

GPS TECHNOLOGY

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1. Introduction

The GPS (Global Positioning System) is a constellation of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location. The location accuracy is anywhere from 100 to 10 meters for most equipment. Accuracy can be pinpointed to within one (1) meter with special military-approved equipment. GPS equipment is widely used in science and has now become sufficiently low-cost so that almost anyone can own a GPS receiver. GPS considers very important part from satellites work in this time. it becomes used from many country in the world. Also it uses in a lot of practical applications. During gulf war when the united state of America fought iraq.USA used this system in very bushed specializations. Thats to guide Military sectors and direct its missiles toward their targets with high accuracy. It could be say that the system (Global Positioning System) GPS depends on an integrated system of satellites that operate within a system called Sophisticated Network Of Satellites, and the satellites in the process of scanning the earth twice every 23 hours and 56 minutes, and distribution of those satellites on 6 levels turnover of each level makes 55 degrees with the other level, and at each level there are three satellites. This system developed by research centers in the United States in 1973 and the budget of about tens of billions of dollars, consists of two main parts, sender and receiver, the sender is the Part that the satellites send the data, and the future, it's a small machine hands very sophisticated electronic circuits operating within Microprocessor, and the precise location is determined in two ways, first through the so-called cue Doppler Shift of the electromagnetic waves received from the satellite, and this offset is caused by the relative speed between the Earth and satellite, the second method to determine the location based on the measurement of time-delay between the electromagnetic waves received from satellites. These data are analyzed by GPS devices, which contain the software provider a lot of information and physical variables such as the impact of the atmosphere on electromagnetic waves and the impact of gravity and state of the climate, as the program contains detailed maps of the land, cities, where street, the most important geographical

features and other important information.(2)

The GPS is owned and operated by the U.S. Department of Defense but is available for general use around the world. Briefly, here's how it works:

21 GPS satellites and three spare satellites are in orbit at 10,600 miles above the Earth. The satellites are spaced so that from any point on Earth, four satellites will be above the horizon.

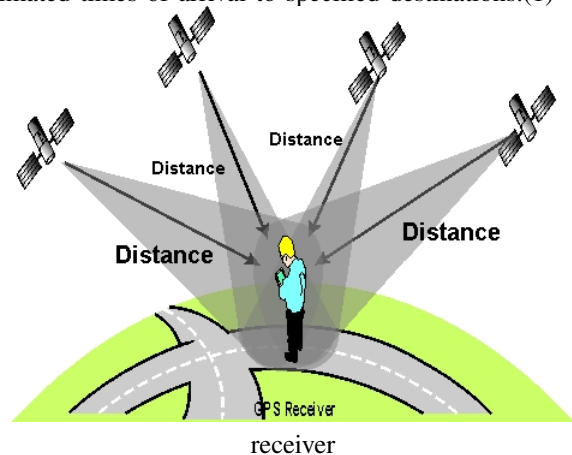
Each satellite contains a computer, an atomic clock, and a radio. With an understanding of its own orbit and the clock, it continually broadcasts its changing position and time. (Once a day, each satellite checks its own sense of time and position with a ground station and makes any minor correction.)

On the ground, any GPS receiver contains a computer that triangulates its own position by getting bearings from three of the four satellites. The result is provided in the form of a geographic position - longitude and latitude - to, for most receivers, within 100 meters.

If the receiver is also equipped with a display screen that shows a map, the position can be shown on the map.

If a fourth satellite can be received, the receiver/computer can figure out the altitude as well as the geographic position.

