

Welcome!

CS Department

Today's Plan

Welcome!

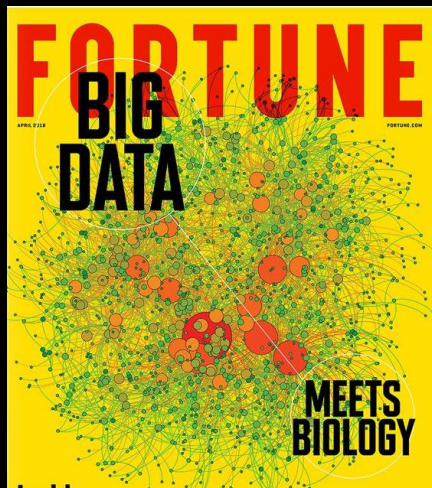
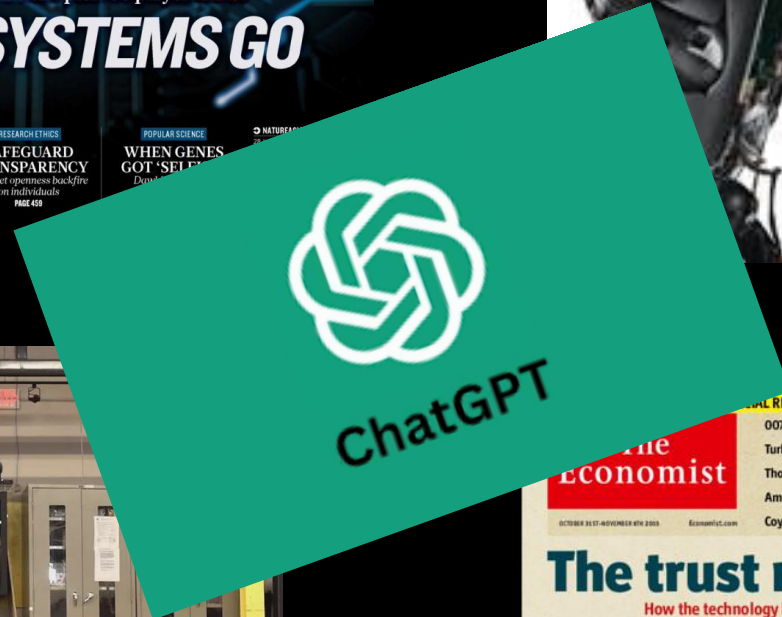
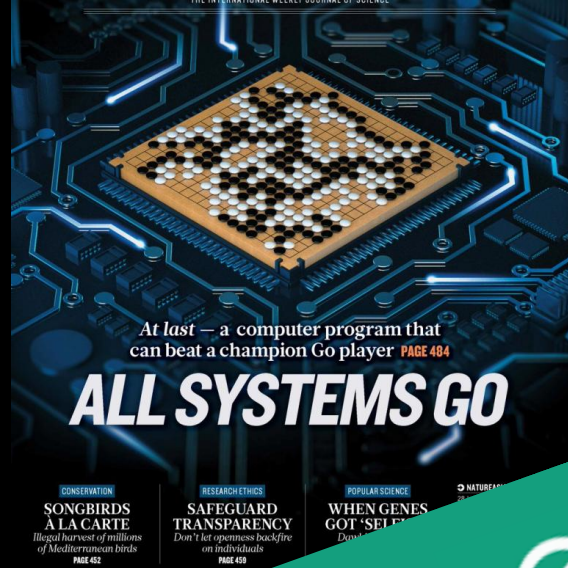
Short briefing

Welcome from your seniors

Questions

A photograph of the NUS School of Computing building. The building features a large glass facade that reflects the surrounding trees and sky. The text "NUS School of Computing" is visible on the glass. The building is surrounded by lush greenery, including palm trees and other tropical plants. The sky is clear and blue.

