

NEWSLETTER

TLMOTO
ifj TÉCNICO LISBOA



FEBRUARY 2022 / QUARTERLY

Diogo is an ex-member of TLMoto. He started in the Structure area where he stayed two years and then he became team leader. He already finished Mechanical Engineering in Instituto Superior Técnico and nowadays he is working as a telemetric in several competitions.



How did you find out about TLMoto and why did you decide to join?

I found out about TLMoto through a fair in the first year and then I got in touch with people who already knew the project. However, at the time they didn't know how a first year student could help the team, therefore, I didn't join right away. In my second year, recruitment was opened for TLM02e for the Structures area and that was when I joined.

What do you think made you become team leader?

Usually, the team leader position is proposed by the old management and by showing responsibility and commitment to the project with TLM01i I think it was a unanimous decision from them to make me the team leader.

Can you tell us about your journey inside TLMoto?

I joined the Structures area with the objective of finishing TLM02e to compete in MotoStudent in 2018. My role back then was to develop the battery box. At the same time, back in 2018, I decided together with the team leaders, that we wanted to get the TLM01i back to work. In 2018 we managed to achieve our goal and took the motorcycle to the National Speed Championship. With this small project I started to have some responsibilities and, with the natural course of things, the following year when we started to develop TLM03e, I ended up staying as a team-leader, having stayed in the position for the following two years. At that time, we went to the National Speed Championship again in 2019 and 2020 with the TLM01i with some evolutions, and we left the TLM03e in the testing phase.

What challenges do you think you have found as a team leader?

I think the biggest challenge was knowing how to motivate people to work on a non-paying project. It is necessary to show people the importance of the project in their lives and what it can bring them in the future, which by not having the immediate benefit, makes this process more complicated. The other thing is getting the budget necessary to carry out the project. I think those are the main challenges. Regarding the part of developing the motorcycle, it is obviously challenging and since you are a team leader you end up having a great responsibility, but I see this more as a challenge for the whole team and not as an individual challenge.

Was it difficult to reconcile university and the TLMoto?

I feel that as a team leader it was more complicated to give the same attention to studies as a member of Structures, in my case, or another member of TLMoto. The reality is that as a leader at the end of the day you have to be available for the project and your colleagues. It is not supposed that a member has to give up his studies to be able to be in the project, but the truth is that for it to run well and to be cohesive, maybe the management has to compromise this part a little, but everything can be done with organization. In my case, I finished university in six years but I know that I gained other skills that I wouldn't have acquired without the TLMoto and I see my experience in the team as a very positive point.

What do you consider to be your greatest achievement within the team?

I think there were several very good achievements. A podium in a National Speed Championship, having been present in the development of the first electric motorcycle made by students in Portugal and being team leader of the team that made the second motorcycle made by students in Portugal were very good achievements. As a team leader, I would say that we were able to create a great team in terms of friendship and for that to spread abroad. In the end, what really pleased me was realizing that people knew TLMoto for its good environment and that in recruitment, people went to the team knowing that they would make good friends while they were working on an engineering project.

Speaking of that, what were the skills that you gained in TLMoto?

One of the things I gained with the team, and I would say it is common to all prototype projects, is the so-called "getting hands-on". Most engineering students take practical classes that are purely problem solving. These classes don't give us that practical aspect of developing something and as they also have no purpose other than solving the problem, you end up not having the same motivation to develop new skills as in a project like this. Beyond having the opportunity to be in contact with what I was going to work on in the future, I also developed a huge sense of responsibility.

Can you explain what you are doing professionally?

There are several competitions at the motorcycle level. We have the MotoGP championship as the biggest, we have another equally important one which is the Superbike World Championship and then we have others a little less important, but which are the gateways to these two. We have the FIM CEV, as it was called in the past and this year it will be renamed JuniorGP, which is the European speed championship. Before this, there are still championships at national level, the national championship in Portugal and the national championship in Spain, which is recognized worldwide as the best at the national level. At the moment I'm working on the European Speed Championship, the national championship in Portugal and in Spain. I'm a telemetric and, in short, my job is to analyze the data from both the riders and the motorcycle so that he can set lower times.

