University of Glasgow
RACING

TECHNICAL PLAN
2022-2023

Outline.

Following on from the team's victory at FS2022, UGRacing plans to deliver three unique vehicles in 2023, with the aim of finishing inside the top 5 in all three categories.

Electric.

After multiple years of research and development, UGRacing aims to take its electric race car from last year's prototype to the track. A custom-made HV accumulator will be manufactured and tested in-house, as well as a new chassis and structural components specifically tailored to an electric powertrain. Additionally, the team will refine last year's successful composite aerodynamics package.

Driverless.

The main goal of the Driverless team will be to improve the robustness of their software. Following successful testing sessions last year and the team's first dynamic points at competition, they will have a particular focus on real-world testing and implementing novel AI techniques in their software.

Concept.

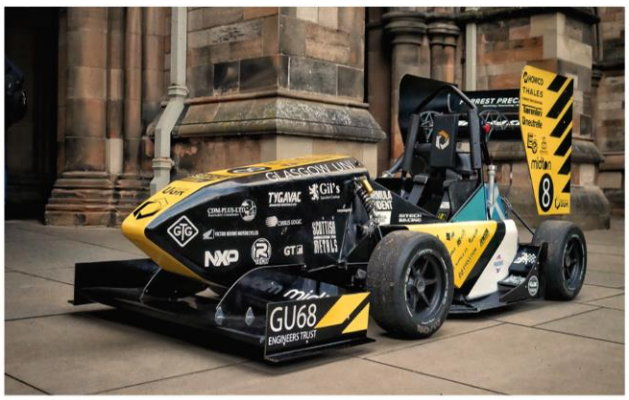
In 2022/23 the Concept team will research and develop an EV-ADS race car. Combining the team's new ambition to design and manufacture an electric vehicle with the implementation of autonomous driving systems, the Concept race car sparks the beginning of a promising new direction of UGRacing. Integrating both the Electric and Driverless teams' future goals, the Concept team will kickstart UGRacing's ultimate goal of entering an EV-ADS into Formula Student.

Electric

Our aim is to put UGRacing's first electric Formula Student vehicle on track by July 2023.

As the automotive industry diverts its attention to the electrical revolution; UGRacing will follow suit for 2022/23 and beyond.

Introducing UGR23 - our first competition electric race car.



Having already achieved a 3rd place finish with an electric vehicle entry in Concept Class, UGRacing plans to convert this concept to the track.

For the team's first electric vehicle, the focus will be on ensuring that the car passes Electrical Scrutineering at competition. There will be an increased emphasis on electrical safety and testing, as well as maintaining the comprehensive mechanical understanding within the team.

The powertrain will be assembled and tested in our dedicated on-campus space, which has been converted to abide by stringent health and safety requirements. While a naturally ambitious team at heart, to meet the ultimate goal of a running electric car at competition, feasibility and manufacturability will be prioritised over performance.

Driverless.

After achieving their first ever dynamic points at Formula Student 2022, our Driverless team look to kick on from this success in 2022/23 by improving the robustness of their software.

Areas of Development

- Mapping
- Perception
- Motion & Control
- Path Planning
- Simulation
- Actuation Systems & Integration

The team showcased their bespoke software at competition in conjunction with the Formula Student DDT autonomous vehicle for the second year running.

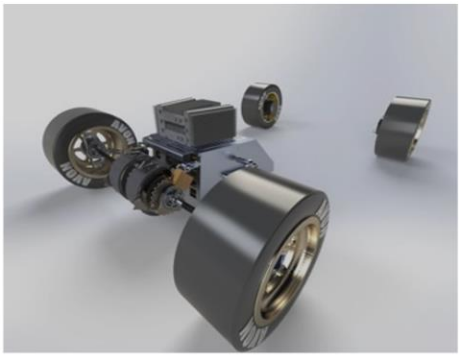
Despite being one of the newest Driverless teams, UGRacing has successfully established a sound foundation to build on in the coming years.

Driverless will begin to develop their very own autonomous simulator this year. This will combine a unique set of skills, ranging from vehicle dynamics to graphic design, and will allow significantly improved testing of their software.

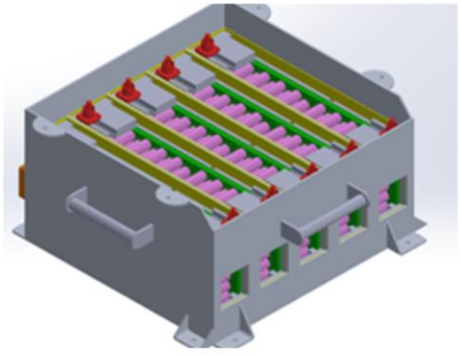
Concept.

