

GeoTracking Computer for Multiple Instrumentation Applications

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Electrical & Computer Engineering

Abstract

A low-cost sensor computer with related software application to measure and collect several features of sensor data like that of acceleration, temperature, pressure, altitude, GPS location, speed, time, and distance of a moving object. A smart device can be connected to show the travel path in real time.

Problem

With an increasing demand for smart devices comes the problem of high-priced technologies. These can be too expensive to purchase for data collection in educational experimental learning situations or for recreational activity purposes.

Solution

The GeoTracking Computer can be used to track a route that a device (or an object it is attached to) has traveled,

collecting data at a lower cost, smaller size, and lighter weight.

Value Proposition

This invention can provide large amounts of sensor data to a variety of consumers. It allows for several geo-tracking features which will allow the consumer greater access to sensor data at a lower cost.

Benefit

The consumer electronics sensor market is currently experiencing strong and continuing growth. As technology advances with trends such as miniaturization, improved energy efficiency, and accuracy, the demand for smart devices has increased. With this demand comes the problem of high-priced technologies. These can be too expensive to purchase for data collection in educational experimental learning situations or for recreational activity purposes. The GeoTracking Computer is a low-cost device that can be used in applications tracking a route that the device (or, more precisely, a body or object it is attached to) has traveled, discerning changes in and collecting data on acceleration, temperature, pressure, altitude, pitch, yaw, roll, GPS location in longitude and latitude, speed, time, distance, and heading. A smart device can be connected to show the travel path in real time and data can be downloaded post hoc or simultaneously to show the path traveled on Google maps. The device is low cost, comprised of commercial-off-the shelf parts as well as a software application written in Python. The materials to create the device cost between \$100-\$150.

This invention provides large amounts of sensor data to a variety of consumers. It provides tracking features and sensor data at lower cost, smaller size, and lighter weight, making it attractive to road bikers, cross-country runners, and similar users. It can also be used for educational purposes like that of teaching physics, engineering, data collection, software and hardware applications for classroom learning. Other potential applications include airplane, boat, or vehicle data collection. Research applications in sediment transport, using the computer to track entrained sediment movement in rivers and streams, is also possible, as pictured below.

Market Application

This technology fits best in the "Other Internet of Things devices market", as it is not designed as a smartphone/tablet, nor is it meant to be a wearable device.

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