What advice would you give someone who is considering joining the team?

They should come with motivation and spirit of sacrifice. The truth is that sometimes we can be a little more busy with the team and we have to give up some things, but nothing that can't be reconciled. Besides, it's essential to enjoy challenges.

Do you think TLMoto influenced you in any way to follow this path?

Yes, no doubt. I only got to know this world because of TLMoto. In the team I had the opportunity to gain knowledge even within the field and to learn about this world in a very dynamic way. The team in this aspect helped me a lot to get on this path and I am very grateful for the opportunities I had.

Do you have any professional dream that you want to fulfill one day?

Obviously working in the MotoGP is always a dream. Besides that, I would like to have the project I had at TLMoto in a company. Whether I'm going to do them or not, I'm not really worried about at the moment, I'm worried about learning and informing myself in both areas so that it's something natural. If it happens one day, it's because it had to happen and that's why I say that my goal today is to work to learn and get as far as possible.

If you had to describe your experience in the team in a few words what would you say?

I think it was an exciting and rewarding experience.

If you had to choose another area within TLMoto which one would you choose?

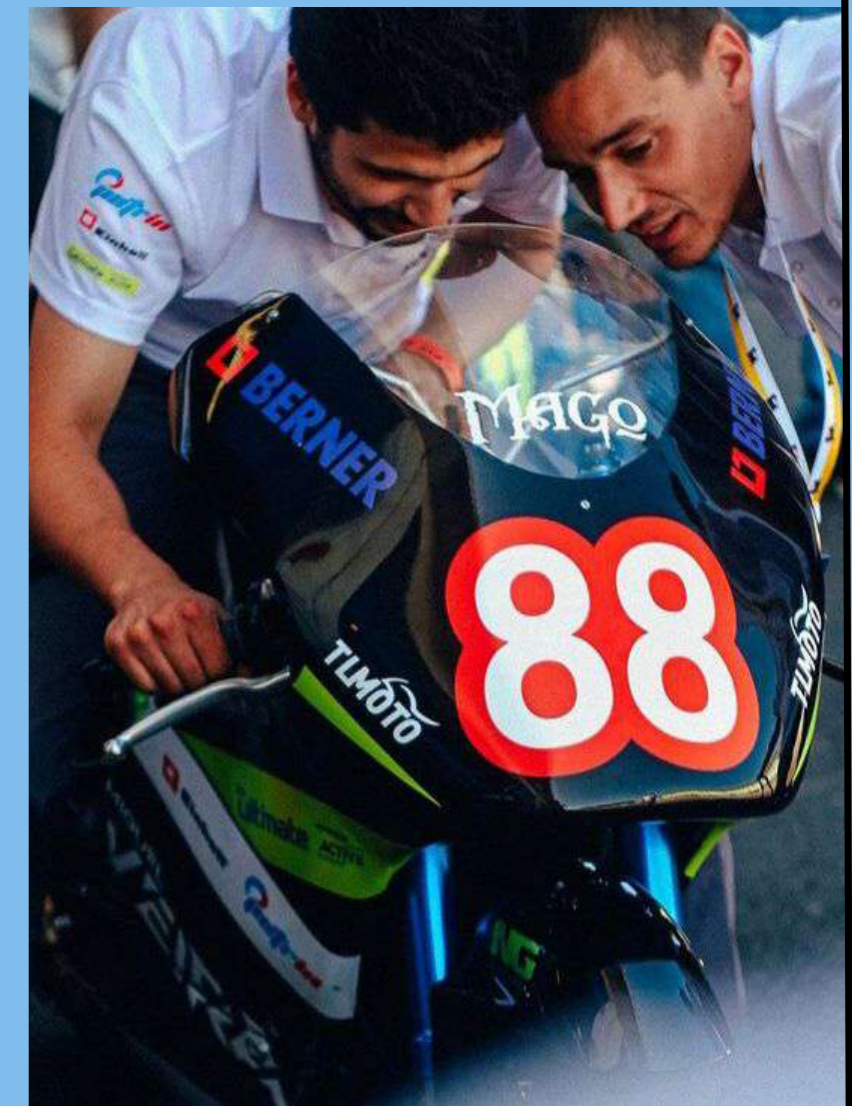
When I joined the team, this area didn't exist yet, it was created more recently, but it was going to be the dynamics area. At TLM01i I worked a bit on dynamics, at a more basic level and without much exploration of this knowledge, but it has already allowed me to have some insight into what the dynamics of a motorcycle is and what I could study further. So maybe this was the area I would like to explore within TLMoto.

