Hi, if this is your first time seeing this, hopefully this set of documents helps with navigating our robot design. This document is a series of our parting thoughts about our project and problems to be addressed immediately.

1. Extra Components
   1. \*\*\*USB Isolator: <https://shop.odriverobotics.com/products/usb-isolator>  
      The USB isolator used in the project belongs to a member of the original team and the new team will need to buy one to connect via USB
   2. Timing Belts:  
      We think there are slipping belts in the legs. If you orient the robot with the power button facing upwards, the bottom right leg’s top actuator has noticeable slippage.  
        
      [width: 4mm / length: 150mm / 50 teeth  
      Width: 6mm / length: 201mm / 67 teeth](https://www.beltingonline.com/at3-gen-iii-synchroflex-timing-belts-4593)
   3. IMU:  
      The IMU is not on in the current configuration. We did not have time to verify if that was due to a bad power connection or if the IMU itself is broken. Further, while the IMU’s code is mostly implemented on the robot, it is not integrated into the primitives. Completing that would likely help damp out a lot of the oscillations and improve its ability to walk.

[Adafruit LSM6DSOX 6 DoF Accelerometer and Gyroscope](https://www.adafruit.com/product/4438)

* 1. Bearings  
     The bearings will likely be damaged more as the robot is tested. Some of them are already stuck to the gear shafts and will likely break if removed. To be safe, more should be ordered of each type.  
       
     [32mm x 25mm x 4mm](https://www.123bearing.com/bearing-housing/deep-groove-bearing/single-row/61705-2rs?gad_source=1&gclid=Cj0KCQjwiuC2BhDSARIsALOVfBLTtf_wx8QmTYzEErM5VmS_L0-OCCcSK4K_FfiNdRsoK2PocKlsLKQaAqzOEALw_wcB)  
     [8mm x 4mm x 2mm](https://www.123bearing.com/bearing-housing/deep-groove-bearing/single-row/mr84-ezo?gad_source=1&gclid=Cj0KCQjwiuC2BhDSARIsALOVfBLP6zc2D7WI78cAX-wvPuipUXAhRfhm4ViEobpSNPHtPp2gaRZUCqoaAl5xEALw_wcB)  
     [7mm x 3mm x 3mm](https://www.123bearing.com/bearing-housing/deep-groove-bearing/single-row/683-zz-ezo?gad_source=1&gclid=Cj0KCQjwiuC2BhDSARIsALOVfBJvnXByl5luDD8K-qQIBbE7xVEqaPmOi-kKv8cbh-WROOkpH6PaLOsaAo3hEALw_wcB)
  2. CF-PLA  
     We ran out of print material. We most readily needed new actuator shells in case they melt or break.  
       
     [Bambu Labs CF-PLA (Red)](https://us.store.bambulab.com/products/pla-cf?variant=41145212076168)
  3. TMotor MN4004 KV300 Motors  
     In the off chance any of the motors encounter shorting issues or break off all of their phase wires, we recommend acquiring bonus motors.  
       
     [MN4004 Antigravity Type 4-6S UAV Motor KV300](https://store.tmotor.com/product/mn4004-kv300-motor-antigravity-type.html)

1. Components to be verified
   1. Bottom right leg top actuator  
      If you orient the robot with the power button facing upwards, the bottom right leg’s top actuator has noticeable slippage. Open the leg up and verify what the issue is early.  
      \*\*\*When opening up, compress the center gear with a pick to make sure the belt doesn’t deform the encoder wheel.
   2. IMU Power  
      The IMU is not currently being powered. We’re not sure how this happened, as it is connected to the rated voltage of 3.3V.\* Please verify that the IMU turns on externally.

\*Orange Pi doesn’t activate 5V and 3.3V at the same time, hence the power splitter

* 1. Motors  
     Three of the motors seem to heat up significantly faster than the others, leading to concerns with melting the PLA legs. Identifying the source of this issue and resolving it is mandatory to get the robot running for extended periods of time.