

Road Inventory & Monitoring Solution

2013

SpaGeo Technologies Pvt. Ltd. (SpaGeo) (an ISO 9001:2008 certified company) is one of the leading Geo Spatial Engineering/Engineering Design, Urban Planning, Data Management and Geoscience Consulting consultancy in India. Over the last several years SpaGeo has been consistently working in the field of GIS/ IT across the globe.

About Our Solution



About Us:

SPAGEO's Mission:

SPAGEO provides a full range of Geo Spatial, Data Management and IT Services for government, utilities & Business on cost effective, highly quality controlled and Professional manner, where every client feels on the top priority.

Background:

SpaGeo (an ISO 9001:2008 certified company) is one of the leading Geo Spatial Engineering, Urban Planning, Data Management and IT consultancy in India. Over the last several years SpaGeo has been consistently working in the field of GIS/ IT/Planning across the globe. SpaGeo Group includes Consulting Geo Info System and Spa Geo Technologies Pvt Limited. The SpaGeo Group is a key Indian player in the GIS arena. SpaGeo holds almost 13 years of experience in producing base Geospatial and IT technology used worldwide, in developing vertical applications, holding a spatial component and in successfully deploying these solutions. SpaGeo group has a vast experience in executing large international GIS projects. 85% of its activities are executed globally.

Company History:

January 2000:

Consulting Geo Info Services (CGIS) was founded with dawn of the new millennium. CGIS has its headquarter in Delhi, the capital of India. The firm was started with vision to provide an integrated GIS solution for all at affordable charges without compromising on the quality. The objective of Consulting Geo Info Services was to provide consulting services in the field of GIS hence the name CGIS. Later Consulting Geo Info Services has been renamed as Consulting Geo Info System (CGIS). The CGIS is promoted by Sonia R Shrivastava.

January 2006:

The CGIS has further been expanded into SpaGeo Technologies Pvt. Limited and growing as one of the leading Geo Spatial Engineering consultancy in India. Since 2006 SpaGeo has been consistently working in the field of GIS across the globe. SpaGeo provides a full range of Geo Spatial, Urban Planning, Data management and IT Services for government, energy, utilities & Business on cost effective, highly quality controlled and Professional manner. SpaGeo is promoted by Director- Sonia R. Shrivastava and O. P. Shrivastava.

Road Inventory & Monitoring Solution

SpaGeo Technologies Pvt Limited (An ISO 9001:2008) is a globally reputed provider of Road Inventory and Monitoring System Solution with the integration of Geospatial Technology. With several world leader strategic partnership and associates and more than 10 years of wide-ranging customer engagements, we are one of the leading firms. We are focused on Enterprise GIS Solution for Road



Inventory & Monitoring System, to serve the Public Work Department, transportation companies and other government agencies. We help our customers leverage geospatial technology and data to improve the business strategy.

SpaGeo provides dedicated solutions in Road's Potholes Mapping, Unpaved Road's Video Mapping, Road Network Real-time Mapping by using GIS and resource mapping technology including Concept to accomplish solutions, Logical support and consultancy, Resource Management, Decision Support Systems, Spatial Database Analysis, Digital Cartography and

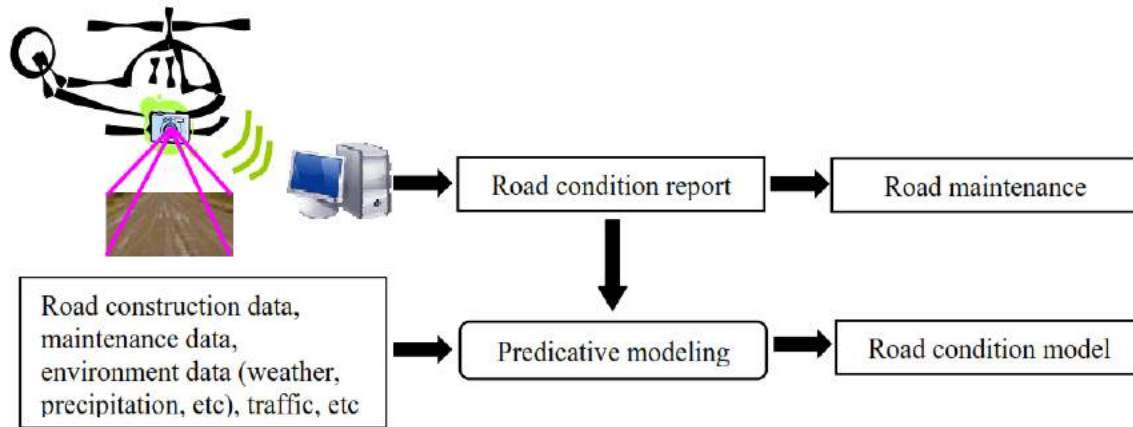
Surveys, GIS Development and Customization, Capability Building Mechanisms and GIS training.