Favorite MotoGP rider and team?

As for the pilot, it is undoubtedly Miguel Oliveira. I didn't follow his entire career, but from what I could follow, as a pilot, what he's already managed to achieve was a feat. I know Miguel as a person and I know that he is a worker who gives 200%. In terms of the team, it's Ducati and I would say it's a dream team for any engineer. It's always the first team to launch the new stuff, develop the new stuff and have the latest engineering.

Any funny stories you've lived on TLMoto that you want to tell us?

Some (laughs). When we went to MotoStudent in 2018 there were only 6 or 7 of us and I can say that I slept a total of about 10 hours in the 4 or 5 days we were there. Now I look back and see that it was completely ridiculous, but it was what we wanted and we fought for it. We also had another funny story in the workshop while we were working on the TLM02e. So there was one of those short circuits that sometimes happens when you're working on an electric motorcycle and out of nowhere the motorcycle starts to smoke without anyone touching it. I can also say that I already lost a nail working on TLMoto.





GIFT EXCHANGE

The arrival of Christmas led the team to bring the Christmas spirit to the workshop. In addition to the exchange of gifts between the team members, a Team-Building activity was also carried out, which consisted of the production of a Christmas video clip and its sharing on social media.

As is well known, Christmas is not Christmas without Mariah Carey so, for the production of the video, the team members decorated the workshop and accepted the challenge of singing the theme "All I want for Christmas" but in a version dedicated to TLMoto. Some say the team performed better than Mariah herself.

TEAM-BUILDING (KARTS)

Despite all the work carried out by the team in the last months, there was still time for more relaxed moments and lots of fun. Therefore, several team-buildings were carried out to keep the team motivated and ready for the new challenges that come.

Since the pandemic situation is getting better, the TLMoto was able to do them in person again. An example of this was the team's trip to the karts, where the members were able to enjoy a great day while having the opportunity to be behind the wheel.

6 MONTHS SINCE MOTOSTUDENT

In January, we celebrated the 6 months since the end of the last edition of Motostudent. To mark this occasion, the team made a motivational video showing the various activities, challenges and achievements that we went through.

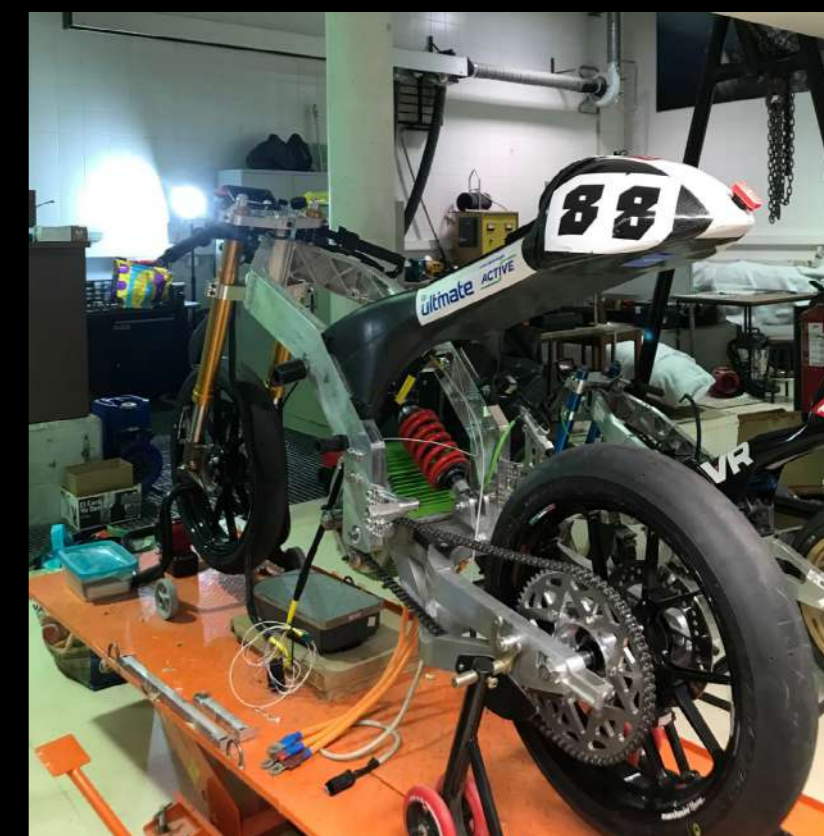
Although it has been a short time since the end of competition, the team does not rest on past glories and it is already back to work. With each edition, our team spirit gets stronger as well as our hunger for victory.



