

Computer Science

Career developer

"I really hadn't expected it, but the computer science papers I did turned out to be most interesting. Solving otherwise insoluble problems using sophisticated technology is a real buzz."

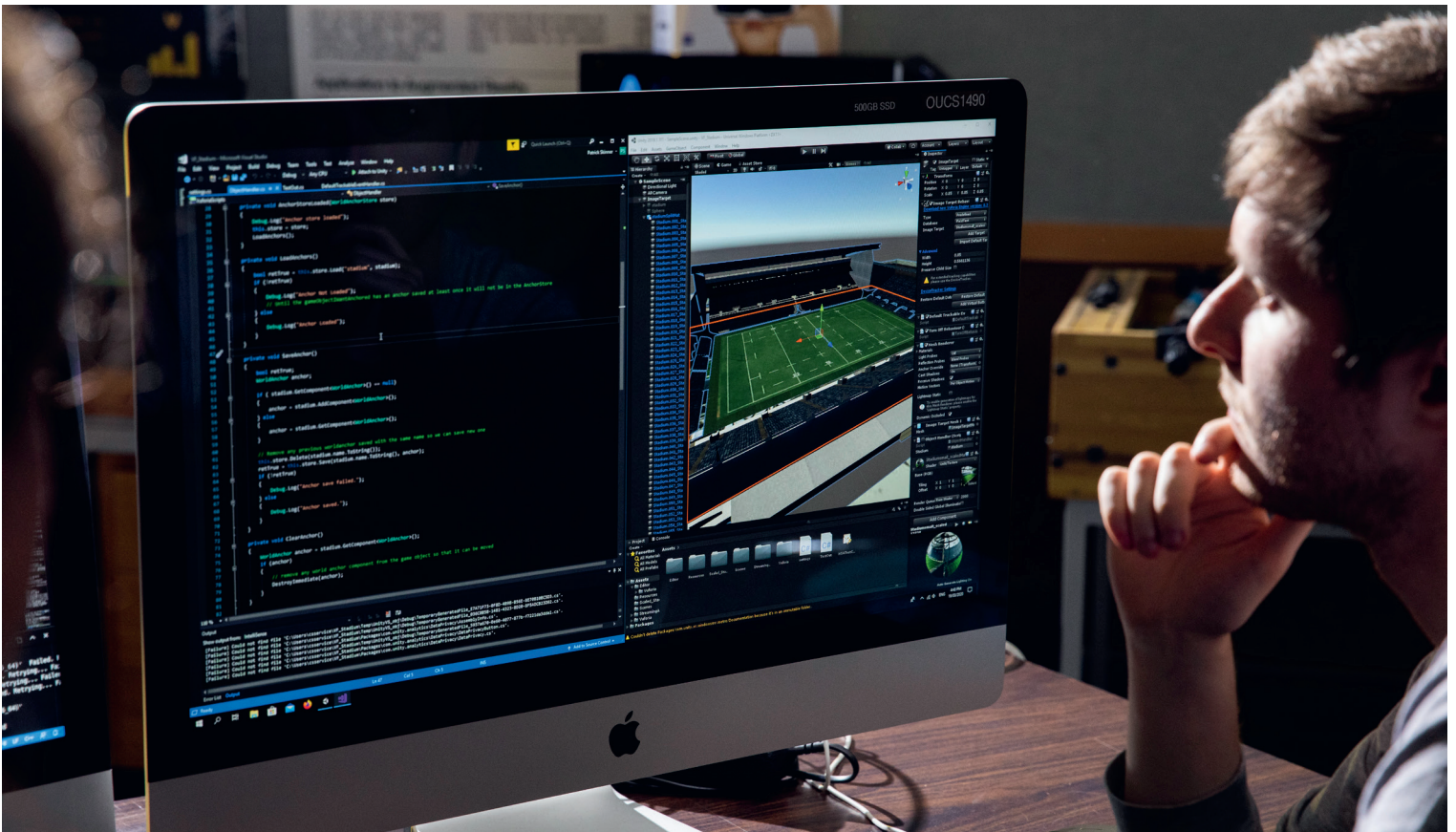
Dave Ferguson BSc(Hons)(Otago)
PhD(Carnegie Mellon)
Co-founder, nuro.ai
Former robotics researcher, Google

Study computer science at Otago and take control of your future. Doors open to many areas – from machine learning, computer animation, computer games, software design and robotics, through to legal, financial and business careers.

Computer science forms the basis for all information technology and it is a fast-changing and rapidly growing field. Computing is now central to the way our modern society works, and it will remain that way. Computer scientists analyse, design and implement computer algorithms and computer systems. Their skills are desperately needed in New Zealand and worldwide.

At Otago, we cover all core areas of computer science and actively research at the cutting-edge in areas as diverse as artificial intelligence, computer graphics and vision, distributed computing, databases, search, biological data science and theory.