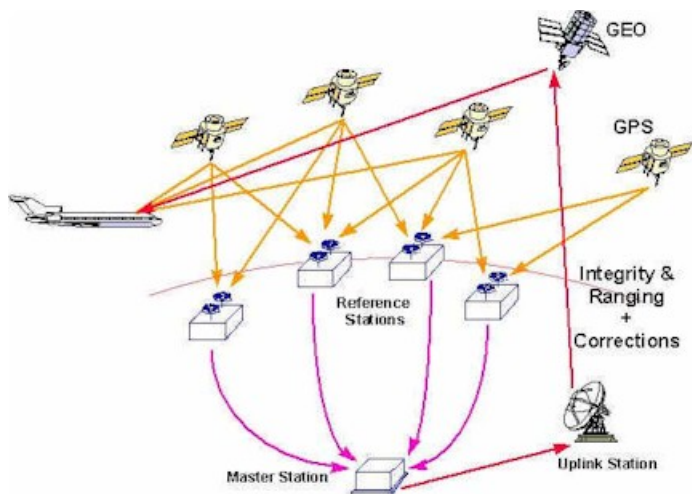
If you are moving, your receiver may also be able to calculate your speed and direction of travel and give you estimated times of arrival to specified destinations.(1)



2. Examples

Agriculture: farmers they use it to monitor the fertilizer and pesticides. Also for marking areas of disease or weed infestation.

Aviation: Aircraft pilots use GPS technology for en route navigation and airport approaches. Satellite navigation provides accurate aircraft location anywhere on near the earth.

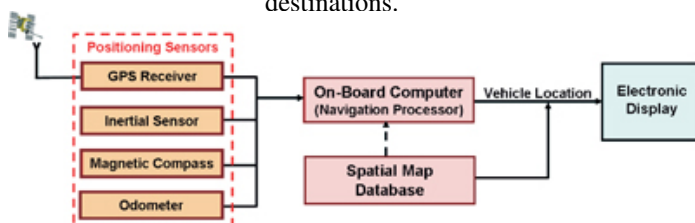


GPS in Aviation

Environment: GPS technology helps survey disaster areas and maps the movement of environmental phenomena like forest fires, oil spills, or hurricanes.

Military : Military aircraft , ships , submarines , tanks , jeeps , and equipment use GPS technology for many purpose including basic navigation , target , designation , close air support , weapon technology , and rendezvous.(1)

Ground transportation: GPS technology helps with automatic vehicle location and in-vehicle navigation systems. Many navigation systems show the vehicle location on an electronic street map, allowing drivers to keep track of where they are and look up other destinations.



GPS in Ground transportation

Public safety: Emergency and other specialty fleets use satellite navigation for location and status information.

Surveying: surveyors use GPS technology for simple task like defining property lines or for complex tasks such as building infrastructures in urban centers.

Marine: GPS technology helps with marine navigation, traffic routing underwater surveying navigational hazard location, and mapping commercial fishing fleets use it to navigate to optimum fishing locations and track fish migrations.

Rail: precise knowledge of train location is essential to prevent collisions, maintain smooth traffic flow, and minimizes costly delays digital maps and onboard inertial units allow fully-automated train control.

Space: GPS technology helps track and control satellites in orbit future booster rockets and reusable launch vehicles will launch, orbit the earth, return, and land, all under automatic control. Space shuttles also use GPS navigation.(1)

3. The Benefits and the Purpose of GPS

The GPS is a tool that should supplement good map reading skills. The GPS will make navigation easier and more precise over terrain that is not well mapped. It can help one determine trail heads, side roads and generally make navigation more enjoyable when landmarks are not well defined. It certainly provides a degree of security if one becomes disorientated (lost) and in an emergency situation it could make the difference in finding medical help quickly if a riding buddy were to become injured. The more one uses a GPS the more one finds additional uses that make travel more enjoyable!(1)

The most important benefit for using GPS is to save your time and your money.

The purpose of this article is to introduce the GPS and its use as a tool for dual sport riding and touring. The description of how it works was kept simple and to the point. A number of terms; waypoints, routes, trackback, and go to were explained to help you understand GPS operation. To allocate the position and get the destination to make the driving, flying, sailing, or exploring more easily. These days the vast organizations and companies are using GPS. Thats because to monitor them drivers to be sure they are discipline in work.

