NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

COMPUTING & DATA SCIENCE IN THE AI AGE

Building a College For the Future

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The Case for A

College of Computing and Data Science

34 YEARS OF NTU

1955 - 1980

Nanyang University

Nanyang Technological Institute

1981 - 1990

1991 - 2000

Nanyang Technological University: A Teaching University

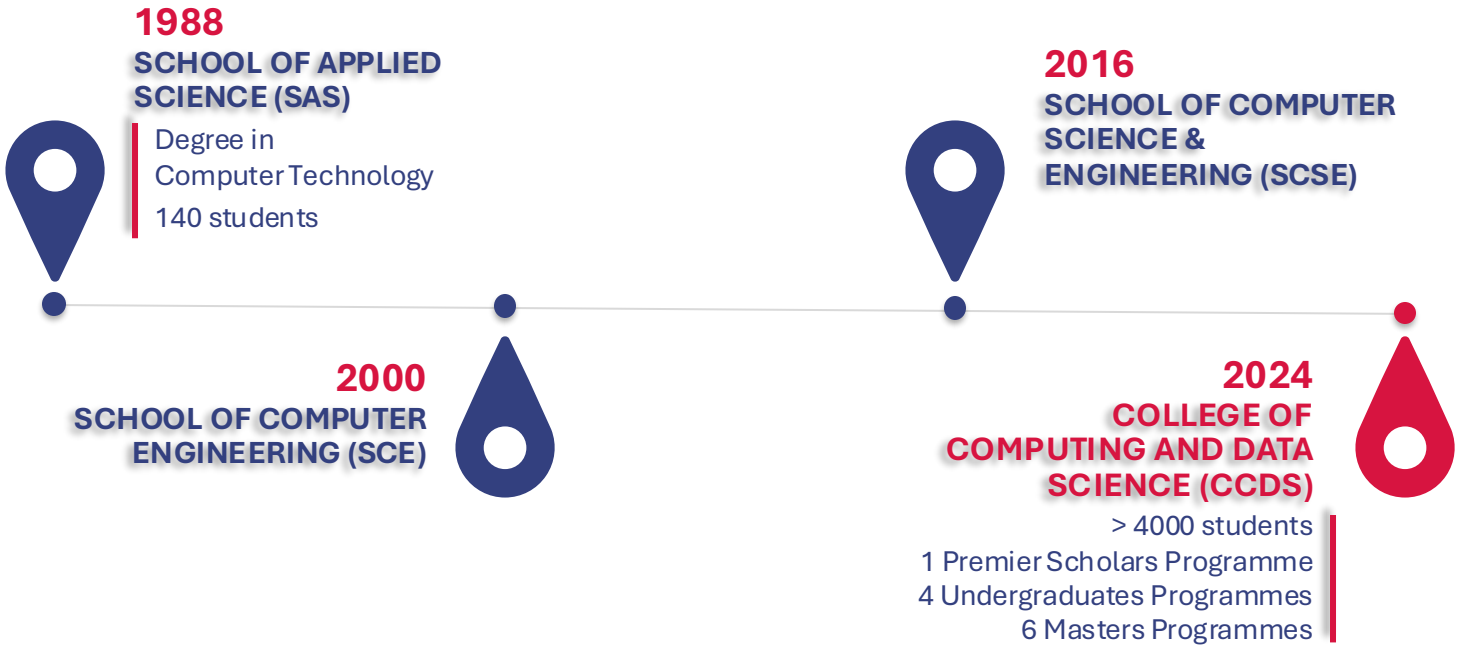
NTU: A Comprehensive University

2001 - 2014

2015 - NOW

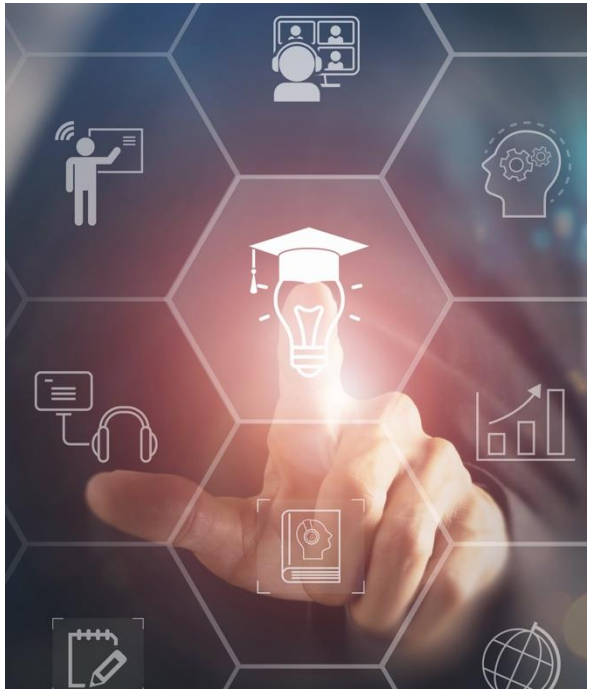
NTU: A Research-intensive University, delivering Lifelong Education

COLLEGE OF COMPUTING & DATA SCIENCE



FRAMING THE FUTURE: THE CASE FOR CCDS

- Responding to the **strategic imperative** of AI and Data Science
- Aligning education with emerging **workforce demands**
- Driving **interdisciplinary education & research** across domains
- Strengthening **leadership & agility** of the discipline
- **Attracting top talent** & enhancing **global visibility**