Unmanned Aerial Vehicle (UAV):

We explore the potential for applying remote sensing technology to monitoring the condition of unpaved roads and Road's Potholes. It aims to develop an efficient yet cost-effective method for maintaining statewide information on the condition of unpaved roads or, presence of potholes in roads. The strategy for monitoring this condition is a hybrid approach comprising two interrelated systems: UAV-based Remote Sensing of Road Condition (UAVRS), and Predictive Road Condition Modeling using Remote Sensing Data (PRCM). Our UAVRS technology will acquire road imagery with high resolution from an UAV platform, and assess roads based on the condition parameters derived through the development of sophisticated algorithms for image processing and analysis. In our PRCM algorithm, the road condition data are produced by developing a robust road condition model using satellite derived environment data and other road data.

The extracted road condition parameters in UAVRS can be directly used in local transportation agencies for road condition monitoring and maintenance. In addition, these data can also be used in the

development of the statistical model in PRCM as field data for training and verification. Furthermore, the statistical model that will be developed in PRCM will be constantly updated and improved by the observation data and the derived parameters provided in UAVRS, leading to an operational system for road condition monitoring.



We are currently operating an Airstar International Mongoose airframe helicopter. The airframe is a modified radio controlled helicopter with primary flight systems consisting of the engine and drive train, main rotor and tail rotor assembly, control actuators, and structural components. The airframe is powered by a 26cc, single cylinder, Zenoah G260H engine producing approximately 1940W at 12,000rpm, providing an operating head speed of approximately 1250-1500rpm.

The weight of the Mongoose airframe is approximately 6.1kg dry, and the payload the airframe is capable of carrying is approximately 6.4kg. The fuel capacity is 475cc allowing approximately 45 minutes of flight without payload, and approximately 30 minutes of flight carrying full payload. The battery powering all onboard electronic components will provide approximately 90 minutes of power-on time for the entire system.

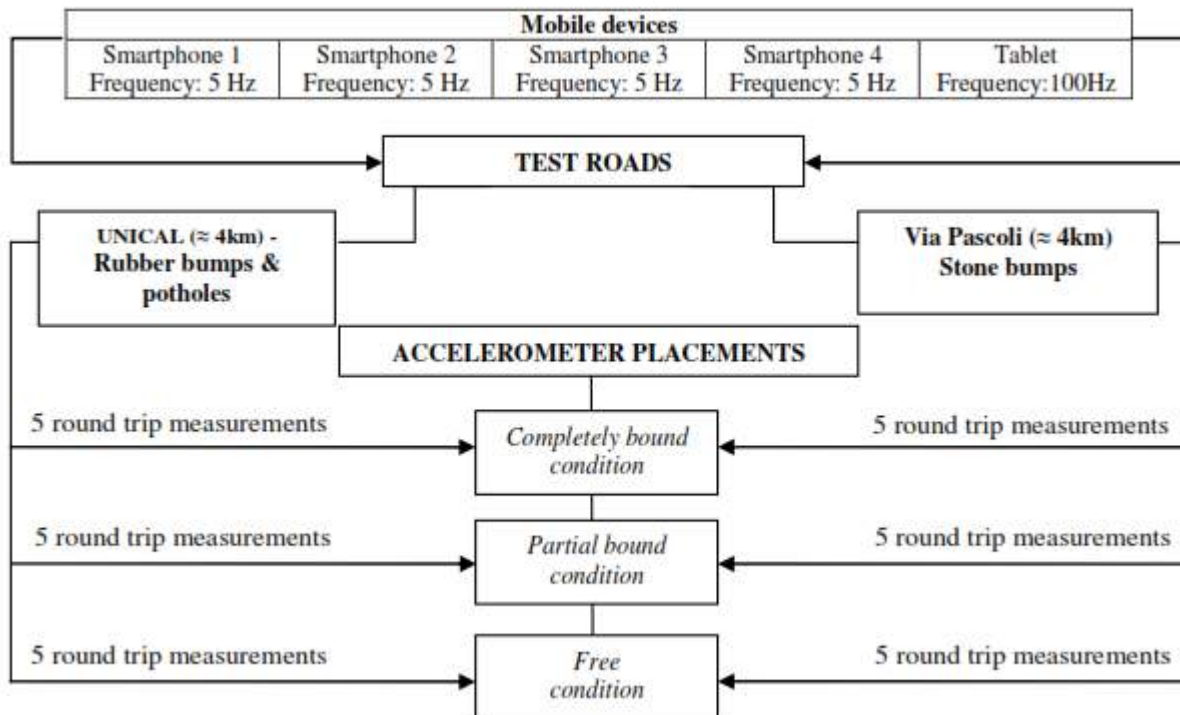
Real-Time Road Surface Detection with Android Mobile App:

