



Vadodara Institute of Engineering Kotambi Vadodara Gujarat

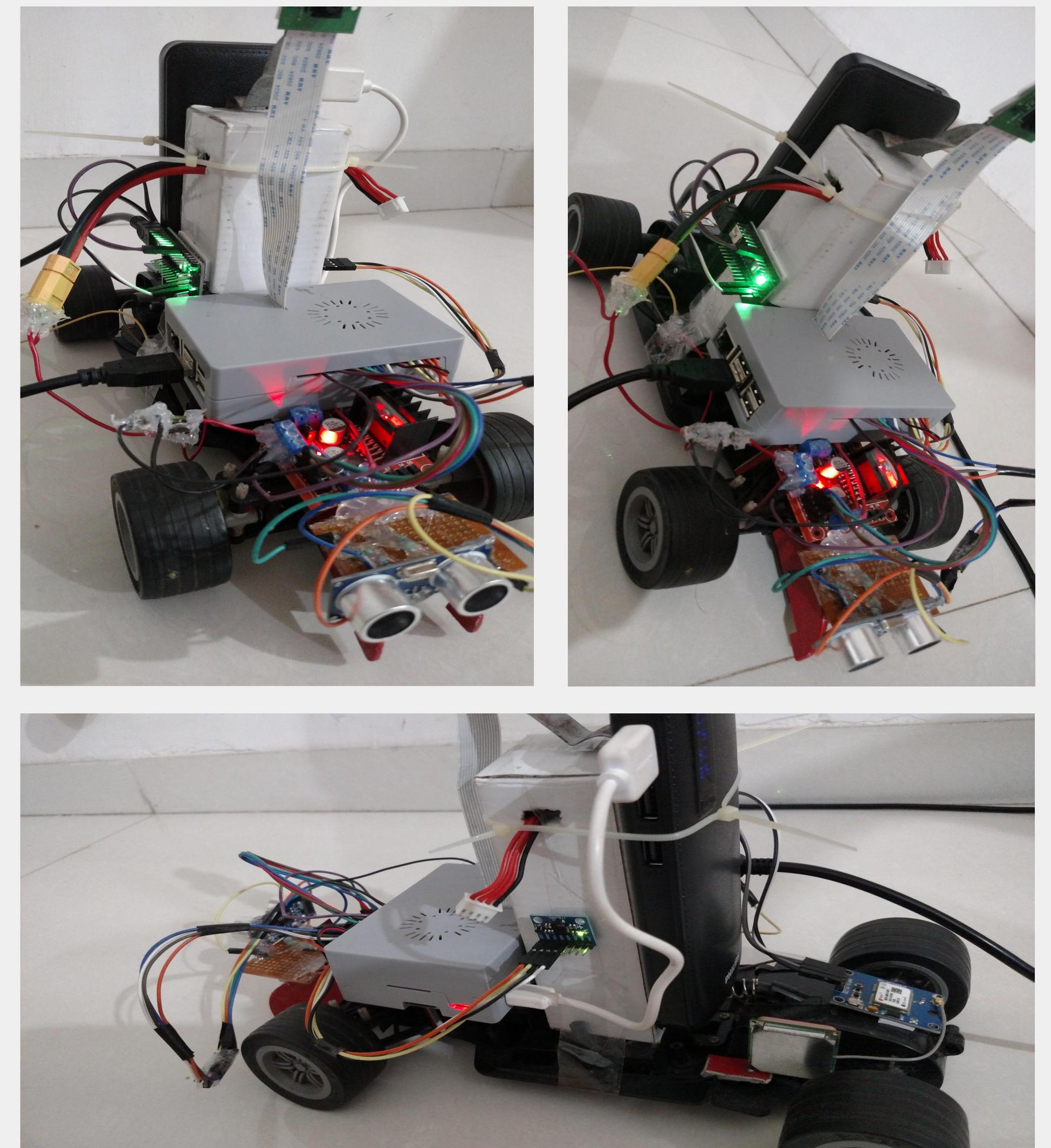


Smart RC Car

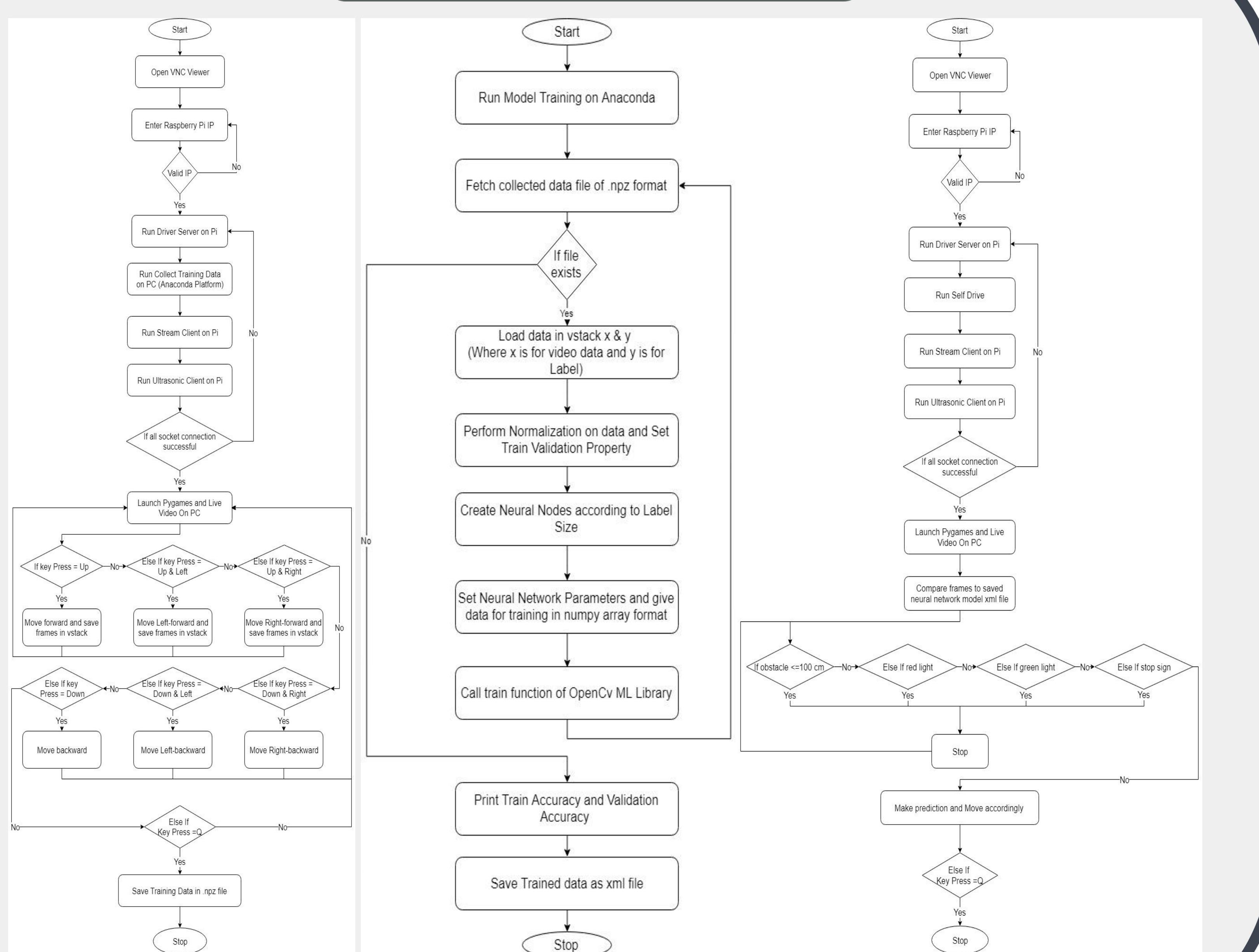
ABSTRACT

With increase in movement of goods and raw material being transported to various location. Companies are searching for cheap and cost effective ways to transport goods from one place to other. The already existing software relies on rigid programming which is incapable to handle the continuously changing environment of warehouses or other places. With such a technology the navigating and safety of such autonomous vehicle would increase. Not only the prices could be decrease but also more and more people would start developing there interest in machine learning programming. Though machine learning has been with us for about more than 50 years now. But the development in hardware and improvement in networking has made it much more practical in today's world. Also, with the current rapid economic growth, vehicle ownership is fast increasing, accompanied by more than one million traffic accidents per year worldwide. According to statistics, about 89.8% of accidents are caused by driver's wrong decision-making, hence posing to be a future application. The project aims to build a miniature vision autonomous car prototype using Raspberry Pi. An camera along with an Distance sensor is used to provide necessary data from the real world to the car. Concepts like Machine Learning, Artificial Intelligence and Image Processing are used to generate a prospective of surrounding in model. OpenCv Machine Learning library is used to create a neural network. Which can make prediction on real time.

SCREENSHOTS



Control Flow diagram



ADVANTAGES

- Open source development platform
- Easy to modify according to requirement
- Highly scalable
- Cost effective
- Cutting edge technology
- Easily accessible all components

Hardware & Software Required

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Pi Camera • Distance Sensor • Lithium Polymer Battery • Motor Driver • Raspberry Pi | <ul style="list-style-type: none"> • OpenCV • Python • Raspbian OS • Anaconda • NumPy |
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CONCLUSION

In summary, smart rc car is an neural network based project which can be scaled in various ways to fit requirements. Any one can easily drive car to collect data required for training phase. This data can then be computed to generate neural network model. Hence, making it capable to drive autonomously. The accuracy of model directly proportional to provided error free data. Additionally, red light detection, green light detection, stop sign detection and obstical detection makes rc car much more safe.