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## GPS BASED VEHICLE TRACKING SYSTEM

*Mohammad Aman Ansari*

AMITY UNIVERSITY

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### 1. Introduction :

With the assistance of satellite signals, GPS tracking technology can pinpoint a vehicle's exact location in real time. The Global Positioning System, or GPS, was first created for military purposes by the US Department of Defense. These days, GPS tracking is employed for many different purposes, such as asset tracking, fleet management, and personal tracking.

All things considered, GPS tracking is an effective technology with many uses. It can be helpful for asset tracking, fleet management, and personal tracking as it provides real-time device and vehicle location tracking. It can lower expenses, increase production, optimize routes, and prevent theft. GPS monitoring can offer useful information and support you in staying connected and informed, whether you are a business owner, fleet manager, or just someone who wishes to keep track of loved ones.

#### *How does a GPS Tracker work?*

GPS tracking operates by sending signals to GPS receivers on the ground via a network of satellites orbiting the planet. These receivers can be found in gadgets like GPS tracking systems specifically designed for tracking, tablets, and smartphones. By triangulating its position using signals from several satellites, the GPS receiver determines its exact location.

A device that has a GPS receiver and an internet connection is required in order to use GPS tracking. Numerous GPS tracking devices and applications are available in the market, each with a unique set of features and capabilities to meet a variety of demands. While some GPS tracking systems are better suited for personal tracking, others are expressly made for fleet management or asset tracking.

#### *GPS Communication and Fleet Management*

GPS technology can help fleet managers in their efforts to create a more effective and efficient company.

How do corporate GPS trackers operate?

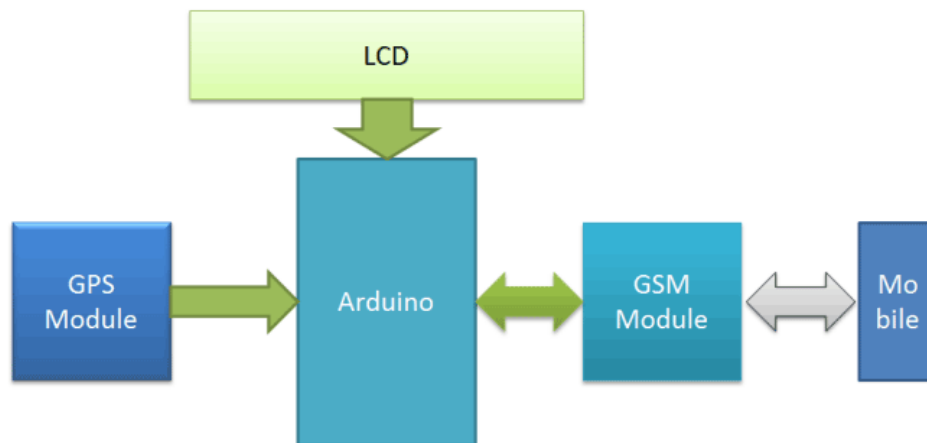
- Receive a notification if a worker leaves a designated path or region.
- Respect safety regulations using vehicle speed information.
- Recognize when a car is utilized after work to safeguard corporate assets.
- Create more profitable routes for drivers to increase revenue and provide better customer service.

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## 2. Methodology

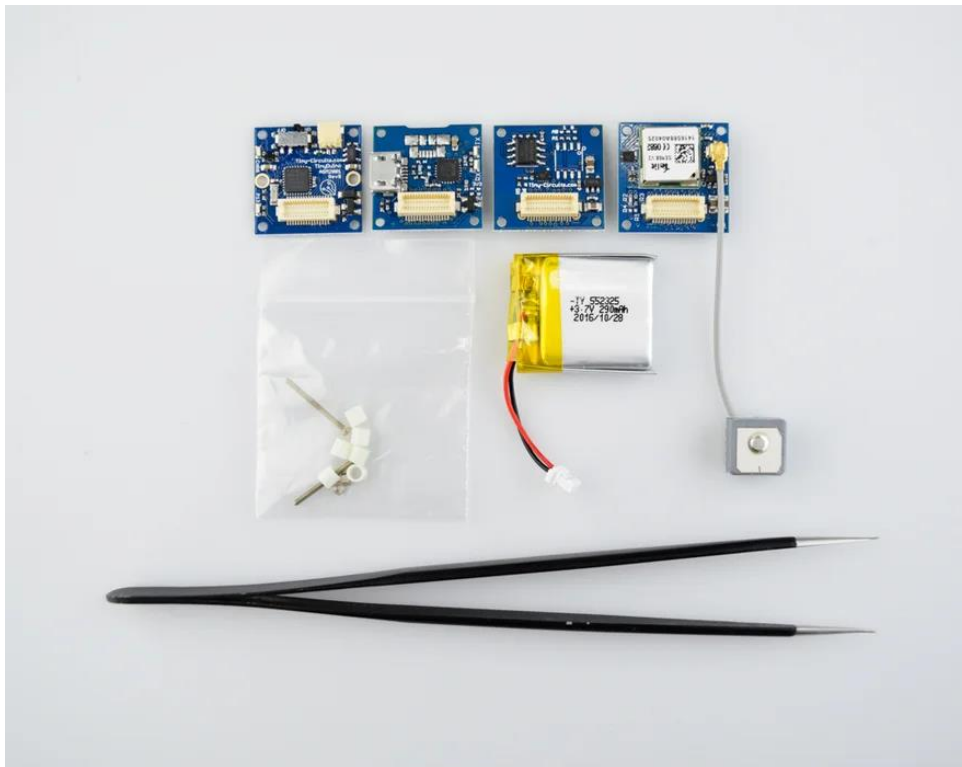
### *2.1 Overview*

This project builds a tiny GPS tracking and data logging device using Tiny Circuits. Any skill level can follow this video; no soldering, coding, or programming knowledge is needed! In only a few minutes, you can get your gadget operating by following the instructions below.