NUS School of Computing



How Facebook Fact-checking Can Backfire

By Brian Feldman [@bafeldman](#)



The disastrous events that would break the internet

Gauging the allure of designer drugs p. 469

Blown-up brains for a better inside view p. 474 & 543

Single-crystal perovskite solar cells p. 519 & 522

Science

\$10
30 JANUARY 2015
sciencemag.org

AAAS

SPECIAL ISSUE

The End of

PRIVACY



3rd party ad content
FAKE NEWS | JUNE 10, 2019

Sorry But Your Favorite Viral Story is Probably Fake

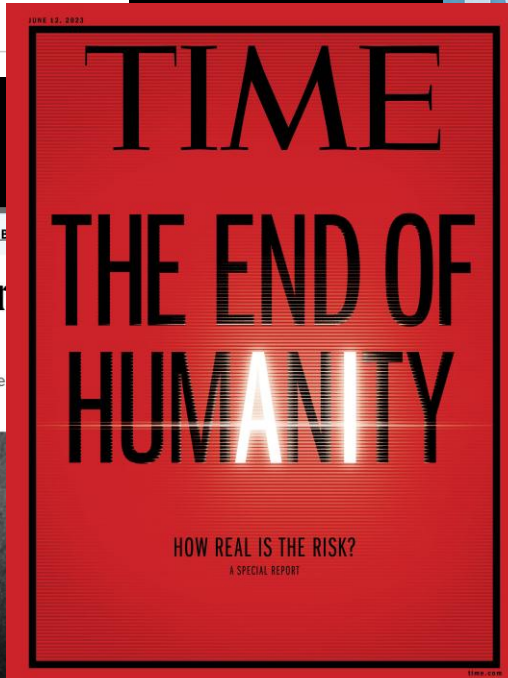
By Madison Malone Kircher [@4evrmalone](#)

Sign up here for our new daily mail.

07.06.17

The Internet's Future Is More Fragile Than Ever Says One Of Its Inventors

Vint Cerf, the co-creator of tech that makes the internet work, worries about hacking, fake news, autonomous software and perishable digital history.



Who's Who:



Dean
Tulika MILTRA



Vice Dean (Undergrad)
KAN Min Yen

Assistant/Associate Deans (Undergrad)



ZHAO Jin



Boyd ANDERSON



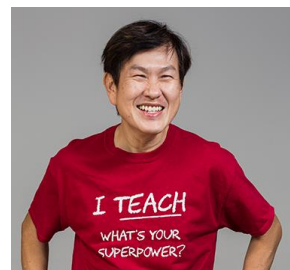
Department Chair
Seth GILBERT



Vice Dean
(Student Life)
Bimlesh
WADHWA



WANG Qiuhong



Aaron TAN

Undergraduate Office



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TOH Mui Kiat

UG Office Contact:
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Snr. Associate Director
Pamela LIM



Snr. Manager
LOW Mun Bak

University Life (?)



classes

socializing

extracurriculars



University Life (?)



classes

socializing

extracurriculars



"What should I do now?"

NANCY

By ERNIE BUSHMILLER



Disclaimer

Information on these slides is simplified for this presentation and should not be treated as official degree requirements.

Students should *always* refer to the official SoC Website and NUS Bulletin for complete up-to-date information.

Please check with the SoC Undergraduate Office to clarify any requirements that are unclear.

Common Computing: CS and AI

Two degree programmes, one beginning:

- Initially, all CS/AI students are part of the common programme.
- After Semester 4 (or equivalent), declare AI or CS.

Computer Science

- Broader CS Degree
- Integrates diverse subareas
 - Example: AI + Software Engineering
 - Example: Security + Distributed Systems
- Maximizes flexibility

Artificial Intelligence

- Specialized AI Degree
- Deep focus on cutting edge AI:
 - Example: NLP
 - Example: Machine Learning
 - Example: Robotics/Embodied AI
- Maximizes advanced AI

BComp(CS/AI) Degree Requirements

CS/AI Program
Requirements

SoC
Common Core

80 units

40 units

40 units

Unrestricted
Electives

Aspects of a Computing Education



Technical foundations

Fundamentals: algorithms, systems, ...
Important no matter how technologies evolve



Practical skills

Problem-solving in real-world setting
Industry relevance



Research

Advancing the field

Computer Science Curriculum Overview

CS Core

Algorithms & Theory

What do you want to do?
How do you do it efficiently?

Programming & Software Engineering

How do you translate your idea into code?
How do you build it?
How do you work on a team?
How is AI integrated into development?

Computer Systems

What is really happening underneath everything?
How does a computer work?
How does a network work?

AI & Machine Learning

How do we design intelligent systems?
How do computers learn?

Depth

Complete a focus area, taking advanced courses in at least one area of interest.

Breadth

Take advanced technical electives to broaden your skillset.

Industry Experience

Do an internship to gain real world experience.

