Titanlegs-Quadruped

a. Objectives:

- This project aims to develop an economic and viable actuator that can be used for multiple projects like an inverse pendulum, wheel balance, quadruped.
- Studying the existing and already implemented algorithms and open-source PCB designs of Quadruped and making it more efficient to serve our purpose.
- To make a Fully-fledged quadruped that can lift or hold up to 5 kg of external weight.

b. Current Status

- **Firmware**:- DRV8305 is the proposed motor driver to be used for controlling the motors. Currently, a firmware driver for DRV8305 is written in ESP-IDF.
- **PCB Designing**:- The schematics and the connections parts of the custom-designed PCB for one controlling one BLDC motor of the joint have been done. The routing has been started and will be completed soon with respect to the first prototype. Once this has been achieved, manufacturing PCB and testing will be underway.
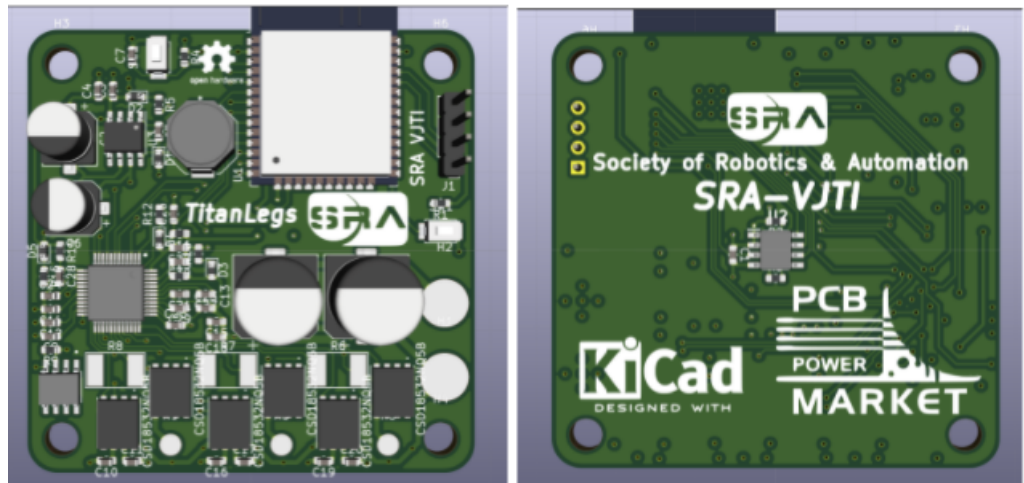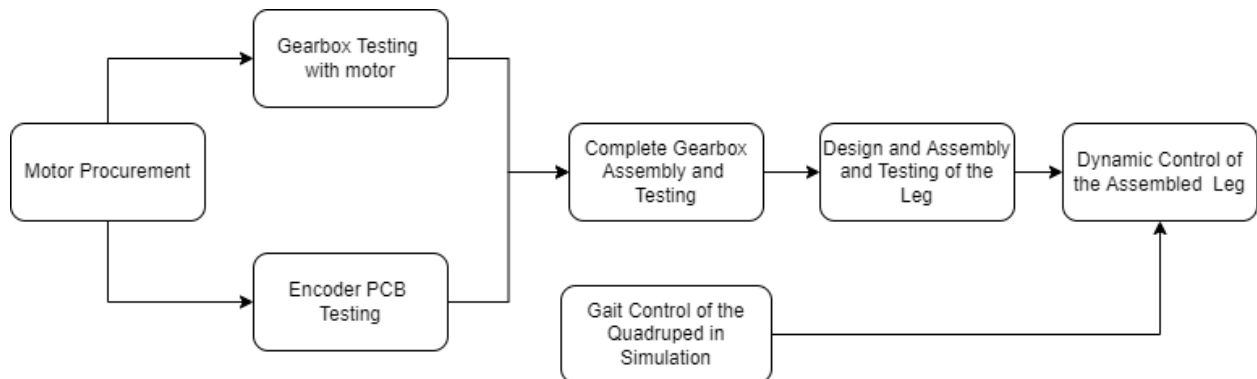

- **Gearbox** : A custom-designed 2-stage cycloidal gearbox is 3D printed to transmit an appropriate amount of Torque based on the motor's KV and RPM.
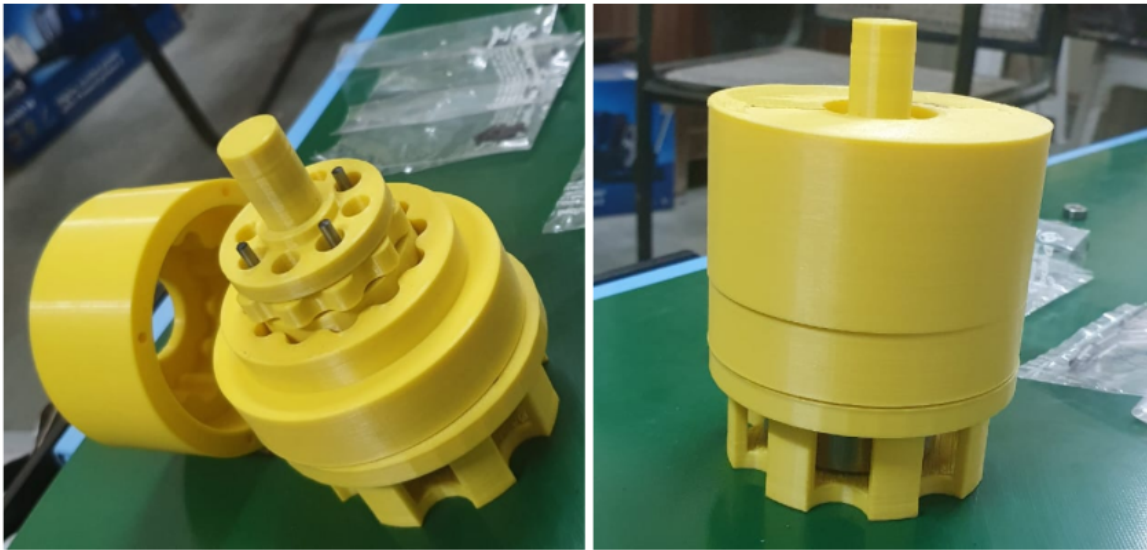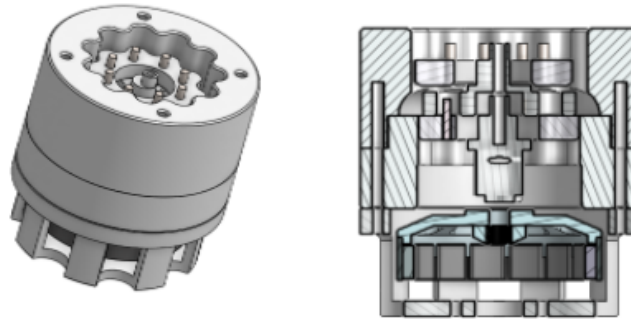
c. Future Plans

- ■ Start Plain Terrain and Rough Terrain testing of Quadruped in Simulation Environment.
- ■ Print the gearbox and Design an Actual Actuator

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Component list for actuator :

Sr. No	Components	Quantity
1	GARTT ML5010 300KV Brushless Motor	2
2	MK06-4.5 Motors	4
3	STM32H750	2