IMPROVEMENTS ON TLM03E

During the last quarter, several improvements were made to TLM03e, namely with regard to its manufacture (fairings, controller support, supports, electronic box and dashboard).

The batteries were also completely dismantled to verify that all cell connections were intact and in good condition. Finally, new wiring was created to connect this controller to the rest of the electrical system



AERODYNAMICS & COOLING

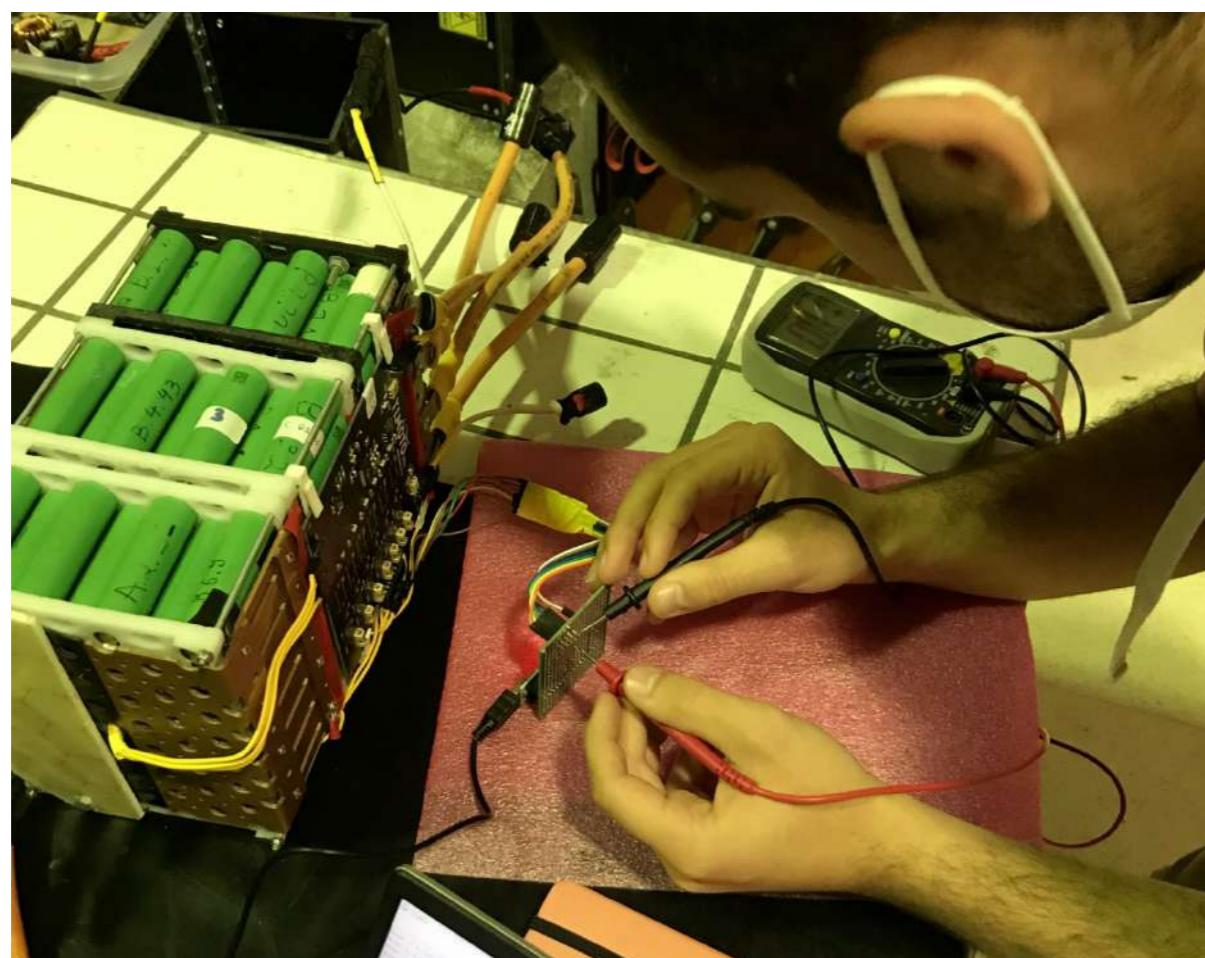
During the last quarter, the Aerodynamics and Cooling area carried out research on new ideas to apply to the motorcycle, CFD simulation in order to improve CFD practices. A post-processing macro was also developed to obtain better simulation results.