Math Foundation

discrete math, calculus, linear algebra, probability & statistics

CS Foundations

The Beginning

CS1101S
Programming
Methodology

CS1231S
Discrete
Structures

Algorithms and Theory

CS2040S
Data Structures
& Algorithms

CS3230
Design & Analysis
of Algorithms

Programming and Software Engineering

CS2030S
Programming
Methodology II

CS2103T
Software
Engineering

CS2101
Effective
Communication

Computer Systems

CS2100
Computer
Organization

CS2106
Intro to Operating
Systems

AI & ML

CS2109S
Intro to AI and
Machine Learning

Breadth & Depth

1. Complete 12 units at level 4000 or above.

2. Satisfy a focus area:

Complete 3 “primary” courses in an area (at least one level 4000).

3. Get industrial experience:

Complete 3 month (6 unit) or 6 month (12 unit) industrial experience.

Computer Science Curriculum Overview

CS Core

Algorithms & Theory

What do you want to do?
How do you do it efficiently?

Programming & Software Engineering

How do you translate your idea into code?
How do you build it?
How do you work on a team?
How is AI integrated into development?

Computer Systems

What is really happening underneath everything?
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Depth

Complete a focus area, taking advanced courses in at least one area of interest.

Breadth

Take advanced technical electives to broaden your skillset.

Industry Experience

Do an internship to gain real world experience.

Math Foundation

discrete math, calculus, linear algebra, probability & statistics

AI Curriculum Overview

Computing Core

Algorithms & Theory

What do you want to do?
How do you do it efficiently?

Programming

How do you translate ideas into code?
How do you build it?

Math Foundation

discrete math, calculus, linear algebra, probability & statistics, optimization and regression

AI Foundations

Learning

How does AI learn from data?

Decision Making

How does AI make decisions and act?

Perception

How does AI understand the world?

Responsible AI

How do we build & deploy AI responsibly?

AI Technical Electives

Advanced AI courses on cutting edge topics.

Industry Experience

Do an internship to gain real world experience.

Foundations (for AI)

The Beginning

CS1101S
Programming
Methodology

CS1231S
Discrete
Structures

Algorithms and Theory

CS2040S
Data Structures
& Algorithms

CS3230
Design & Analysis
of Algorithms

Programming and Software Engineering

CS2030S
Programming
Methodology II

CS2103T
Software
Engineering

CS2101
Effective
Communication

AI Foundations

CS2109S
Intro to AI and
Machine Learning

CS3263
Foundations of
Artificial
Intelligence

CS3264
Foundations of
Machine Learning

CS3268
Responsible AI:
from Algorithms
to Impact

CS4243
Computer Vision
and Pattern
Recognition

OR

CS4248
Intro to LLM

BComp(CS/AI) Degree Requirements

CS/AI Program
Requirements

SoC
Common Core

80 units

40 units

40 units

Unrestricted
Electives

Programme Details:

CS Cohort 2026/2027

AI Cohort 2026/2027

BComp(CS) Degree Requirements

Unrestricted
Electives

SoC
Common Core

40 units

40 units

4 units
(1 course)

24 units
(6 courses)

12 units
(3 courses)

Ethics: IS1108
Digital and AI
Ethics

University Pillars

Interdisciplinary/
Cross-Disciplinary
Courses

BComp(CS/AI) Degree Requirements

University Pillars

Data Literacy:

- Preregistered: GEA1000
- Other options: DSA1101, ST1131
- Can drop GEA1000 and apply for other options

Data
Literacy

Critique &
Expression

ES2660
Communicating
in the Information
Age

Cultures &
Connections

Digital
Literacy

CS1101S
Programming
Methodology

Singapore
Studies

Communities
&
Engagement

Programme Details:

