

## Project Title: **Driver Interface & Telemetry**

Supervisor: **TBC**

### Project details:

The desired outcome for this project is twofold:

#### Driver Interface

An important part of any car is how the driver interacts with the vehicle controls. This includes the dashboard, steering wheel, and electronic controls. You will need to consult previous race drivers and use their feedback to develop the physical layout of switches and controls for core functions like acceleration/ regenerative braking. You will also familiarise yourself with the code managing critical driving functions (written in C++) and then update it for the new vehicle.

In addition, with the change in direction for this race cycle, a new in-car 'infotainment' system is being developed, using the Raspberry Pi platform. This includes features such as an audio system and navigation, and will also display interesting information to passengers, all controlled via touchscreen. This also needs a graphical user interface to be designed. Once the core features have been implemented and tested, there is scope for new features to be added.

#### Telemetry

The second focus of the project is to integrate and test the new telemetry solution developed during the year. Streaming live data from the car is critical for strategy and determining health of vehicular subsystems. Hence, field-testing of the telemetry system's data gathering ability is needed. 'Out-in-the-field' range tests must be performed to ensure a reasonable range and streaming data rate is obtained.

During the project you will need to fully document all design decisions, software and schematics, to ensure a traceable route for other team members to follow.

**Closely linked projects:** "Electronic Hardware & Solar Arrays"

### Desired Skills and Experience:

*Note: These are not essential (unless listed in **bold**) and those who receive roles will be offered training to compensate for any gaps.*

- **General interest in writing software/firmware**
- **Experience with C++**
- **Experience with (or strong interest in learning) Raspberry Pi**
- Experience with using mbed /Arduino/a similar embedded platform
- Experience in designing (simple) PCBs (both schematic design and PCB layout)
- Good communicator of ideas
- Willing team player
- Prior interest/experience with solar cars/CUER
- Flexible and able to work to tight deadlines