Modular Vehicle and Road diagnostics

(Phase 2)

Roads are one of the major key components of a country’s economy. In the previous section we discussed the problems with roads and automobiles and provided basic solutions to the identified issues.

Let us try to have a recap of the identified issues:

* Anomalies on roads that lead to damage of road infrastructure.
* Driver pattern/ reaction to such anomalies.

The phase1 predominantly focused on detecting road conditions and vehicle malfunctions and providing solutions to such issues. Detecting road conditions include detection of anomalies such as potholes and rough patches.

The solution provided was simple and cost efficient. Let us try to list down the major features focused in phase1:

* Pothole detection
* Speed breaker detection
* Validation with video feed

Phase2 of the solution would focus on the development of a complete end-to-end solution. It would include the implementation of a working prototype that could be ported onto any car instantly.

The main objectives of this implementation are:

* To collect data seamlessly
* To give out real time results
* To overcome the data storage constraints by making use of cloud storage

Requirement Setup:

The hardware would consist a compact version of all the module used in phase1 of the project. Some of the requirements can be listed below:

* An OBD module to record vehicle parameters
* An optical device that would capture visual data
* Cloud access
* Personalised application to visualise results

**What is cloud? How is it useful?**

In simple words, cloud computing may be called as computing that is based entirely on the internet. Storage of data on a physical device has many constraints, some of which include space and security. Cloud based computing overcomes such disadvantages and requires almost little or no maintenance.

Some of the advantages of cloud-based computing:

* Flexibility
* Data recovery
* Easy access
* Increased security
* Reliability
* Mobility
* Unlimited storage capacity
* Cost effective

As a complete hardware module would be a priority as this point, we would like to collect data from multiple resources to provide a wide range of applications in different fields.

However, the data collected from these resources would be accessed from the cloud and real time results would be provided with the help of a tool or an application developed as a part of the project.

Applications:

* 3D imaging for accident analysis.
* Recognition of unsafe driving conditions.
* Vehicle detection and recognition.
* Automated traffic monitoring for complex road conditions.
* Vehicle counting and fleet management.
* Location based SOS and emergency services.
* Complete car and driver profiling.