In the age of computing technology evolving from static, desk-bound PCs to more dynamic and interactive mobile devices, an understanding of computer and mobile systems engineering becomes ever more valuable in the workforce.

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Professionals in this field need to have a clear understanding of the development, operation and maintenance of software and its application to mobile communications devices and networks. They apply this knowledge in a huge variety of roles in the tech sector, with the fast-paced evolution of technology ensuring that there is always more to be learned and new opportunity to be uncovered.

Are you curious about how mobile computing technology works? Do you like staying up-to-date with the latest apps and devices? Are you practical, logical and able to process complexity? Then a career in computer and mobile systems engineering could be for you.

A FUTURE IN COMPUTER & MOBILE SYSTEMS ENGINEERING
WHAT IS COMPUTER AND MOBILE SYSTEMS ENGINEERING?

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OUTLOOK AND TRENDS

Long-term skills shortage

Computer mobile engineer, systems engineer and telecommunications engineer all appear on Immigration New Zealand’s long-term skill shortage list, which means the Government is actively encouraging skilled specialists from overseas to work in New Zealand.

Mobile/Apps

In 2015, Google changed its algorithms to prioritise websites with a strong mobile experience, leaving a number of companies scrambling to optimise their web design for a mobile-friendly experience. Google also recently announced that in 10 countries, mobile searches have surpassed desktop. The need for Apple iOS and Android application developers has grown and will continue to do so.

Source – CIO.com

Huge opportunities in the banking sector for app development

Internet banking is only the tip of a massive iceberg for banking applications. Banks worldwide are working on applications that will interface with both customers and employees to provide services and real time financial information. These apps will revolutionise how we handle money and do business in the future.

Internet of things (IoT)

The Internet of things is the network of physical objects or “things” embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data. This allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer–based systems, and resulting in improved efficiency, accuracy and economic benefit. According to Gartner, Inc. (a technology research and advisory corporation), there will be nearly 26 billion devices on the Internet of Things by 2020.

Big data

Many companies are collecting massive amounts of data, but many are strapped for resources when they need to organise data in a practical way. In 2014, the demand for big data skills increased by over 120 per cent for IT project managers and just under 90 per cent for computer systems analysts.

Source – CIO.com

Cloud

The adoption of cloud storage through systems like iCloud, OneDrive, Google Drive, and Dropbox has prompted the need for more data analysts and security professionals. Users demand seamless access to content across devices, be it personal or professional.

As cloud continues to move into the mainstream, there will be an even greater demand for workers skilled in cloud computing, as well as cloud security.

Source – CIO.com

WORK SETTINGS

Professionals in this field usually work regular office hours, but may have to work some evenings and weekends to meet project deadlines.

They normally work in offices and may travel to see clients and work on projects at their workplaces, but increasingly have the option of working from home.

They work for a wide range of organisations, including software, web and app development companies, private companies that provide computer, database and network services to clients, specialist Information and Communications Technology (ICT) companies, government departments and agencies, computer consultancies and telecommunication companies.
CAREER ROLE EXAMPLES

Computer systems engineer – design complex systems based on computers, for use in a wide range of areas, from robotics to multimedia applications. They use both hardware and software, and can be involved in research and development of products such as telecommunications systems, computer-controlled appliances and healthcare products.

Mobile apps designer – develop mobile applications for a huge range of organisations using software programmes like Java, HTML5, XML and C++. Innovate design ideas into interactive digital mobile applications, collaborate with other technical professionals and develop and test web interfaces to ensure that they contribute to ease of use and customer satisfaction.

Software engineering designer – write, test, develop and maintain complex software programmes. They can be involved in developing software that produces 3D graphics for sports events, write code that runs networking devices such as routers and switches, and create mobile applications.