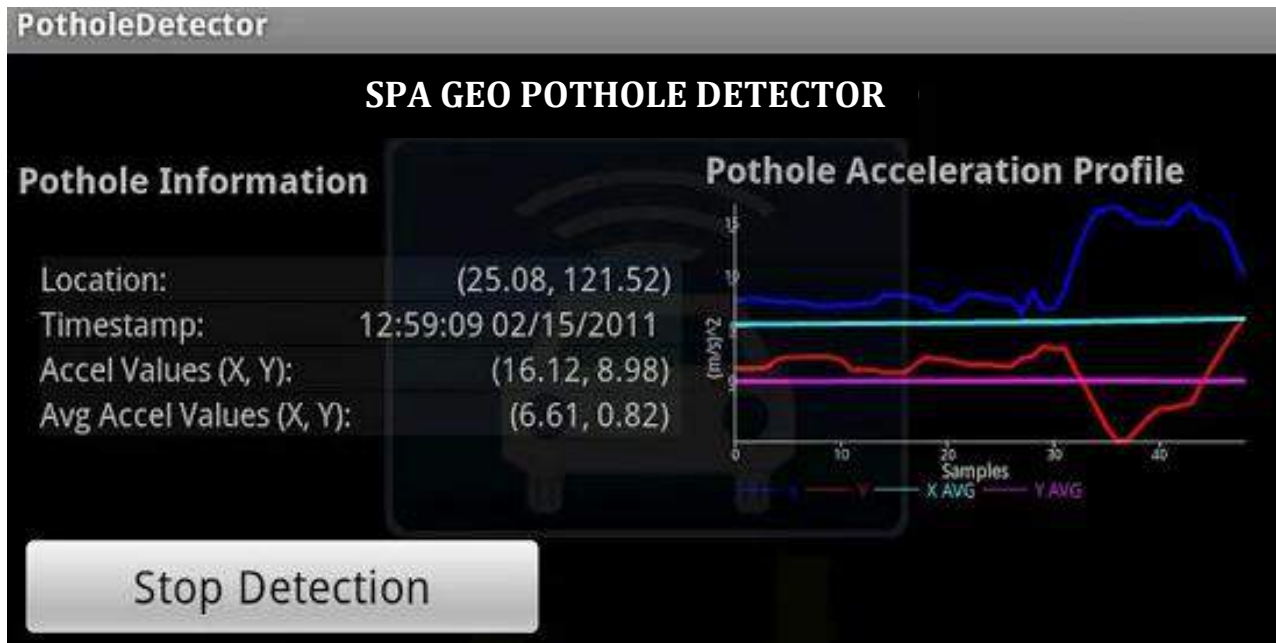
Road surface anomalies, such as potholes, speed bumps, railroad crossing, and joints can determine some problems for vehicles and can affect road user's safety. Road quality assessment plays a key role in

infrastructure management and it is useful to an adequate allocation of road maintenance operations. At the same time, informing drivers on road real conditions, in terms of the presence of bumps, potholes, or other anomalies, has a great importance in order to make the transportation system more safe, efficient and comfortable. As is well known, road energy efficiency, in terms of fuel and vehicle's parts consumption and of CO₂ emissions, is affected by road evenness. Fuel consumption is primarily due to acceleration necessary to regain speed after deceleration determined by bump events. Moreover, braking and bumps and/or potholes crossing generate vehicle's parts consumption as concerns brakes and suspensions.

For these reasons in the last few years we have developed mobile sensor computing systems to collect data on road quality with the final aim of giving real-time information to road users. The monitoring of road conditions can be done by means of several sensors piggybacked on mobile devices. Most of these smartphones/tablets uses a three axis accelerometer to collect acceleration data due to vehicles motion on road anomalies and a GPS receiver to obtain location information of the road segment in question. In this way each event can be located and database will be created of road anomalies by means of a central server to which data collected by users can be reported and registered.

In the light of the abovementioned facts, we are developing a road detection system based on the use of Android mobile devices, driving a test vehicle and a utilitarian car for the validation process. Mobile devices used in the experimental tests are all equipped with a GPS receiver and an accelerometer with a 3 dimensional Cartesian frame. To evaluate our approach a set of field tests, type of mobile devices and accelerometer placements is chosen.





Video Mapping Solution for Road Surface Condition Study:

High-speed video mapping for ITS applications has been developed by SPA GEO by using Sony Image Sensing Solutions along with system integrator Horus to create a pothole identification system capable of detecting potholes at speeds of up to 130 kph (80 mph).



The vision-based pothole detection system integrates six high-speed camera modules, each taking 15 high-resolution frames per second to form a 360-degree imaging system which accurately records data from up to three lanes simultaneously, even when travelling at high speed. Images are combined with GPS data and processed by an on-board CPU.

Video from the system will then be transferred to the councils' computers and analyzed using a bespoke media player with integrated mapping functionality, speeding

the detection of potholes and allowing councils to make earlier, less costly repairs.

SPA GEO Technologies Pvt Limited

8A, 3rd Floor, Mahaluxmi Metro Tower
C2, Sector 4, Vaishali
Ghaziabad- 201012
Up, India

Email us: info@spageo.co.in

Visit Us: www.spageo.co.in

Call Us: +91 120 4567200

Fax: +91 120 4567100

Go Geographic.....