CS Cohort 2026/2027

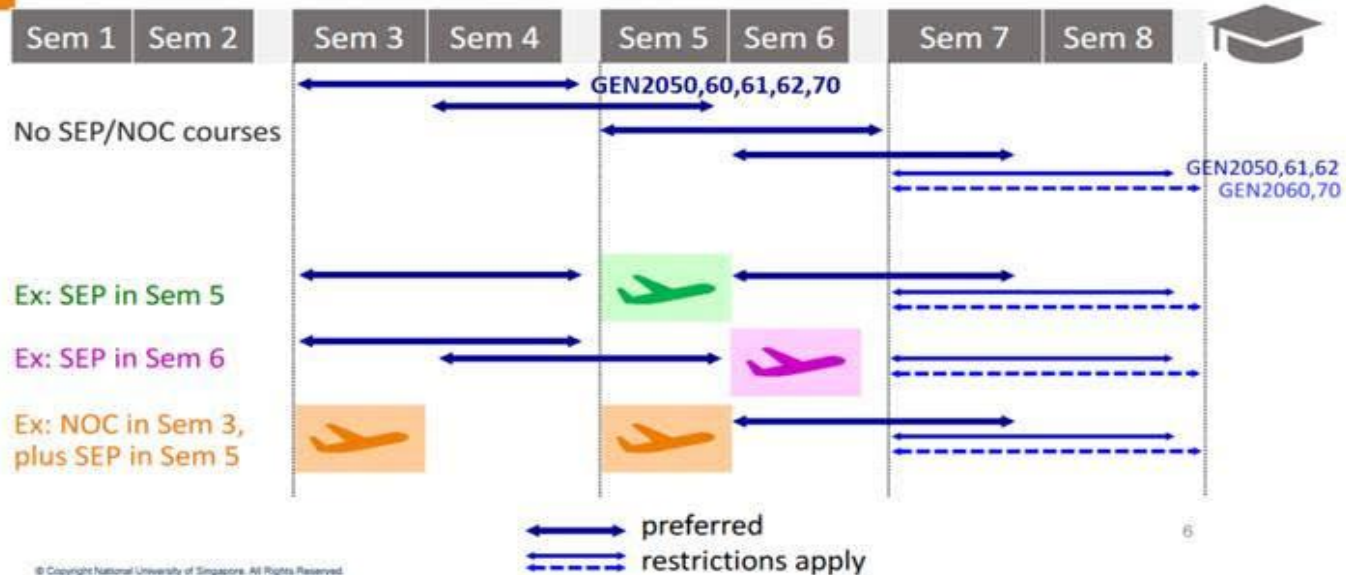
AI Cohort 2026/2027

Communities and Engagement

Issues: semester-long GEN courses have limited capacity per semester – alternative is year-long GEN Courses (i.e. Service Learning)

Students planning for enrichment programmes (Student Exchange Prog (SEP), NOC and/or internships) who wish to take year-long GEN option – recommend not leaving the GEN course too late and recommend to include Servicing Learning in their Study Plan.

Include Service Learning in Study Plan



BComp(CS/AI) Degree Requirements

Interdisciplinary / Cross-disciplinary Courses

- Choose three courses from the specified course lists.
- At least two must be interdisciplinary.

Interdisciplinary = integrates more than one discipline

Cross-disciplinary = a field different from CS that has interesting connections to CS.

BComp(CS/AI) Degree Requirements

Examples: Interdisciplinary Courses

- IS1128 IT, Management and Organisation
- IS2238 Economics of IT and AI
- HSH1000 The Human Condition
- HSI2001 Scientific Inquiry & Health: Good Science, Bad Science
- HSI2011 The World of Quantum
- DTK1234 Design Thinking
- CD2501 Liveable Cities
- IE2141 Systems Thinking and Dynamics
- PF1101 Fundamentals of Project Management

BComp(CS/AI) Degree Requirements

Examples: Cross-disciplinary Courses

- DAO2703 Operations and Technology Management
- EL1101E The Nature of Language
- SPH2002 Public Health and Epidemiology
- NUR1113A Healthy Ageing and Well-being
- EG2201A User-Centred Collaborative Design
- CD2310 Fundamentals of Systems Design
- Any Chemistry, Physics, or Biological Sciences (PC, CM, or LSM coded)

Some Additional Options

- Second major in mathematics.
 - Second major in statistics.
 - Minor in mathematics.
 - Minor in statistics.
 - Minor in financial mathematics.
 - Minor in life sciences.
 - Minor in geographic information systems.
 - Minor in interactive media development.
 - Minor in management.
 - Minor in management of technology.
 - Minor in entrepreneurship.
- And many more...

Unrestricted
Electives

40 units of Unrestricted Electives are useful here...

40 units

Tell me my schedule?

When to take what?

Year 1:

Begin foundation courses. Begin Common Core courses.

Year 2:

Finish foundation courses. Finish Common Core courses.
Begin focus area.

Year 3:

Focus area courses.
Industrial experience.

Year 4:

Focus area courses.
Breadth and depth.

Sample

CS/AI Year 1: The Basic Foundation

CS1101S
Programming
Methodology

CS2040S
Data Structures
& Algorithms

IS1108
Privacy/Ethics
in Computing

CS2030S
Programming
Methodology II

CS1231S
Discrete
Structures

CS2100
or Math

How to think computationally.
How to solve computational problems.
How to program.
How does a computer work.
Basic computing math.
Ethical/legal/social issues.

