

Why I want to be a professional engineer

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Making up one's mind about what to study at university is always a challenge, especially if your interests are diverse and wide-ranging. I began to consider engineering as an option when I was in Year 11 at school – I had realised that I was passionate about Physics, and wanted to be involved in this area in the future. I have always been a high achiever in both mathematics and science; over the past two years I have received three ICAS medals, two of them for science. I am an avid reader of science texts, whether they be fiction or nonfiction, and I have also been heavily involved with the technology department at my school.

After spending years tossing up between a BSc and a BEng I eventually settled on engineering, because I am a practical individual, and I love to be challenged. This year I will begin my studies at the University of Canterbury, with the intention of entering either the mechanical or mechatronics disciplines offered at the university.

My decision to study engineering has only been reinforced by the various engineering and technology-related projects with which I have been involved over the past year. The Otago Technology Innovation Challenge was great fun – my team was asked to come up with an innovative use for Sun SPOTs. These are small programmable units that can have numerous different applications. We designed an earthquake monitoring network for large buildings, supported by autonomous robots that could apply bracing and perform simple repairs. Finally, we presented our idea and an approximate costing to a group of local entrepreneurs. I found the challenge really enjoyable because it gave me the opportunity to work as a team, to come up with a really new idea, and to try and think through all the possible applications. Our hard work was rewarded when we were placed first in our category – a very satisfying achievement.

Later last year I was also involved in the Robocup Junior Search and Rescue Competition. Over the course of several months, I designed, built and programmed a small robot (named Marvin) to follow a course set out on a mat and to navigate numerous obstacles found along the way. I became almost obsessed with this project – spending all my spare time working on it at weekends. The project was something of a rollercoaster ride – with small successes, unforeseen difficulties and frictions within the team. However, once again, all the hard work paid off, and we won the regional competition, winning a trip to Auckland to compete in the national finals (where we were placed third). Robocup was a brilliant experience for me – giving me a better understanding of the mechanics of working as a team, allowing me to improve my design skills, and giving me the opportunity to test my skills of reasoning against the obscure and ungainly logic mechanisms of the Mindstorms programming interface.

As a scholarship entrant in six different subjects in 2008, I was exceptionally busy, but I found time to attend the Physics extension classes offered by my school and also by Kaikorai Valley College. These quiet Friday afternoons (and Monday mornings) were a great opportunity to ask questions – about books I'd been reading, or exercises I didn't understand. At one point I came across a question regarding superconducting AC power cables, which I felt made an incorrect assumption. When neither of my teachers were able to answer my query, I let it drop, until I came across a newspaper article profiling a local physicist who was an expert in superconducting phenomena. I managed to get in

touch, and cheekily explained my problem. In return, I was given a small mountain of information regarding applications of superconductors, offered a place in the Honours program in the Physics department (at Otago) and recommended to attend a lecture given by Jeff Tallon, an entrepreneur working on applications of high temperature superconductors. I was delighted to find there were so many people willing to share their knowledge and ideas.

I was further influenced in my decision through discussions with family members. Although both my parents are doctors, my uncle is a chemical engineer, my grandfather is a (retired) electrical engineer and my cousin is studying to become an aerospace engineer. They have all been very supportive, discussion the numerous options available to me, and making helpful suggestions. Talking to my grandfather about designing the machines and systems used at his old workplace, a Ford factory, was fascinating. From him, I learnt about the differences between point to point and continuous systems, and how this related to my own work on the Robocup project.

Although I have chosen to pursue a degree in engineering, I will always maintain an interest in other areas – biology, public speaking and languages, to name but a few. This is because I feel that engineering, unlike pure Physics or Mathematics, provides the opportunity to amalgamate knowledge from several different subject areas, in order to solve a problem or better understand a situation.

It is my hope that, by studying engineering, I will be involved in challenging and innovative projects that involve teamwork and new technologies. I have to confess to holding a somewhat childish desire to be involved in constructing a new Mars rover, or designing a new personnel carrier to take astronauts to the ISS. Of course, I expect my plans to change over time, and I am sure I would speak differently on this subject even a year from now. However, there is one thing I am certain of; I will always be pushing at frontiers, coming up with new ideas and solving problems – and I will enjoy every minute of it.