Jibebe Internship 2022

Progress report

Name: Paul Moses

Tasks completed last week

- [#4] Charge Controller and Battery Acquiring – The two components are placed in one section since a single manufacturer should supply both. Significant progress has been made in getting qoutations though not as fast we would like. Some suppliers are also unable to supply to this country.
- [#34] Determination of components for tractor and calulation of their values- The calulation of the motor required have been done and uploaded though a challenge remains in the best design for use in the tractor.(Refer to section on Pending issues for explanation)

Tasks completed last week

- [#33] Torque Calculations – The torque required by the Shujaa Tractor was calculated and subsequent motor calculations and acquisitions will be dependent on the torque requirements calculated here.
- [#36] Revision of timelines - Re-writing expected timelines to fit current progress and account for delays in procurement was done as displayed in this document.
- [#30] Experimental Characteristics of motor- We decided to go in a different direction and research on pre-existing values already gotten for the specific motor we have.

Major Pending Issue

Currently, the automation robot is powered by 4 motors. One for each wheel. The Tractor however only has one motor that powers all four wheels. This presents a design challenge.

Option A: Change to 4 motors in the tractor- This would require massive mechanical overhaul of the existing tractor and redesign of motor and torque requirements for the electrical team.

Option B: Change to 1 motor in the bot –This would require an overhaul of the mechanical configuration of the robot and how automation is done.

Tasks in this week

- [#39] Clarify best choice for motor orientation for use in Tractor to allow for automation – Have meeting with the entire team to decide on how best to position motor so to allow for automation and also to remove burden from the mechanical team in having major redesign requirements
- Re-Calculate previous motor and torque requirements based on outcome of the meeting above

Total estimation of weeks: 12

Week	Tasks	Reporting	Hrs	Month
5 - Requirements review				
5.1	Finalize on battery acquisition for the Tricycle	None	20	Feb
5.2	Finalize on motor and torque requirements for the Tractor	None	8	
5.3	Clarify best choice for motor orientation for use in Tractor to allow for automation	Team meeting to review the best course of action	5	
6 - Research				
6.1	Research and recommend best motor for our specific use case in the Tractor	Electric Team Meeting	20	Feb
6.2	Get experimental data for motors and run simulations for verification	None	20	
7 - Testing				
7.1	Alpha testing of newly arrived battery for the tricycle.	Electric Team Meeting	20	Feb
7.2	Testing of integration with other components of the electric subsytem	None	25	
8 - Deployment				
8.1	Deployment of the electric subsystem of tricycle to finalized Tricycle	None	20	March
8.2	Fixing of any issues that may arise during Integration	None	20	
9 - Testing				
9.1	Alpha testing of newly arrived components for the tricycle.	Electric meeting	16	March
9.2	Getting experimental resuts of the components and NDT to validate correct operation and performance under load	None	24	

10 - Integration				
10.1	Integration with other subsystem	Team meeting	40	March

11 - Testing				
9.1	Alpha testing of entire assembled tractor	Team meeting	40	March

12 - Deployment				
12.1	Deployment of Shujaa Tractor	Team meeting	40	April