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Vision Statement

Project Goals:

To develop a self-driving car kit in the form of a mobile application which uses a smartphone as the "brain" of an RC-car. The application will be able to control the RC-car by classifying and analyzing the surroundings using the phone's camera, combined with other sensors such as IMU & GPS.

The app will perform the functions of Adaptive Cruise Control (ACC), Automated Lane Centering (ALC), Forward Collision Warning (FCW) and Lane Departure Warning (LDW).

It will make driverless vehicles relatively cost-effective using off-the-shelf components such as smartphones and existing vehicles.

Project scope:

Includes:

- Building an Android base application inside a real smartphone device.
- Run a real-life simulation on a remote-control car.
- Perform field tests on RC-car in a "road-like" scenario.

Not including:

- Actual real-life testing on full size car on a public road.
- The application would not be able to synchronize with other users (for retrieving data).

High-level features or requirements:

- Android base phone.
- Remote control car.
- Image recognition and path planning to make an autonomous car.

Major milestones and deliverables:

- Car simulator capability (AIRSIM) and simple sensor base algorithms.
- Developing deep learning and image recognition
- Define a sensor fusion method for combining the IMU & GPS to allow for path planning.
- Testing the system by walking.
- Test system using a remote-control car manually.
- Attaching the application to the remote-control car system. (autonomous car).