

# CASE STUDY



## Autonomous Robotic Vehicle design with Infotainment

### Executive Summary:

The client is US based company offering immersive end-to-end multimedia solutions for the automotive industry with applications like human interaction and smart driving.

The client approached Softnautics to help them build a [self-driving robotic vehicle](#), an infotainment system with voice, gesture, and touch support along with accurate standard diagnostics measurement system. A self-driving car can sense its surroundings and operate without human intervention. To execute software, these vehicles rely on actuators, sensors, and powerful processors.

The solution is targeted to industries like consumer electronics and automotive designing smart, interactive consumer devices and autonomous cars respectively.

## Business Challenges

The client was looking for a multimedia expert having automotive experience to help them build an [automotive solution](#) consisting of HMI infotainment, vehicle diagnostics, and autonomous driving solution with features like gesture, voice control, touch recognition, multi-display hardware, multi-HID handler and Diagnostic Trouble Code (OBDII).

## Solution Provided

Softnautics assisted the client by developing HMI infotainment comprising of the distributed display, voice enabled, and gesture control app, vehicle diagnostics with PCAN USB Pro FD and JetBot autonomous navigation using OpenVSLAM.

- ✓ Followed GENIVI software development platform aka GDP for design and development
- ✓ Developed diagnostics monitoring tool with CAN data handling, DTC, and OBDII support
- ✓ Deployed autonomous driving solution with area mapping and localization, robotic vehicle navigation, obstacle avoidance with Robotic Operating System as framework
- ✓ Implement semantic segmentation and Jetson inference library

## Tools & Technologies

### Hardware Platforms

- ✓ X86, ARM

### Programming Languages

- ✓ C/C++
- ✓ Qml

### Frameworks

- ✓ JetPack SDK
- ✓ OpenVSLAM
- ✓ ROS
- ✓ LabelMe
- ✓ Pytorch

### Tools

- ✓ Jupyter Notebook
- ✓ Visual Studio Code
- ✓ Qt

### Technologies

- ✓ GENIVI Development Platform
- ✓ Google Speech Recognition
- ✓ Media Pipe Gesture Control Model

## Business Benefits

 Easy and quick vehicle health monitoring with vehicle diagnostics tool