RANGE OF SKILLS

Technical skills
- Up-to-date with mobile technologies, such as object oriented applications
- App programming using both Apple and Android software development kits
- Excellent Java and C++ programming skills
- Advanced understanding of engineering mathematics
- Conversant with advanced data structures
- Competency in algorithm design and analysis
- Project management

General skills
- Good analytical and problem-solving
- Excellent oral and written communication
- Strong collaborative approach
- The ability to liaise well with professionals from other disciplines
- Excellent time-management
- Able to work well under pressure, and meet deadlines
- Able to work well as part of a team, and with minimal supervision
- Skilled at problem-solving and decision-making

PERSONAL QUALITIES
- Creative
- Practical
- Logical, and strong planning
- Technically innovative
- Analytical
- Accurate, with an eye for detail

SALARY GUIDE

<table>
<thead>
<tr>
<th>Role</th>
<th>Salary (per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer and mobile systems engineer</td>
<td>$50,000 - $55,000 starting salary</td>
</tr>
<tr>
<td></td>
<td>$60,000 - $80,000 with a few years’ experience</td>
</tr>
<tr>
<td>Software developer</td>
<td>$50,000 - $55,000 starting salary</td>
</tr>
<tr>
<td></td>
<td>$60,000 - $80,000 with 3 to 6 years experience</td>
</tr>
</tbody>
</table>

Source – Futureintech
Salary range is indicative of the New Zealand job market at the time of publication (Jan 2016) and should only be used as a guideline.

THE AUT APPROACH

All students undertake an industry-based specialisation project in Year 3. This is a chance to apply learnings and skills in a research or industrial environment. Recent projects have led to internships and graduate positions in companies such as ASB and Air New Zealand.

Students also need to complete a minimum of 600 hours of planned supervised work placement to graduate. This work experience involves real-world engineering practices and management systems and helps build engineering networks.

FURTHER STUDY OPTIONS

Further study options at AUT could include postgraduate certificates and diplomas in Engineering (Computer Engineering), Master of Engineering and Doctor of Philosophy programmes.

Research specialisations in the school include biomedical signal processing and devices, banking applications, virtual reality, wireless sensor network applications and alternative saving energy applications.
LEWIS BALLARD
Junior Python Developer, Y Tech, Yellow
Bachelor of Engineering Technology in Computer & Mobile Systems Engineering

“When I was at school I was always interested in playing around with computers, and I built a few while I was there. So I spoke to AUT about what might suit me, and the Bachelor of Engineering Technology sounded like a good mix of theory and practical learning, so I enrolled in that.

I was chosen for the three month graduate programme at Yellow, the business directory. I worked as a junior developer on the internal website and back end services. I used the programming language Python for their web applications.

Now I work on the Yellow intranet (internal) website on automation, reporting and analytics, evaluating the performance of advertisements on Google. I really enjoy the challenge of making things work, and getting projects across the line to meet deadlines.

I intend to stay with Yellow as long as possible while I learn as much as I can in the software field. They are a really good employer with lots of space to grow; so it’s a good place to be.”

EMPLOYER COMMENT

“At Yellow, we build mobile, desktop and responsive and we love to work with great developers, whether they work with Python, Java, Javascript, or in designing solutions or using a range of open software and frameworks. To work here, you need to be demonstrably excellent technically and a reliable team member.

We love people to take ownership of their work and see it through, without taking things too seriously, and we celebrate our success as often as we can! Scrum (agile software development) and great communication go hand in hand, so excellent written and spoken English really matters.

In our industry, it’s very desirable to have an academic background including patterns, design and logic so you can stay current as the landscape changes. Exposure to current frameworks and search engine marketing knowledge is a bonus given our business.

Lewis is technically strong and easy going and he has been very good at taking ownership of his area. Within a year he’s become the key developer for an entire application and is becoming a highly valued part of our team.”

Chris Nel
Head of Development, Yellow
A FUTURE IN COMPUTER & MOBILE SYSTEMS ENGINEERING

USEFUL WEBSITES

New Zealand Information and Communication Technologies Group (NZICT)
www.ict.org.nz

Futureintech
www.futureintech.org.nz

Game Developers Association
www.nzgda.com

Institute of IT Professionals
www.iitp.org.nz

For the most up to date information on the study of computer and mobile systems engineering and the Bachelor of Engineering Technology, visit our website www.aut.ac.nz/computer&mobile-systems-eng

For employability and career support, visit CareerHub:
https://careerhub.aut.ac.nz

For other Future Career Sheets visit:
www.aut.ac.nz/careersheets

You can also contact the AUT Student Hub team for help and advice:

0800 AUT UNI (0800 288 864)
email: studenthub@aut.ac.nz

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NORTH CAMPUS
90 Akoranga Drive, Northcote, Auckland

SOUTH CAMPUS
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www.aut.ac.nz/social

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