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Why study computer science?

Computer scientists are in demand across the world and attract excellent salaries. Technologies change rapidly and there is always something new and exciting to learn – whether as a programmer, software engineer, systems architect or chief technical officer.

A career as a computer scientist is challenging and rewarding. If you like solving problems, then a major in computer science is for you. It is hard to describe the joy involved in designing and implementing a complex system and then seeing it all work in front of your eyes.

A minor in computer science is an invaluable supplement to any degree, whether in science, health sciences, business or the humanities. Technical expertise in computing in addition to expertise in another field opens doors to many exciting careers. It will change the way you think about your chosen field and make you more effective in that field.

Choosing computer science papers as electives will open doors in your mind to the possibilities of computers, will make you more effective at using computers and will look great on your CV.

Background

There are no special requirements or prerequisites, but taking digital technology for NCEA is useful. For students wishing to major in computer science, NCEA Level 3 mathematics (preferably calculus) would be helpful.

Career opportunities

There is currently a worldwide shortage of IT professionals and they are in high demand in New Zealand, Australia, the USA and the UK. The Information and Communications Technology section of seek.co.nz consistently has more advertised vacancies than any other category.

You will find Otago computer science graduates at work worldwide in every aspect of commerce, government, education, research and media in a variety of interesting roles: programmers, software engineers, systems analysts, network managers, consultants and advisers, web programmers, interface designers and database administrators.

Some of our recent graduates now have these exciting careers: making CGI movies, developing software for driverless vehicles, writing control software for Formula 1 racing cars, designing computer games, and programming the latest high-performance computers. Others are working in medical informatics, as an entrepreneur, as a weapons engineering officer in the Navy, as a database analyst, and as a patent attorney.

Specialising in computer science

You can choose to study in an Arts or a Science environment. You would choose a BA (or BA(Hons)) if you want to include papers in subjects like classics, geography, history, various languages, music or philosophy. You would choose a BSc (or BSc(Hons)) if you wish to study in areas such as biology, biochemistry, chemistry, electronics, geology, mathematics, physics or psychology.

What will I study?

An updated and refreshed curriculum, with a new suite of first year papers, is available from 2021, leading into a completely revised range of second year papers in 2022.

First year

First-year papers teach the basics of computer programming, as well as foundational material in computer and information science. A common core of papers opens up majors in a range of computing disciplines, and leaves plenty of room for you to explore other subjects and interests. No programming experience is required, but if you've already learned to code then ask about our accelerated entry options.

Second year

Building on the foundations of the first year, the second-year core provides practical experience developing larger software systems and web-based applications; explores the fundamentals of computer architecture; and gives you the ability to design effective and efficient solutions to computing problems. These skills are the essence of computer science and give you the tools you'll need to adapt to new technologies as they arise.

Third year

In your final year of study, you can choose from a wide range of options, from cloud computing and artificial intelligence to computer graphics and games design. You will also gain further experience using the skills you've learned across your degree to solve more complex and challenging problems.

Postgraduate study

After completing a degree in computer science you'll have all the skills needed to enter the workforce. You can, however, stay on and study more specialist topics such as neural networks, cryptography or computer vision. We offer a wide range of postgraduate opportunities, including the chance to research and develop the next generation of ideas and technologies.

PROFILE

Fan Zhang

Bachelor of Science (Computer Science) | Android developer, Xero

Fan completed his BSc in Computer Science in 2015. Since then he has held the position of Android developer at three companies: Mixbit, TouchTech Ltd and currently, Xero.

Arriving at Otago at the end of 2011 to start an eight-week language course, Fan says he initially wasn't sure which major to start with.

"I had interests in IT-related areas but did not understand the whole picture of computer science."

He says he received lots of help from both the International Office and from staff in Computer Science who "explained to me the difference between computer science and information science which helped me make the right choice".

Several years on, some of the papers he completed during his degree still stand out in his memory.

"There were so many papers I enjoyed, but my favourites would be COSC 241 and COSC 301. COSC 241 focuses on data structures and algorithms, which would be one of the most important areas in computer science. This paper set up the foundation for my future study and career. COSC 301

helped me understand the fundamentals of networking and was also a contributing factor in getting my Cisco certificate."

Beyond coursework, Fan says the industry exposure he gained during his time at Otago equipped him with valuable real-world experience.

"I took part in extra-curricular activities, such as summer internships. My first internship opportunity was with a company called, at the time, Mixbit, where I learned a lot about the local company culture and real-world industry experience. I also really enjoyed the industry introduction session which gave me a chance to talk with employees from some of the biggest IT companies in New Zealand."

In his current work, he continues to pursue his interest in the mobile development area and hopes to one day become a mobile expert.

"I really appreciate the knowledge and skills I gained at Otago which set up the foundation for my career and also taught me the right habit of a developer – keep learning and never give up."



For questions about
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otago.ac.nz/computerscience

