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Lunar Scout: Arduino Help & Troubleshooting

Krutarth  e-Yantra Staff

Nov 2023

Troubleshooting

- **Troubleshooting Arduino IDE common errors:**

This page has a general checklist to follow for using Arduino IDE - to stay away from errors. But just in case you get one, then it has a list of common errors & detailed steps on how to resolve it for different OS & platforms.

Any other resources of similar kind, will be added here if it's useful to all.

Writing good Arduino Code:

Any self-balancing system is inherently time-critical, demanding precise synchronization between the execution of control algorithms and the feedback from sensors. The execution of the control algorithm is highly sensitive to both execution order and delays..., specially when it's being executed on a discrete system such as a microcontroller.

- These three excellent guides on efficient programming in the Arduino flavor of C++ have proven to be helpful, especially in all the previous self-balancing robot themes of eYRC.

[multi-tasking-the-arduino-part-1.pdf](#)

Google Drive file.

[multi-tasking-the-arduino-part-2.pdf](#)

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[multi-tasking-the-arduino-part-3.pdf](#)

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Getting Started

Datasheets & application notes created by the manufacturer are the only authentic & reliable source of information about any electronic component.

- Many of these might not be easy to read as compared to blogs, but when there's an ambiguity - verify it with datasheet.
- Following are a few such materials we shared in hardware specifications section of the *"Rulebook"*.

On another topic

Datasheets & Related Materials

- [ATmega328p Microcontroller](#)
- [NRF24L01](#)
- [L298N Motor driver](#)
- [7805 Voltage regulator](#)
- [ACS712 Current Sensor Module](#)
- [GY-87](#) (Refer [MPU6050](#) for more details)
- [Dual axis Joystick module](#)

Following are few blogs/tutorials (a beginner's walk-through) for using components that are a part of your kit.



[In-Depth: How nRF24L01 Wireless Module Works & Interface with Arduino](#)

Learn about nRF24L01+ 2.4GHz Wireless PA LNA Transceiver along with its Working, Features - Multiceiver & ShockBurst, Pinout, Wiring, Library & Arduino Code

Est. reading time: 18 minutes

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[🔗 Lunar Scout: Task-4](#)

Unlisted on Nov 29, 2023

Listed on Dec 15, 2023

Closed on Dec 15, 2023

Krutarth  **e-Yantra Staff**

Feb 6

[@ls_stage2_teams](#) ,

Another interesting learning experience, which you only get when you mess around with hardware!

IMU (GY-87 or MPU6050 or any MPU6050 based variant)

We came across a problem ourselves that the IMU shows max. 25 degrees when it's tilted for 90 degrees! 🤖

After a lot of digging inside the library's code, and the internet finally something useful came up : 🙌

Unexpected X, Y value range when run upside down



enhancement

opened 🌐 Jan 8, 2021

closed 🌐 Jan 9, 2021  **daara-s**

Hi,

I have an MPU6050 breakout board mounted on a Teensy 3.2.
The GetAngle e ...

Most arduino libraries are open-source and they have their source maintained on some Git repo.

Such a GitHub repository is available for the “**MPU6050_light**” library as well. These repositories have an **ISSUES** section - where contributors, users talk about bugs faced during the usage or development & the maintainers try to reply/resolve/improve these in next library versions.

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This little MPU6050 software bug is a very nice example of how GitHub workflows are extremely beneficial and if used properly, the Git ISSUES are the right place to look for software bugs.

Krutarth  e-Yantra Staff Feb 6

Edit:
If you are using the MPU6050_light library, then calibrate IMU using **upside-up** manner only.

They have partially resolved the range problem for **upside-down** case, but there's still a problem with sensor fusion that occurs only in that case. **So better don't place imu upside down.**

[🔗 \[URGENT\] IMU issue](#)



Krutarth  e-Yantra Staff Feb 20

**Hardware Support**
UNO Nano MKR GIGA R1 Nicla
Portenta General troubleshooting
Board not detecte...

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