2022/23 marks the beginning of an exciting new era of UGRacing. This year's Concept team will design and develop an EV-ADS vehicle.

This will be the first autonomous electric vehicle entry from UGRacing and will kickstart the team's ultimate goal of uniting the Electric and Driverless teams in the future.



Continuing on from the team's recent successes in Concept Class, the team looks to combine our new ambition to design and manufacture an electric vehicle, with the implementation of autonomous driving systems. This presents the greatest challenge the team has faced to date, requiring skills from all aspects of engineering.



Entering and running a physical EV-ADS vehicle would be the first of its kind within Formula Student UK, reaffirming that UGRacing is one of the most established FS teams in the nation.

Future Timeline.

2022

UGRacing's first electric vehicle Formula Student entry and a continuation of Driverless DDT development. 2022/23 will mark the beginning of EV/DV integration within the team.

2023

2024

UGRacing's second electric vehicle Formula Student entry and a further continuation of Driverless DDT development. 2023/24 will introduce the start of manufacturing of an EV-ADS prototype.

2025

Continuing on with electrical and autonomous vehicle development, UGRacing will enter our first EV-ADS Formula Student entry in 2024/25.

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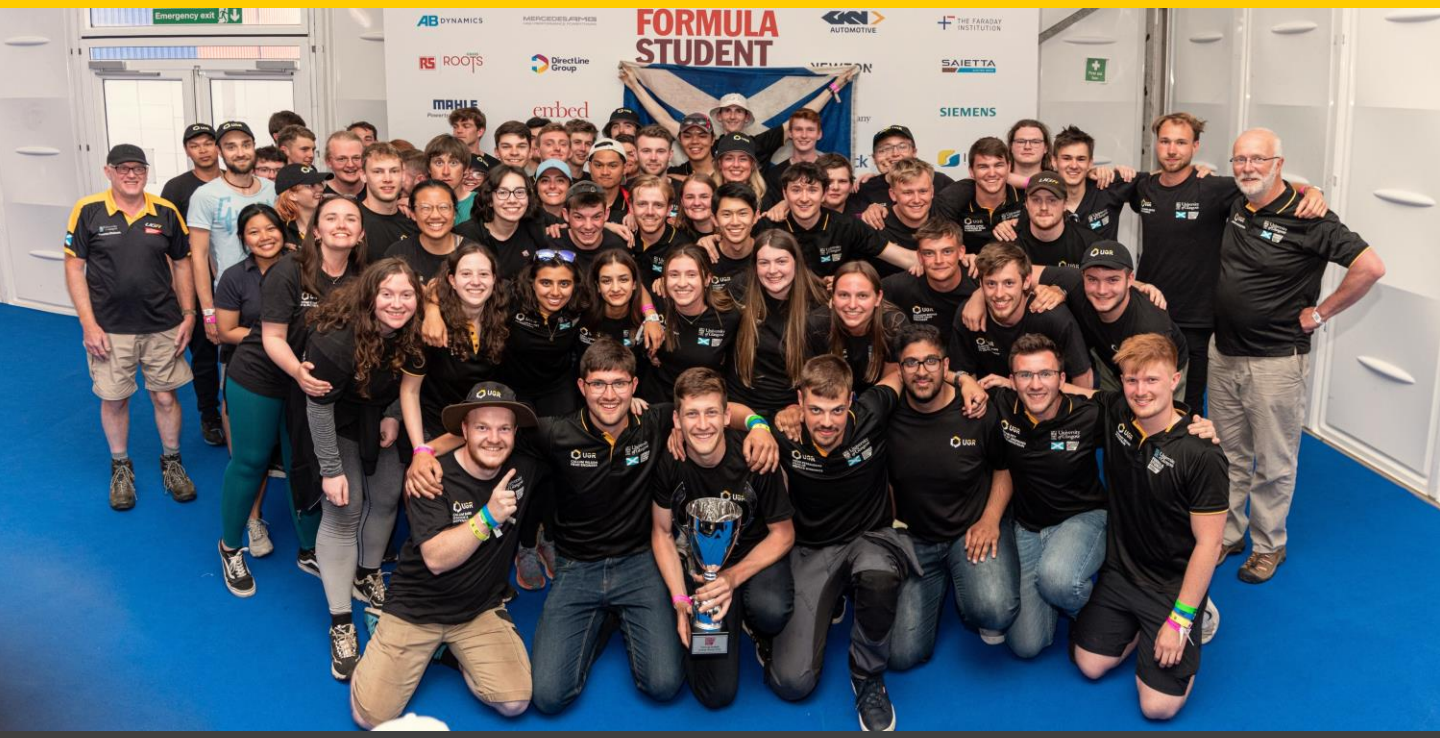

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