Data Literacy
course

Math

University Pillar
or
Interdisciplinary

Math

CS Year 2: The CS Core

Sample

CS3230
Design &
Analysis of
Algorithms

CS2109S
Intro to AI and
Machine Learning

CS2101
Communication

ES2660
Communication

CS2103T
Software
Engineering

CS2106
Intro. to Operating
Systems

How to deal with complex systems.
How to deal with complex software.
How to solve hard problems.
Advanced algorithmic techniques.
Begin to specialize.
Develop software skills.

University Pillar
or
Interdisciplinary

Math

University Pillar
or
Interdisciplinary

University Pillar
or
Interdisciplinary

AI Year 2: The AI Core

Sample

CS3230
Design &
Analysis of
Algorithms

CS2109S
Intro to AI and
Machine Learning

How to solve hard problems.
Advanced algorithmic techniques.
Introduction to AI and ML
Foundations of AI
Responsible AI

CS2101
Communication

ES2660
Communication

CS2103T
Software
Engineering

CS3263
Foundations of
Artificial
Intelligence

University Pillar
or
Interdisciplinary

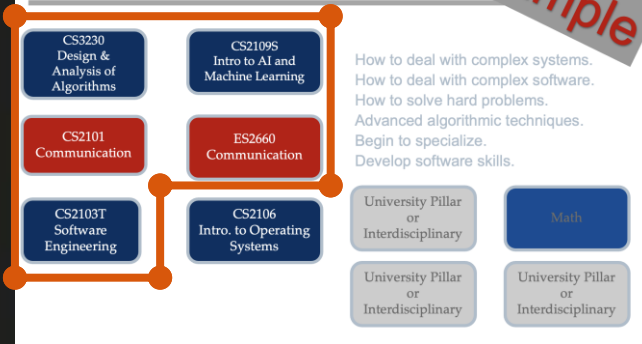
CS3268 Responsible
AI: from Algorithms
to Impact

University Pillar
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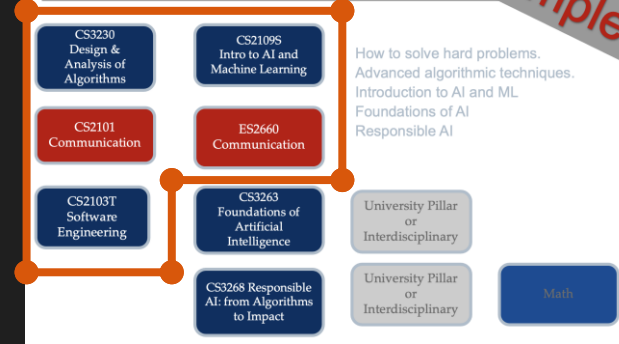
Math

Deciding between CS and AI Programme at the end of Year 2

CS Year 2: The CS Core



AI Year 2: The AI Core



- CS and AI course plan are only slightly different by Year 2
- Try and decide the degree programme to continue
- The default path is CS

What else should I think about?

What else should I think about?

Research

- Urop
- FYP
- Turing Program

What else should I think about?

Research

- Urop
- FYP
- Turing Program

Summers

- Orbital
- CVWO
- Internships
- And more...

What else should I think about?

Research

- Urop
- FYP
- Turing Program

More?

- NOC
- DDP
- Minors
- Teach!

- Summers
- Orbital
- CVWO
- Internships
- And more...

What else should I think about?

Research

- Urop
- FYP
- Turing Program

More?

- NOC
- DDP
- Minors
- Teach!

Clubs

- NUS Computing Club
- NUS Hackers
- NUS GrayHats
- NUS Game Development Group
- NUS BiZiT
- NUS Fintech Society

Summers

- Orbital
- CVWO
- Internships
- And more...

A few words of advice...

Computer science is super exciting!

Cutting edge...

Fast changing...

Always something new to learn...

Computer science involves many different skills!

Math and logic...

Creativity and design...

Implementation skills and technical knowledge...

Teamwork and communication...

A few words of advice...

So what to learn in university?

- Learn fundamental principles that never (?) change...
- Learn how to solve problems...
- Learn how to work with others...
- Learn how to learn...

What to optimize for?

- Skills, knowledge and expertise (not grades)...
- Cooperation (not competition)...
- How to get things done (not rote knowledge)...

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CS Department

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Short briefing

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NUS School of Computing

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