The design of a first iteration of the mudguard, the study of the improvement of the engine cooling and research on mesh sensitivity studies were also made. The recruitment of this area reached the end of the first phase and consequently the beginning of the second, where the recruits have to do a CFD simulation of a simple geometry.

STRUCTURES

The structures area ended the initial research on our new prototype. The focus was on building TLM01i and learning about new software, NX and Hyperworks.

This area also started to develop the concept phase, define needs and specifications, and design the first ideas for TLM04e. Finally, it was still focused on recruitment.



POWERTRAIN

In the powertrain area, TLM03e controller was replaced by the one of our previous prototype, given the great shortage of existing electronic components, and the impossibility of taking it to tests. The controller has been reprogrammed according to the engine and batteries.

Once the powertrain is functional, the next step is to take the bike to a power bank where adjustments and performance improvements can be made.

ELECTRONICS

Over the last three months, the electronics area has worked on TLM03e charger and telemetry and researched different approaches to the new bike's battery management system. In the charger, the hardware was finalized and in the near future we intend to test it by charging the batteries.

In the telemetry sub-area, the program began to be developed that will present the collected data as well as the sd card that will store this same data. Regarding the research carried out for the BMS, it culminated in a report that will be fundamental to decide the direction of the steps that will be taken in TLM04e.

DYNAMICS

In dynamics, the construction of the dynamic model and its physical environment was carried out in order to start optimizing the base geometry of the new prototype.

In addition, the first suspension models were also made, both front and rear. The recruitment process continues to be done as well as the planning of the area.



MARKETING & DESIGN

Over the last few months, the Marketing and Design area continued its recruitment process. In addition, dissemination partnerships were established with the student association, BEST and WIE.

Finally, workshops were prepared with QSR and new merchandising for the team.

