# 0Sholto can you please recheck them all I have added to the first two a little

# Justin

I believe I am suited for this topic (White lab vending machine) as I am very adept at embedded systems with multiple levels and different skill requirements involving programming for embedded systems and non-embedded systems, electronics, circuit design and production. Such projects like this have helped to improve and hone my skills as an engineer. I also feel this would be an interesting challenge on an IOT (Internet of Things) scale as it would require some level of IOT for a user interface. I have had experience with IOT applications during vacation work for a company producing units that plug into a home alarm which allows it to be controlled from the internet. Also, I have designed and built a custom system that allows me to control my lights and heaters, while also being able to monitor my room temperature, motion in the room, how bright it is and whether my door or windows are open, all from the internet. My room automation topic helped me better my skills in researching, embedded software design, circuit design and building, android development, server side development, and 3D CAD which I feel will be needed to complete the project described by this topic. On a power electronics side, I have had experience with dc brushed and brushless motors with regards to powering and control. This previous experience with power electronics may be needed in parallel with moving mechanical parts. I also predict that the project will require some metal work and possibly welding in which I have had training. I really believe I would do well with such a topic as it combines many of my interests, especially 3D CAD design, embedded software development on the IOT space and circuit design. This would help keep me motivated to do well and deliver a well-polished final product both, my supervisor, Justin Pead and I could be proud of.

# Nicolls

After having spoken with Prof. Nicolls on the topic (Flat-face optical turbidity sensor) I feel I have a decent understanding of the project and the desired outcome which is something I am interested in. Having designed and built many circuit boards myself for personal projects, UCT projects and vacation work, I feel I am more than comfortable with the outline given by Prof. Nicolls for the circuitry of the project. Having also designed 3D CAD models for various projects such as my third year hovercraft and the second hovercraft for Intel, I will be able to improve on this skill and provide a more than suitable prototype for the project. Also having worked with similar sensors for my third year project, I used a LED and phototransistor to detect the distance from a surface which isn't much different to detecting the amount of reflected light off particles in water. I feel with this prior experience I can grasp a realization of the final product giving me an advantage in understanding the mechanics and physics behind such a sensor. I have also had experience with making compact systems for example; building a fully functional prop of a life sized “Light Saber” with more than 25 LED’s , two speakers and an accelerometer which gave me experience on designing to meet compact and restricted specifications, same as required for this topics project. I also feel this topic is vital to the community as it would help save costs, as expressed by Prof. Nicolls. I also feel this would help towards research for marine based applications such as pollution which is an ever growing concern I share. I feel the interest I have in this topic will help me keep motivated and produce a final product that will meet the desired outcome and make both Prof. Nicolls and I very pleased with it.

# Martinez

Having spoken to Prof. Martinez I feel I have a grasp on the scope of the topic (Encoder-based pointing system). We talked about making this project an embedded system which would be well within my skills as I have done many personal projects, projects for UCT and vacation work which involved embedded systems. These included third year projects such of the digital scale and hovercraft to the second hovercraft for Intel. This also includes my own embedded system that allows me to control my lights and heaters, while also being able to monitor my room temperature, motion in the room, how bright it is and whether my door or windows are open, all from the internet. I also obtained insight into mechanical design with the above mentioned digital scale and hovercraft project. The digital scale project helped me understand stresses and strains that could occur on materials and ways in which to design for maximum strength where our scale was able to withstand over 40kg structurally before failing. The hovercraft project, both for UCT and Intel, taught me about fluid dynamics plus stresses and strains when mounting motors on supports. I am also comfortable with Linux based systems and interfacing embedded systems with computers. With the above mentioned skills, I believe I would be able to develop a system that could work in parallel with current systems and eventually replace the system on board. This would enable better tracking of the telescope’s rails. I feel this project will be a fit for me as I have always been interested in Space and this project will give me a window into the field of Astrology. I believe because of this ongoing interest, I would be motivated to produce a final product that I could be proud of and meet Prof. Martinez’s standards.