Satellite Building: Aiming for the Skies

Malachi Akyea-Mensah

Over the last three months, five eager, bold and bright students have been tackling the immense challenge of constructing a working satellite to be launched over 300 meters into the atmosphere.

This collective effort is part of the UK CanSat competition, where young physicists and engineers like us participate in a contest to extract and analyse data from the skies above the Earth. Felix, Gabriel, Rumi, Lukas and I are entering under a team named 'Houston, We Have Fun!', which was inspired by the infamous Apollo 13 space mission to the Moon. Together, we have been planning, prototyping and programming the base ideas for this satellite mission and are excitedly preparing for its launch in March.

'The tasks ahead are certainly a challenge, but with the equipment and commitment we have, we can build an effective satellite.'

Our team began its work in October, and we have already developed a document listing the objectives of our CanSat, meeting up each Tuesday in the maths classroom after Physics or online during the weekends. Here, we also discuss strategies to create the satellite; solving calculations on the predicted mechanics of the satellite; drawing labelled sketches of the design and planning the construction schedule for the coming weeks.

Our mission is to measure the intensity of ultraviolet radiation (UV) at different altitudes as the satellite falls to Earth, alongside taking measurements of barometric pressure and air temperature which will be transmitted live to a ground control station each second. Concerning the technical matter, we will use a Raspberry Pi microcontroller to attach the sensors we are using to measure these quantities, such as the BMP280 and VEML6075. We are also ensuring that our microcontroller can fit into a regular soft drink can, hence the term 'CanSat'.

Felix and Lukas are tasked with managing the software and transfer of the data that we collect in the air onto our laptops. When asked about the mission ahead, Felix said 'Every line of code and microcontroller connection needs to be perfect or else it will not work'. Their work serves to illuminate the difficulty of creating the CanSat, and they will create code using Python so we can communicate with the satellite. Afterwards, they will transfer the data to an Excel spreadsheet so we may obtain graphical data about our findings that we can display to the competition panelists.

The other half of the team have the task of designing a working parachute, so that the CanSat will fall smoothly in a non-erratic drop. This will allow us to collect precise readings on the atmospheric conditions 400m high. We also are tasked with completing the administrative task of writing down a second document so we can inform the competition organizers that we are prepared for the launch. Most excitingly, we will also be doing live tests of our CanSat drops, of which we may invite you to spectate, in the New Year with a mock CanSat to test our equipment before the real launch.

Rumi stated, ‘If we get into the finals, we can really display our feats at a national scale’. The incoming CanSat creation and launch are innovative and exciting scientific achievements for our school to behold. Look around the school for our posters and check out our Instagram pages, ‘houston_we_have_fun’ and ‘houston_men_on_a_mission’, to stay up to date with the progress of our satellite mission. ‘And finally, as for any mission, be it a satellite or rocket or exam success, the sky's the limit.’