“Any sufficiently advanced technology is indistinguishable from magic.”

- Arthur C. Clarke

Computing’s Reach

The alarm rings. We reach over to our mobile phones to turn it off and check for messages. During breakfast, we scroll through news headlines and social media newsfeeds. When we step out the door, an app tells us when the next bus will arrive. On our daily commute, we respond to emails, catch up on our reading or try to get to the next level of that addictive game. And then we get to work and turn on our computers...

We are living in the Age of Computing, and yet people aren’t aware of how extensively we rely on Computing, how quickly it is developing and its awe-inspiring potential to revolutionise every aspect of life as we know it. **Computing is enjoyed by most, but understood by few.** Everyone uses Computing to communicate, work, travel, spend, invest, heal, build, entertain…and every industry is using Computing to enhance performance and productivity. With its inevitable ubiquity, understanding Computing will be as critical as literacy, even if most people don’t realise it yet.

As did steam power, electricity and the internal combustion engine before it, Computing is the new general purpose technology that is allowing us to re-imagine the way we live, work, connect and create.
We are only just beginning to see Computing’s impact on our lives. The advent of autonomous cars and accurate computerised translations are only the first examples of the kinds of revolutionary technology that will emerge as Computing’s astounding exponential growth continues. Every day, Computing experts are revealing machines and software that are successfully performing tasks that were unachievable only a few years ago. Since Computing is fundamentally about helping people solve problems with technology, it can exist anywhere and in any field.

With that kind of growth, and its pervasiveness, there is a massive demand for Computing talent across all industries, across the globe. Computing is one of the few disciplines that can blend with and complement any other field to potentially propel performance to new heights. No other discipline affords access into all industries like Computing does. The problem is that there just aren’t enough people that are trained with these skills today. There is a dearth of computing talent. Supply is not meeting Demand. Correspondingly, many Computing jobs are consistently listed, not only as the best paid, but also simply the best jobs to have in Singapore, and the world.
Not Just Geeks

Because Computing can exist in and augment all industries, **we need Computing experts of all types.** Entrepreneurs, Math-Whizzes, Artists, Doctors, Builders, Business Executives, Scientists, Writers, Athletes, Musicians, Designers, Film-Makers, Conservationists, Farmers, Teachers, Inventors, Financiers...whatever your propensity, Computing will teach you how to think and equip you with the skills that will give you the edge in whatever you do.

When you enter one of our many comprehensive programmes, which range from Business Analytics to Computer Engineering, you will be part of a diverse community made up of enthusiastic, well-rounded and versatile students, alumni and faculty, who embody a myriad of personalities, aptitudes and interests.

With Computing, you could write lines of code or design systems that will impact the lives of millions. Computing offers the fastest and simplest way to transform an idea in your mind into a physical, functioning product, and then share it with millions around the world, in a click. If you can create technology, **you can change the world.**

Some people say it's the closest thing we have to a superpower.
We are consistently ranked among the world’s leading Computing Schools.
Quacquarelli Symonds World University Rankings by Subject

Degree Programmes
- Bachelor of Computing in Computer Science (CS)
- Turing Programme
- von Neumann Programme
- Bachelor of Computing in Information Systems (IS)
- Bachelor of Engineering in Computer Engineering (CEG)
- Bachelor of Science in Business Analytics (BA)
- Bachelor of Computing in Information Security (ISC)

Double Bachelor’s Degree Programmes
- with NUS Business School in Business Administration / Accountancy
  (for CSAS)
- with NUS Faculty of Science in Mathematics / Applied Mathematics
  (for CS)

Concurrent Bachelor & Master’s Degree Programmes
- with Brown University in Computer Science / Computational Biology
- with Carnegie Mellon University in Entertainment Technology (for CS)
- with NUS Business School in Management

Bachelor’s & Double Master’s Degree Programmes
- with French Grandes Écoles Diplome d’Ingenieur

Scholarships, Awards & Financial Aid
- NUS Scholarships & Aid
- School of Computing Scholarship
- Kwan Im Thong Hood Cho Temple Computing Scholarship
- Lim Hong Chin Memorial Scholarship
- Asia Fusion Technology Scholarship
- National Infocomm Scholarship
- IDA Enhanced Learning in Infocomm Technology (ELiTe)
- A*Star Pre-Graduate Award (PGA)
- NEW Scholarship
- SingTel-NUS Analytics/Cyber Security Undergraduate Scholarship
- SNCF Co-Operative Scholarship
- SoC Pay-It-Forward Bursary
- Computing Alumni Assistance Award
- Computing Student Development Fund

Internships
- Advanced Technology Attachment Programme (ATAP)
- Student Internship Programme (SIP)
- Industry Internship Programme (IIP)

Enrichment Programmes
- NUS Overseas Colleges (NOC)
- Student Leadership Programme (SLP)
- University Scholars Programme (USP)

Industry Exposure
- SoC Term Project Showcase
- SoC Career Fair
Admissions Criteria

Please refer to NUS Office of Admissions (www.nus.edu.sg/oam) for complete criteria listing.