{Fig.1} Method of Using Hardware and Software

## 2.2 Materials used in this Project



{Fig 2} Materials

Source =<https://www.instructables.com/Tiny-GPS-Tracker/>

### Hardware

- Tiny Duino Processor Board (with Lithium Battery Support)
- USB Tiny Shield
- Flash Memory Tiny Shield
- GPS Tiny Shield
- Mounting Kit
- Lithium Ion Polymer Battery - 3.7V 270mAh

## SOFTWARE

This project use Arduino.

Installing the most recent SPIFlash library version is also required. Go to the 'Sketch' tab in your Arduino IDE, open the Library Manager, and type in 'SPIFlash'. Select 'Install' to add the library to your IDE, as indicated previously.



3 ASSAMBLING THE BOARDS

{Fig 3} Assembling of Boards

The Tiny Duino at the bottom of the stack should be used first. Place the Flash Me Memory Tiny Shield first, and then the USB Tiny Shield. On top is the GPS Tiny Shield.

Place spacers between the boards on the side opposite the connector using your mounting kit. This will guarantee that your stack remains firm and stop your connectors from breaking off in the event that pressure is applied to that side. If using your naked fingers isn't working for you when inserting them, I suggest using a pair of tweezers to facilitate the task.

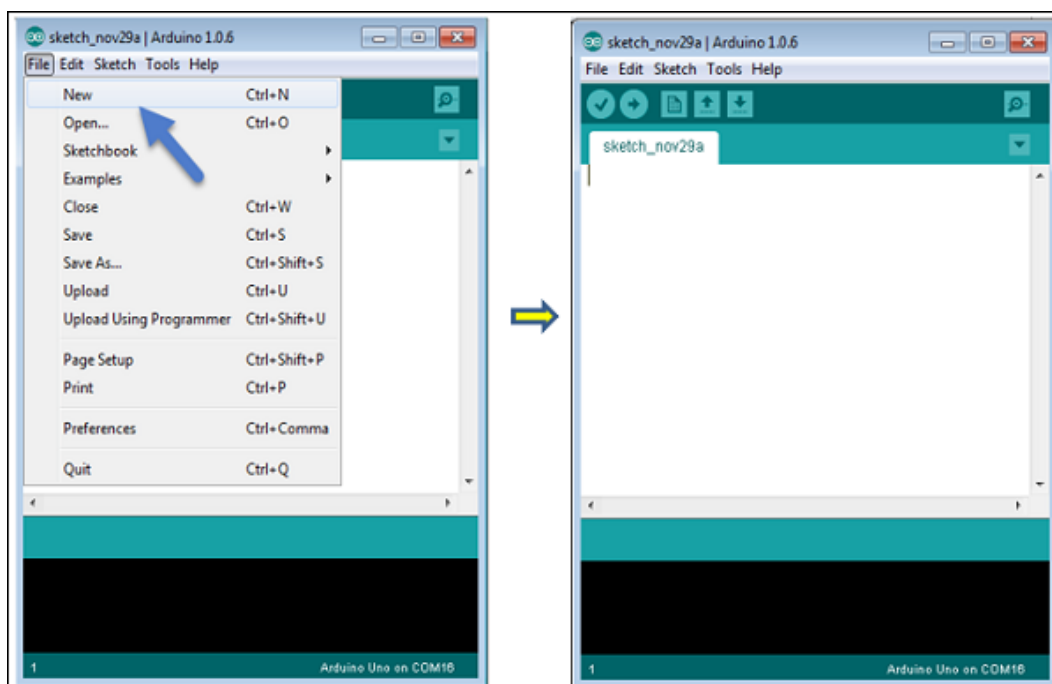
To seal the deal, drop the screw through the holes, position spacers there, and then screw in the bolt on the opposite side. To keep everything in place, a little finger tightening will do the trick.

Once your lithium battery is plugged in, the assembly is complete!

### After all of this we have to Upload the Sketch

After making sure your Tiny Duino's connection is set up correctly, switch it on and press upload. To verify that your device is outputting correctly, open the Serial Monitor.

{Fig.4} Uploading Sketch



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#### 4. Transporting the device :

In order to obtain the best GPS data readings, the sensor at the top of the stack's antenna end needs to be parallel to the ground. (Note that your results won't be impacted by the antenna wire's coiling or bending.) The best way to accomplish this is to carry the stack upright within a containment system. Imagined Below is a possible arrangement that I tested out: the stack is upright in an anti-static plastic bag that can be fastened to your coat's shoulder or a backpack strap. The same effect can be achieved in a variety of inventive ways. Perhaps there's a little box that can travel with you!

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#### CONCLUSION :

GPS car tracking systems have numerous benefits, such as enhanced efficiency, cost savings, precise data collection, and safety and security. They do have certain drawbacks, too, including potential hacking flaws, privacy problems, and unreliability.

There are now a lot of options available to replace GPS car tracking systems, including RFID, BLE, and hybrid systems. Our product TITO will provide you with unimaginable levels of improved visibility, accuracy, and cost savings because it combines the greatest aspects of all these options. You can monitor and regulate vehicle traffic throughout all of your facilities with the use of TITO.

Now that you are aware of the benefits and drawbacks of vehicle tracking systems, contact us so we can assist you in selecting the best option for fleet management!

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