4. The usages of GPS

Multiple uses of this system is incalculable, at the moment, many companies deliberately global transport and shipping companies to track the movement of machinery and ships with this system very effective, as this system has been introduced in many of the newly manufactured cars and drivers that provide detailed maps of places and streets are found, and the best and shortest ones, which should conduct while on the go every day.(2) Everyone can use GPS technology in many fields such as: driving, flying, fishing, sailing, hiking, running, biking, working, or many different things. Here are some examples of how GPS technology can be use:

Get the closest location of your favorite restaurant if you are out of town.

Find the nearest airport or identify the type of airspace in which you are flying.

Pinpoint the perfect fishing spot on the water easily relocate it.

Know precisely how far you can have run and at what tracking your path so you can find your way home.(1)

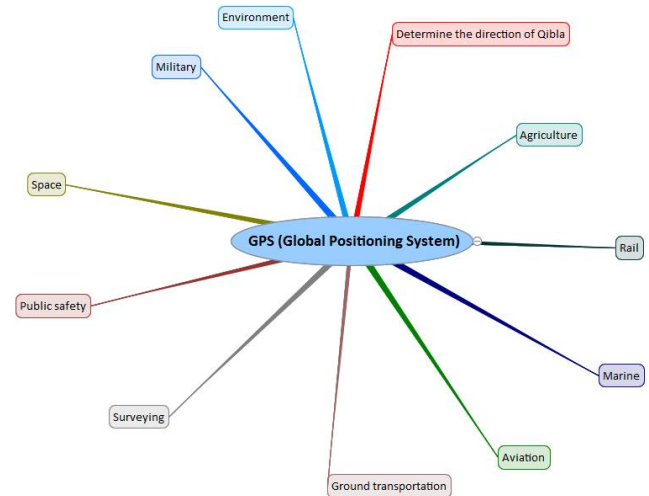
Also can easily use GPS to determine the direction of Mecca from any place on Earth. Idea depends in part survey, including (without going into mathematical details) at the expense and determine the deviation or trend line between the location of the device and location of Mecca. Since the GPS device itself determines the location of the observer at any moment, what is required is to know the location (coordinates) Mecca so the device can calculate and determine the direction to it. (3)

Accordingly, the only required from the holder of the device is to establish a point or a default location within the memory device and enter the coordinates of this point which is a sign Mecca. Coordinates of Mecca are: Latitude equal to 21 degrees, 25 minutes, while the line height or equal to Longitude 39 degrees, 50 minutes. We call this point "Mecca"

After the introduction of location data Mecca use the function "Go to" in a GPS device and determine the name of the desired target reach him that Mecca. Directly, the device determines the line deviation from the current location to the location of Mecca, and most GPS devices will be by means of graphic to draw on the device display the direction of the desired font then the holder device moves several simple steps and start in the same direction until the itinerary is located totally on the line delineated on the screen sets the direction to Mecca, and thus can determine the direction of Mecca from any place on earth, either morning or at night.(3)

The GPS is being used in science to provide data that has

never been available before in the quantity and degree of accuracy that the GPS makes possible. Scientists are using the GPS to measure the movement of the arctic ice sheets, the Earth's tectonic plates, and volcanic activity.



5. Features

Text and Voice Guidance

Available in more than 20 Languages

2D and 3D map views Split-screen map view Day/Night Mode

Routing to Addresses, Intersections, or Points of Interest
MP3 Audio MP4 Video Players support WMA/WMV format(4)

5.1. Text-to-speech or spoken street names

Most models to identify new sites introduced in the 2008 feature text to speech. These days, often marketed using less technical title of the names occur in the streets, or something like that, this feature allows the GPS to say aloud the names of roads as part of the spoken instructions. This means that instead of hearing only "turn left in 500 meters", you may hear something like "turn left in 500 meters to Jalan Ampang."

Anyone ever studied English as a second language, or someone helped by the study, you will know that pronunciation wise it's pretty informal. Consideration of the many ways that four letter combinations ough can be pronounced depending on the word - bought, though, enough, and through a comprehensive and is just a few votes that may arise from those four little letters. And then to consider the names of the flags are, if anything, even more irregular.