Bachelor of Computing in:
Computer Science (CS)
or
Information Security (ISC)

- Singapore-Cambridge ‘A’ Levels:
  ‘A’-Level pass in Computing or Mathematics or Physics
- Polytechnic Diplomas: All Diplomas
  (except Advanced Diplomas/Specialist Diplomas/Certificate Courses)
- NUS High School Diploma:
  Major CAP of 2.0 in Mathematics or Physics
- International Baccalaureate Diploma:
  Pass in HL Computer Science/Mathematics/Physics OR good pass in SL Mathematics

Bachelor of Computing in:
Business Analytics (BA)
(post-baccalaureate programme in collaboration with
BIZ, FASS, FAS, FBD)

- Singapore-Cambridge ‘A’ Levels:
  ‘A’-Level pass in Mathematics
- Polytechnic Diplomas:
  Please refer to NUS Office of Admissions
- NUS High School Diploma:
  Major CAP of 2.0 in Mathematics
- International Baccalaureate Diploma:
  Pass in HL Mathematics

Bachelor of Computing in:
Information Systems (IS)

- Singapore-Cambridge ‘A’ Levels:
  ‘A’-Level pass in either Computing or Mathematics
- Polytechnic Diplomas: All Diplomas
  (except Advanced Diplomas/Specialist Diplomas/Certificate Courses)
- NUS High School Diploma:
  Major CAP of 2.0 in Mathematics
- International Baccalaureate Diploma:
  Pass in HL Computer Science; OR a good pass in SL Mathematics

Bachelor of Computing in:
Computer Engineering (CEG)
(post-baccalaureate with P3A)

- Singapore-Cambridge ‘A’ Levels:
  ‘A’-Level pass in Mathematics and either Physics or Chemistry
- Polytechnic Diplomas:
  Please refer to NUS Office of Admissions
- NUS High School Diploma:
  Major CAP of 2.0 in Mathematics and either Physics or Chemistry
- International Baccalaureate Diploma:
  Pass in HL Mathematics and either HL Physics or Chemistry

(*) Students without Major subject in Physics need to have ‘O’ level Physics or equivalent and would be required to take specified Physics bridging modules.)
I chose to study Computer Science because I strongly believed in taking up the challenge of possibly a very demanding, but highly rewarding undergraduate course. My advice to future undergraduates is to come in with an open mind and lots of perseverance. As they say, ‘Don’t limit your challenges, challenge your limits’.

Ipsita Mohapatra

**COMPUTER SCIENCE**

**Sneak Peek**

You’re halfway into your third year and in your favourite class, CS3216 Software Development on Evolving Platforms. Today’s guest speaker is an SoC alumnus who describes how his studies in artificial intelligence, computational geometry and human computer interaction allowed him to develop an intuitive gesture system for an iPad game while he was a student here. You listen with interest as he describes how he founded a company to develop the game into a highly profitable, chart topping mobile app. After class, you chat with your project teammate about your project to reduce manpower needs in restaurants by using customers’ mobiles for ordering and billing. You discuss your concerns about the potential trade-off between customer service and manpower savings while you are rushing to your next class, CS3244 Machine Learning. While the professor is describing the hidden Markov model, you feel a tap on your shoulder. It’s your teammate, and she whispers, “Why not have the phone learn the customer’s preferences so that they can order easily?” Brilliant! Instead of compromising on service, your app may end up improving the dining experience. You realise that your class project may turn into a real, money-making product.

**Sampler of Modules**

**CS11015 Programming Methodology**
Experience our unique “gamified” introductory programming course where you take on challenging missions to level up and occasionally meet Sumbots, Jedi Knights, and Darth Vader.

**CS2106 Introduction to Operating Systems**
Understand how different processes end up in a deadlock via the adventures of dining philosophers who starve because they cannot coordinate the use of their chopsticks.

**CS2107 Introduction to Information Security**
How are websites hacked? Are there unbreakable codes? How are human vulnerabilities exploited in social engineering attacks? Decipher and master the intricacies of IT security.

**CS2212 Programming Languages**
How do you design a programming language? How do you get the same program to run on different hardware? Delve into the languages of the future!

**CS2230 Design and Analysis of Algorithms**
How do you design blazing fast algorithms? Are there problems that cannot be solved quickly no matter what you do? Prove that and you will win the first Millennium Prize and a million dollars.

