Toy Concept

Remote control race car

- Controllable via mobile device app via Bluetooth
- Has LEDs to customise colours, and an OLED display on the windscreen to customise the driver
- Mobile app educates children about STEM topics in racing
- Customisation is meant to encourage inclusion in STEM and racing. This toy is for all genders, ages, ethnicities.
- The race car's capabilities can grow and scale: from a simple toy usable without the mobile to a programmable remote control race car that educates children about physics

Behavioural Driven Design with Gherkin

1. **As a child, I want to control the movement of the race car.**

   Given the child is using the mobile app

   And the app is connected to the race car

   And the race car is charged

   When the child pushes a direction

   Then the car moves in that direction

2. **As a child, I want to honk the horn.**

   Given the child is using the mobile app

   And the app is connected to the race car

   And the race car is charged

   When the child pushes the horn button

   Then the car sounds the horn

3. **As a child, I want to change the LED colours of the race car.**

   Given the child is using the mobile app

   And the app is connected to the race car

   And the race car is charged

   When the child selects an LED colour scheme

   Then the car LEDs change colour to the selected scheme

And the colour scheme is updated in the app

4. **As a child, I want to customise the driver's appearance.**

   Given the child is using the mobile app

   And the app is connected to the race car

   And the race car is charged

   When the child pushes the "customise driver" button

   Then the child can select the driver's appearance

   And the appearance is updated on the race car

   And the appearance is selected in the mobile app

5. **As a child, I want to see how much range is left in the battery.**

   Given the child is using the mobile app

   And the app is connected to the race car

   When the child pushes the "battery" button

   Then the app displays the estimated range left in the battery

6. **As a parent, I want to establish admin/parental control access to the race car and app settings.**

   Given the parental controls have not previously been configured

   When the parent initially configures the app for use

   Then the parent is prompted to establish a password

   And the parent can access parental controls by pushing the "parental controls" button and inputting the password

7. **As a parent, I want to access admin/parental control access to the race car and app settings.**

8. **As a parent, I want to set parental controls for maximum speed.**

   Given the parent is using the mobile app

And the parent has validated parental control credentials

When the parent

9. As a parent, I want to set the driver appearance as a photo of my child.

10. As a parent, I want to select the educational functions enabled in the app.

Possible References

BDD/Gherkin

https://behave.readthedocs.io/en/stable/philosophy.html#the-gherkin-language

BDD/Scrum

https://www.scrum.org/resources/blog/behaviour-driven-development-bdd-helps-optimizing-value-work-done-scrum-team

Scrum Theory

https://scrumguides.org/scrum-guide.html

Personas

https://dl.acm.org/doi/10.1145/2207676.2208573

Matthews, T., Judge, T. and Whittaker, S. (2012). How do designers and user experience professionals actually perceive and use personas? *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI '12*. doi:10.1145/2207676.2208573.

Sprint Planning

https://www.atlassian.com/agile/scrum/sprint-planning

Pytest

https://docs.pytest.org/en/stable/