# Smart Navigation Robot – Project Purpose & Motivation

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## What Inspired This Project

After watching around 10 robotics videos, I noticed one problem that most obstacle-avoiding robots have. They usually scan their surroundings and then choose a general direction, but they don’t calculate the exact angle for the best path. They just turn and go a short distance instead of choosing the most efficient route. This made me want to improve both the navigation and speed of a robot using better sensing and decision-making.

## Learning the Basics

To start, I’ve been using Tinkercad Circuits to understand how to build and wire simple robots. I’m getting familiar with how the components work before moving on to building a physical version.  
Video that helped me: <https://www.youtube.com/watch?v=bzH_6lxgfz4&t=1s>

I also attended a 5-day robotics and coding camp to learn how to construct the robot physically, but instead of using an Arduino, we used a Raspberry Pi. During the camp, we first learned how to assemble a breadboard with LEDs, buttons, RGB lights, and ultrasonic sensors. We then learned how to 3D design, and only after we started building the robot. We mounted Raspberry Pi boards using elevation spacers because of the metal. By the end of the week, I had built a working robot with obstacle detection and wireless capability.  
  
Now I understand how everything connects on the robot, and all I need to do is buy the parts to upgrade it. Once I have the parts, I’ll be able to wire everything myself and start writing the code to make it work the way I want.

## The Big Picture

Every day, people — including kids and adults — die in car crashes. Even though companies like Tesla have already started working on self-driving cars, I believe there is still room to improve how cars think and respond. My goal is to build a small robot that works like a smart car: it should be able to avoid obstacles, choose the best path, and be controlled wirelessly through Bluetooth. If this works in a robot, it could work in real vehicles too.

## Long-Term Vision

In the future, these kinds of robots could work with cameras and sensors on roads. The same idea might also help in other areas like medicine or emergency delivery. I understand there are challenges, such as high costs, changes to city infrastructure, and job losses in certain industries. But I want to be part of a group of people who think about these changes and how to support those affected.

## Personal Motivation

This idea became even more important to me after hearing about two soccer players who died in a car crash. My younger brother plays soccer, and I often follow both sports and regular news. Stories like this made me want to do something, even if Tesla is already working on it. I believe small projects like mine can lead to big ideas that help keep people safe.