**CS2423 Introduction to Artificial Intelligence**
How do you build Skynet? How can machines represent knowledge? Follow up with CS1244 Machine Learning, CS4246 Knowledge Based Systems, CS4246 AI Planning and Decision Making.

**CS3247 Game Development**
Learn about designing games as well as the underlying 3D maths, game physics, game AI, sound and human computer interface issues.
Information Systems stands out for me because it will equip me with a broad skillset that will be highly relevant across many industries due to the penetration of technology into our lives today. Also, NUS Computing fosters a great learning environment that encourages us to really explore and challenge ideas, even those of our professors. Our professors communicate with us through Facebook and even continue answering questions late into the night. We’re like one big family.

Lim Cheng Lei

INFORMATION SYSTEMS

Sneak Peek

You are close to completing your project for IS3102 Information Systems Development Project. You and your teammates have been enthusiastically developing a hospitality management system for an integrated resort chain. While you have always enjoyed participating in hackathons, developing an enterprise-level system in a team is a completely different challenge. You check if you have your necktie for the IS3102 project presentation today. You want to look sharp, and present with confidence! After your presentation, you meet with representatives for whom you are setting up and managing a retail company Facebook fan page, as part of your IS3222 IT and Customer Relationship Management project. You are enjoying the experience of a real-life industry project that needs not only computer coding skills, but also an in-depth understanding of the retail business and the Customer Relationship Management aspects on social media platforms. Thanks to Information Systems, you have developed the confidence to innovate business with infocomm solutions that you can design, assess and market. You have no doubt that the rigorous education you are receiving now will stand you in good stead for a career as a business leader with deep technology insights.

What You Could Be

- Finance Analyst at Goldman Sachs
- Manager at International Enterprise Singapore
- Consultant at Accenture
- Associate Consultant at KPMG
- IT Specialist at IBM (Global Technology Services)
- Developer Evangelist at Microsoft
- Technology Associate at Singapore Exchange

Sampler of Modules

- IS1105 Strategic IT Applications: Learn how to identify strategic opportunities for information systems deployment, manage IT resources, and evaluate strategic IT investments.
- IS2103 Enterprise Systems Development Concepts: Study systems development technologies and tools that include Java, 2 Enterprise Edition, .NET (from Microsoft) and distributed computing concepts.
- IS3102 Information Systems Development Project: Home software engineering and communication skills to develop a real-life enterprise-level application system, including consultations and formal presentations.
- IS3222 IT and Customer Relationship Management: Discover the knowledge and skills to analyse customer metrics, conduct customer data analytics exercises, and manage customer data and privacy concerns.
- IS3241 Enterprise Social Systems: Learn about the roles that social computing technologies and their associated business models play today in changing business and organisational landscapes.
- IS4225 Strategic IS Planning: Practice evaluating business and IS strategies, and manage the alignment of business and IS strategies.
- IS4241 Social Media Network Analysis: Study the endless insights available from social network analysis methods and tools, clustering and association techniques and business cases for social network platforms.
- IS4243 Information Systems Consulting: Learn management and IS consulting practices, and experience a real-life field consulting project with an organisation.
I always wanted to learn about interfaces between hardware and software and what I have learnt in Computer Engineering has exceeded my expectations. Some of the modules are technical, but it has been truly fun and I am certain these valuable experiences will help mould my career. What I like most about being part of NUS Computing is that everyone is driven and willing to help each other achieve their objectives.

Kaung Htet Aung

COMPUTER ENGINEERING

Sneak Peek

You are in the Embedded Systems Teaching Lab with your CG2271 Real Time Operating Systems teammate. For the past three, exciting, weeks you have been working together to build a wearable computer — your version of Google Glass. Today you are adding the final modules that will tell the wearer what he is seeing in front of him, and after that you will be installing a specially customized Operating System and application suite that will bring your creation to life. When complete, your version of Google Glass will provide both visual and audio feedback to the wearer. You have learnt so much about building useful and possibly life changing devices from simple and cheap hardware components. Later, you attend the EE3204 Computer Networks lecture. The classes have been illuminating — you finally understand exactly how your Facebook timeline travels all the way from Menlo Park in California, to your room in Shearers Hall at NUS. Things have never been more exciting for you — Computer Engineers are riding on the wave of the computing industry’s unprecedented growth, and employment surveys indicate that you are among the best paid professionals in the country.

Sampler of Modules

CS1010 Programming Methodology
The app industry has exploded and programmers are in high demand everywhere, but there is still an acute shortage. This is where you start to become a highly sought after software developer.

CG1108 Electrical Engineering
How did the iPhone develop from an idea into the amazingly cool device that it is today? How does a collection of chips and wires become a robot? Find out in this class, and build a robot car!

