

ArduRover Sources Notes

Source: “Global Positioning System – Working and its Applications”

Link: https://link.springer.com/chapter/10.1007/978-1-4020-8735-6_84

Notes:

- Goal of paper – describe how GPS works!
- Initially designed/developed for US military and security reasons in the 1970s and deployed in the 1980s (448)
- Is a collection of 27 total satellites (449)
- Major utility of GPS compared to preceding systems was that it was three-dimensional; it included latitude, longitude, and altitude! (449)
- Base GPS accuracy is 100 meters using triangulation and atomic clock timing; can be refined to 3 centimeters with Differential GPS (449)
- Distance between user and receiver (12,550 miles) measured by checking how long it takes a signal to bounce from receiver to user and back (449)
- Predicting location of a user leverages maximum 4 satellites (450)
- Error sources include atmospheric changes, system clock errors, reflective signal errors, etc. (450)
- Uses include but are not limited to autonomous drones and farming equipment! (452)

Source: “An Arduino UNO Application: GPS Guided Unmanned Ground Vehicle”

Link: <https://ieeexplore.ieee.org/document/8266283>

Notes:

- Vehicle has Arduino, GPS unit, magnetometer, and 4 DC motors! (1)
- Vehicle is capable of “chaining” together waypoint targets and transfers over coordinates via Bluetooth (1)
- This implementation contained Bluetooth for data transmission and an LCD display to monitor system stats (2)
- Lower accuracy for cheaper GPS receivers, definitely >1 meter (2)
 - This lower accuracy can be compensated for with averaging! (3)
- Paper includes heading and distance calculations!

Source: “Tracing Path with Arduino Uno using GPS and GPRS/GSM”

Link: <https://ieeexplore.ieee.org/document/8674953>

Notes:

- Goal of project – to develop a real-time tracing system using an Arduino (1)
- They use a GSM module to send data via SMS..? (2)
- Not super useful overall, but a cool application of the tech.