or mobile robots, this is a big challenge. They can’t predict what others will do by noticing small movements like eye contact or facial expressions. So, how do they avoid moving obstacles?

Robots have to predict where obstacles will be, based on their current position and direction. This turns into a math problem that the robot's computer needs to solve. Therefore, my research focuses on creating a system that helps robots solve this problem quickly. The goal is to let robots move safely and efficiently, without crashing into anything.