CS2103 Software Engineering
Writing a single program is challenging yet the sense of achievement that comes from having a working application is indescribable. Now imagine building complex systems for large corporations!

CG2271 Real Time Operating Systems
Airplane computers manage a complicated task involving many factors like air density, aircraft altitude and navigation commands. How are such operating systems built to guarantee safety?

CG3002 Embedded Systems Design Project
Over the past three years, you’ve learnt how to build a computer deploy a customized operating system that guarantees performance, and build large complex software systems. Now combine all that to build something really cool with a Raspberry Pi and a handful of components.

EE3031 Innovation and Enterprise
Everyone has great ideas, but only a few become great memorable products that are widely sought after. What makes these products stand out, and how can you create your own?

CS3243 Introduction to Artificial Intelligence
How do you build a robot? How can machines represent knowledge? How can machines reason about the world? Follow-up with CS3244 Machine Learning.

CS3244 Knowledge Based Systems
Learn about designing games as well as the underlying 3D maths, game physics, game AI, sound and human computer interface issues.
To be honest, I never thought that I would join NUS Computing. Luckily for me, the new multidisciplinary Business Analytics course caught my attention and it was what I was looking for – something that would hone my technical skills and allow me to apply them to business. It was not until I entered the programme that I learnt the power and impact that technology can have on our lives. It is truly fascinating!

Chia Li Juan

BUSINESS ANALYTICS

Sneak Peek

You are currently conducting extensive data analysis of a major shopping mall’s customer loyalty programme for BT3101 Business Analytics Capstone Project, and enjoying it. You are always seeing things in the news about data analysts and data scientists being in high demand. Indeed, the Harvard Business Review reported that the ‘Data Scientist’ is the ‘hottest job’ of the 21st century. Meanwhile, you are glad that you are taking BT4211 Data-Driven Marketing, where you are learning to code and estimate models that can predict customer choice behaviours and advertising responses. You have also learnt how Amazon figures out what to offer you even before you have thought of buying it! In your BT4221 Big Data Techniques and Technologies class, you discover how to conduct a linear regression statistical analysis of five billion airline transactions records within just 2 minutes, using Hadoop-based technology. With the ever-growing amount of consumer and business data available, you can’t help wondering about the exciting, lucrative career opportunities that lie ahead in the field of business analytics. Through this programme, you are confident that you will be well prepared with ample business domain knowledge and powerful data analytics skills.

What You Could Be

- Web Analyst at AC Nielsen
- IT Business Analyst at Citibank Singapore
- Monetization Analyst at Facebook
- Data Mining Specialist at Symantec
- Market Research Specialist at Singtel
- Business Analyst at Debate Analytics
- Data Scientist at Singapore Press Holdings
- Healthcare Analyst at Khoo Teck Puat Hospital, Alexandra Health System

Sampler of Modules

- BT1101 Introduction to Business Analytics
  - Apply basic business analytics tools in a spreadsheet environment, and learn to communicate with analytics professionals to effectively use and interpret analytic models and results.
- BT2101 IT and Decision Making
  - Understand the conceptual foundations of decision making processes, multi-criteria decision analysis, expert systems, neural networks, genetic algorithms, and support vector machines.
- BT3102 Computational Methods for Business Analytics
  - Learn optimization methods, numerical analysis, simulations, Monte Carlo methods, graph and flow methods, and computational complexity issues to address business analytics related problems.
- BT4211 Data-Driven Marketing
  - Study marketing metrics, data management, market response and diffusion models, market segmentation models, and digital media marketing analytics.
- BT4221 Big Data Techniques and Technologies
  - Examine big data infrastructure, analytics scalability and processes, Hadoop, HBase, Cassandra, MapReduce, Dynamo, R, in-database analytics, and mining of data streams.
- BT4222 Mining Web Data for Business Insights
  - Use text mining methodologies, web data mining for marketing, sales and finance applications, social web data mining from Facebook and Twitter, and web analytics involving clickstream and site traffic data.
- IS4241 Social Media Network Analysis
  - Study the endless insights available from social network analysis methods and tools, clustering and association techniques and business cases for social network platforms.
- IS4250 Healthcare Analytics
  - Learn the principles and techniques of processing and analysing healthcare data, as well as interpreting and reporting of results.
NUS Computing is a closely knitted faculty and coming to school every day feels like being home. I love the many events that students can join – like Security Wednesdays, Friday Hacks, STePS and Gamecraft – that provide priceless opportunities to gain knowledge that you don’t get from classes. Through these opportunities, I competed in and won multiple security-related contests and co-founded NUS Greyhats because I enjoy sharing my knowledge and experience with others.

Yee Quan Yang
If you can create technology, you can change the world.