RC Aircraft

Introduction:

After seeing a video online of a DIY remote control aircraft, the body of the plane being made of a bottle and cardboard, and the flight controlled by elevators and a rudder, I decided to attempt this myself. The main difference being mine would use a custom-built Arduino programme for the controls, rather than an expensive pre-built flight controller.

Build:

I started the build focusing on the code (Full copy available on my Github). The general premise of the code was relatively simple:

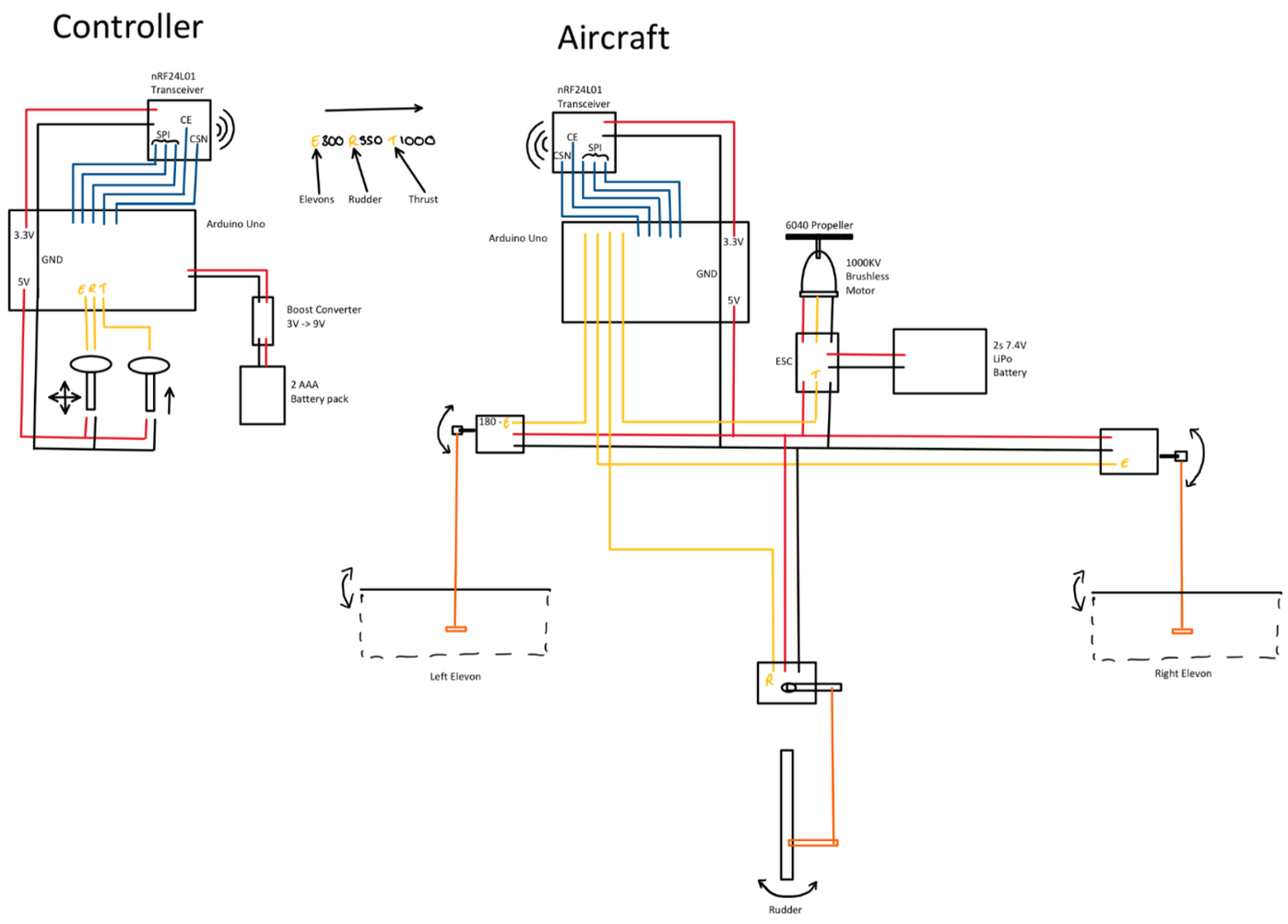
- The first Arduino (controller) reads the values of the joysticks, maps them to elevons, rudder and thrust, and assembles these values into a string (i.e. E900R100T500)
- The Arduino then transmits this string using the RF transceiver module.
- The second Arduino (Aircraft) receives this string using its respective RF transceiver module
- The Arduino then parses the string into its respective components using custom-built functions
- The Arduino writes the values to their respective motors.

The hardware part of the project mainly consisted of ensuring that the servos could move freely and give a wide range of motion, the motor was securely fastened, and the electronics were sufficiently protected/secured. Some iterations included:

- Adjusting the location of the Arduino for optimal Centre of Gravity
- Optimising the aerofoil for sufficient lift.

Conclusion:

The flight systems worked perfectly, however, as to be expected, making the hardware of a plane out of a bottle and cardboard has its limitations. Overall, the plane successfully glided around 20-30 feet with optimal conditions and sufficient flight control.

Future Iterations:

Due to the relatively anticlimactic flight results, in future iterations I would endeavour to use a more reliable/robust plane body. One method could include the CAD modelling and then 3D printing of an established aircraft design. Another option could be purchasing a suitable model aircraft online and fixing my electronics in order to make it fly.