With this combination in tone and Australia we have the repeated use of the term indigenous peoples in the names of streets and roads, and you'll come to an understanding of what GPS devices have such a hard time getting the words right. Some of the more memorable mispronunciations heard over the years and include Bourke Street, which pronounced as Bourke Street, the fence and a street, and the way lah Illawarra as, well, something close to Swahili. With the adoption of Navteq maps) in the latest Mio Moov, Navman S-Series Platinum range Navigon, things have taken a turn for the better. Maps (Navteq) and includes audio information of the names of the streets, this means that the pronunciation is the best. It's not infallible, however, the focus is sometimes far from the target as well.(4)

5.2. Bluetooth hands-free

GPS units these days of high-end feature hands-free mobile phone via Bluetooth. While the sound quality is sufficient in most of the quick chat, or to allow for friends and family know that you are working late, do not expect them to up to snuff discourses for a longer period. You may also need to ensure that your phone is supported by the Bluetooth GPS system you intend to purchase - either verify the location of the manufacturer, or try it in the store before you buy.(4)

5.3. FM transmitter and MP3 playback

Many of the higher end of the show GPS MP3 playback and FM transmitter the former of the little use without the latter, because the language at all tinny and GPS units do justice to the music a bit, even if it's just Natalie Bassingthwaite. Transmitters and Foreign Minister on some devices, such as Navman and solve S300t TomTom Go 720, was too weak and that the depository of the pirate radio station which is located in Ursa Minor would be overcome.(4)

If you run your music through the GPS is a priority then we will have a choice in the Garmin nvi 760. The transmitter is not only strong enough to work well in the Convention on Biological Diversity, but also one of the GPS devices we've tested few that he is happy to play music files directly from SD card.(4)

5.4. the path of guidance

Until mid-2008, GPS units sold in Australia if I told you to turn to the right or left, or hold, respectively. Important information, certainly, but in some cases, as it's important to know which path you're supposed to be where some of this year and new units for GPS, such as the Navigon 2150max, as well as the Navman S-Series Platinum range, and view corridor at the intersections of information Home. In some of these full-screen 3D graphics, with hot and information signs in the street and will replace the regular map. By far the best warm guidance we have seen has been on the drum to go 730, and by extension to go 930. On these units are warm and guidance on most main roads and streets, and not only on the main intersections.(4)

6. Summary

In conclusion, the purpose of this article has been to introduce you to the GPS and its use as a tool for dual sport riding and touring. The description of how it works was kept simple and to the point. A number of terms; waypoints, routes, trackback, and goto were explained to help you understand GPS operation.

While collection of GPS data has become considerably easier over the past few years, and it is now possible to collect large quantities of GPS data on personal travel, vehicular travel, etc., the amount of data that may need to be managed and manipulated is larger than many professionals realize. As a result of this enormous quantity of data, it is necessary to develop procedures for managing and manipulating the data, so that useful information can be provided, and so that ready access can be provided to the resulting files. In this paper, we have described a series of procedures that have been developed to manipulate data collected from GPS devices carried by people or placed in personal vehicles, and used to produce records of the trips made over a period of days or weeks. By setting up various algorithms and rules, we have found it to be possible to break the data up into trips with approximately a 95 percent correct rating in identifying real trips. We have developed procedures to correct some of the major potential problems encountered in using GPS devices, such as the cold start problem and urban canyons. Our procedures in these two cases have been found to provide a high degree of accuracy in completing partial records from GPS devices. As a result, we are able to obtain a more complete picture of where a person or vehicle travelled while using the GPS device. Finally, we have developed procedures that allow us to infer the mode and

purpose of the majority of the recorded trips. This procedure has allowed us to analyse the data without the need to undertake further questioning of respondents, thereby providing this as a low burden method of data collection. The automation that has been permitted by programming these rules has not only been effective in managing the data and providing ready information to those who may need to review the data. The automation has also provided a potential reduction in the time and effort required to process data on the order of a reduction of 7580 percent of the amounts of time required for a manually assisted procedure.(5)

Acknowledgment

I would like to thank the god as the first.that's because the god gives as the power and the life. after that I would like to thank everyone who helped me and gave any idea to do this paper.

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