MANAGEMENT

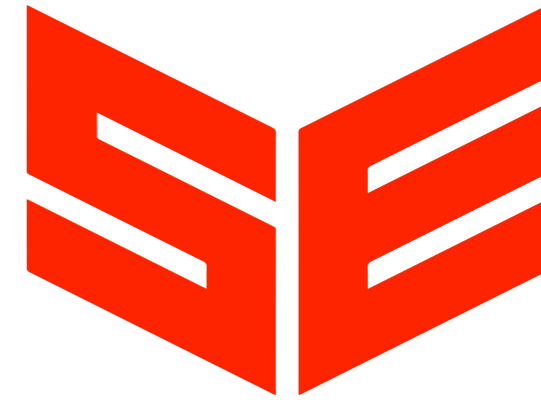
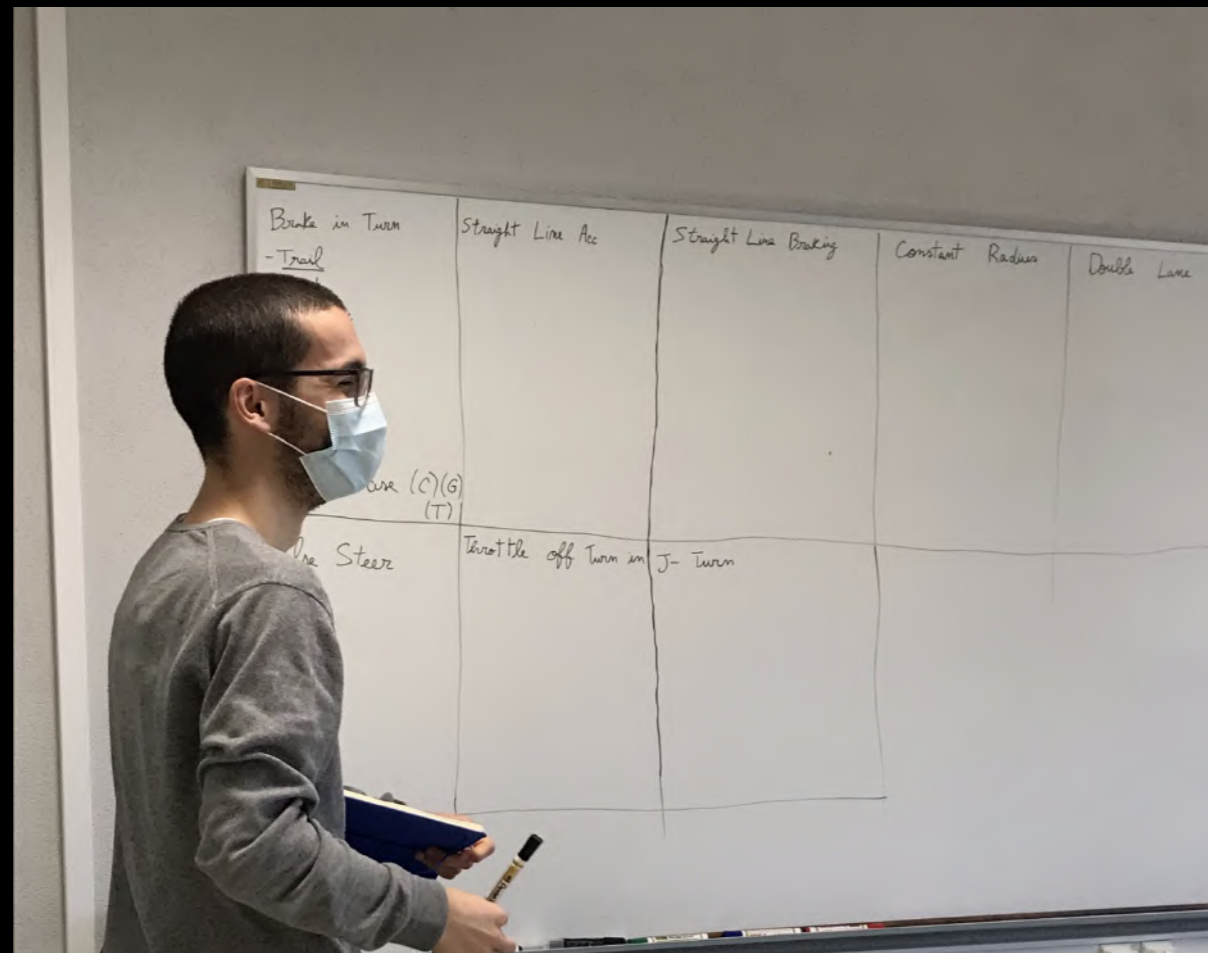
The management area has continued to look for sponsors and has held annual meetings with former ones. A partnership was also made with QSR.

HUMAN RESOURCES

In the Human Resources area, the objectives and responsibilities of this area were defined.

In addition, he was responsible for preparing several teambuildings and for carrying out evaluations of leaders, sub-leaders and recruits from different areas. Finally, training was given regarding time management and receiving feedback.

In addition, the registration with MotoStudent was made and the possibility of competing in events in Italy and Poland is being studied. The application for Technov is also being prepared.



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