College of Computing and Data Science

An Academic Home for AI, Data Science & Computing

VERTICALS & HORIZONTALS

VERTICALS: Academic Divisions

ARTIFICIAL INTELLIGENCE

DATA SCIENCE

COMPUTING

HORIZONTALS: Centres, Institutes, & Labs

- Centre for DS&AI-for-X
- Generative AI Lab
- Centre for Cybersecurity & Digital Trust
- Institute of Computing & Society

RESEARCH PORTFOLIO: 3 Divisions, 14 Themes

ARTIFICIAL INTELLIGENCE

- ARTIFICIAL INTELLIGENCE
- COMPUTER VISION & LANGUAGE

DATA SCIENCE

- STATISTICAL DATA SCIENCE & APPLICATIONS (NEW)
- DATA MANAGEMENT & ANALYTICS
- HEALTH INFORMATICS
- DATA SCIENCE + X (BICULTURAL) (NEW)

COMPUTING

- ALGORITHMS & COMPLEXITY (NEW)
- PROGRAMMING LANGUAGES, SOFTWARE ENGINEERING, & FORMAL METHODS (NEW)
- PARALLEL & DISTRIBUTED COMPUTING
- GRAPHICS, INTERACTION, VISUALIZATION & REALITY
- NETWORK SYSTEMS
- HARDWARE & EMBEDDED SYSTEMS
- SECURITY, CRYPTOGRAPHY & DIGITAL TRUST
- QUANTUM COMPUTATION (NEW)

MORE HORIZONTALS: STRATEGIC RESEARCH ENTITIES

CORE AI RESEARCH

- S-Lab for Advanced Intelligence (**Computer Vision**) – $70M
- Centre of **DSAI-for-X** – $600K
- **Generative AI** Lab – $600K

TRUST, SAFETY & RESPONSIBLE TECH

- Digital Trust Centre (DTC) / Singapore **AI Safety** Institute – $52M
- Strategic Centre for **Privacy-Preserving Tech** (SCRIPTS) – $15.3M
- **Cyber Security** Research Centre (CYSREN) | CyberSG R&D Programme Office (CRPO) – $62M

AI & COMPUTING FOR SOCIETAL IMPACT

- Alibaba-NTU Institute (**Green Computing**) – $75M
- Joint NTU-WeBank Centre on **Fintech** – $15M
- Joint NTU-UBC Centre for **Active Aging** (LILY) – $10M
- MasterCard-NTU **Digital Future Initiatives** – $5M

Education for the AI Era

Preparing both Creators & Users of AI

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In the age of AI, two kinds of workers will thrive: those who *create* it – and those who *use it wisely*.

SOME GUIDING PRINCIPLES

- Teach computational thinking & system design
- Interdisciplinarity: AI is no longer purely technical
- Focus on meta-skills: adaptability, learning how to learn, collaborative problem-solving
- Be open-minded & agile in what we teach

AI PROGRAMMES @ CCDS

FOR AI CREATORS

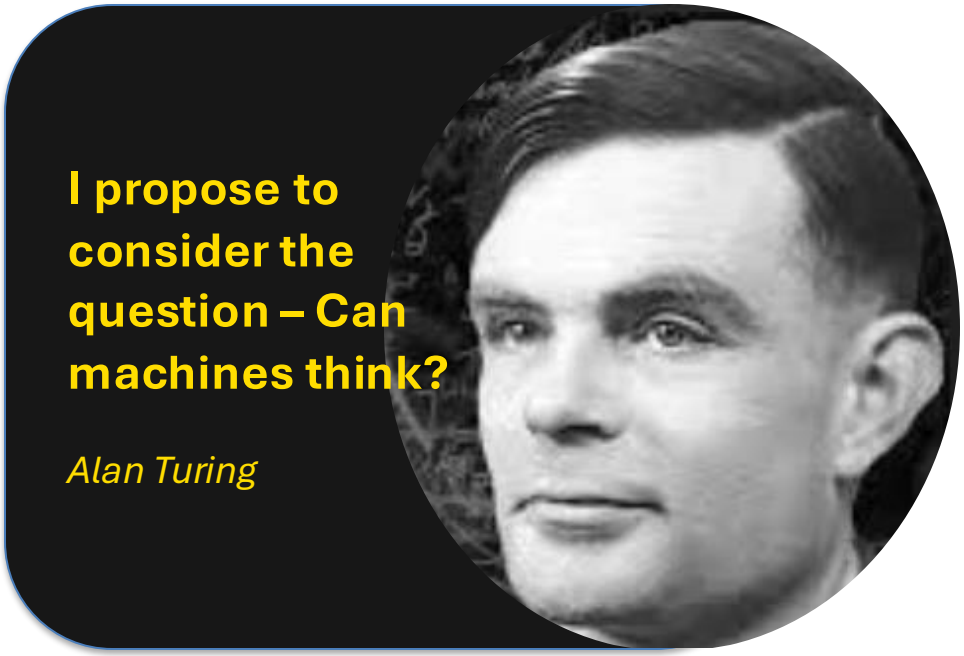
- Turing AI Scholars Programme (Elite Scholars Programme)
- BComp in AI & Society

FOR AI USERS

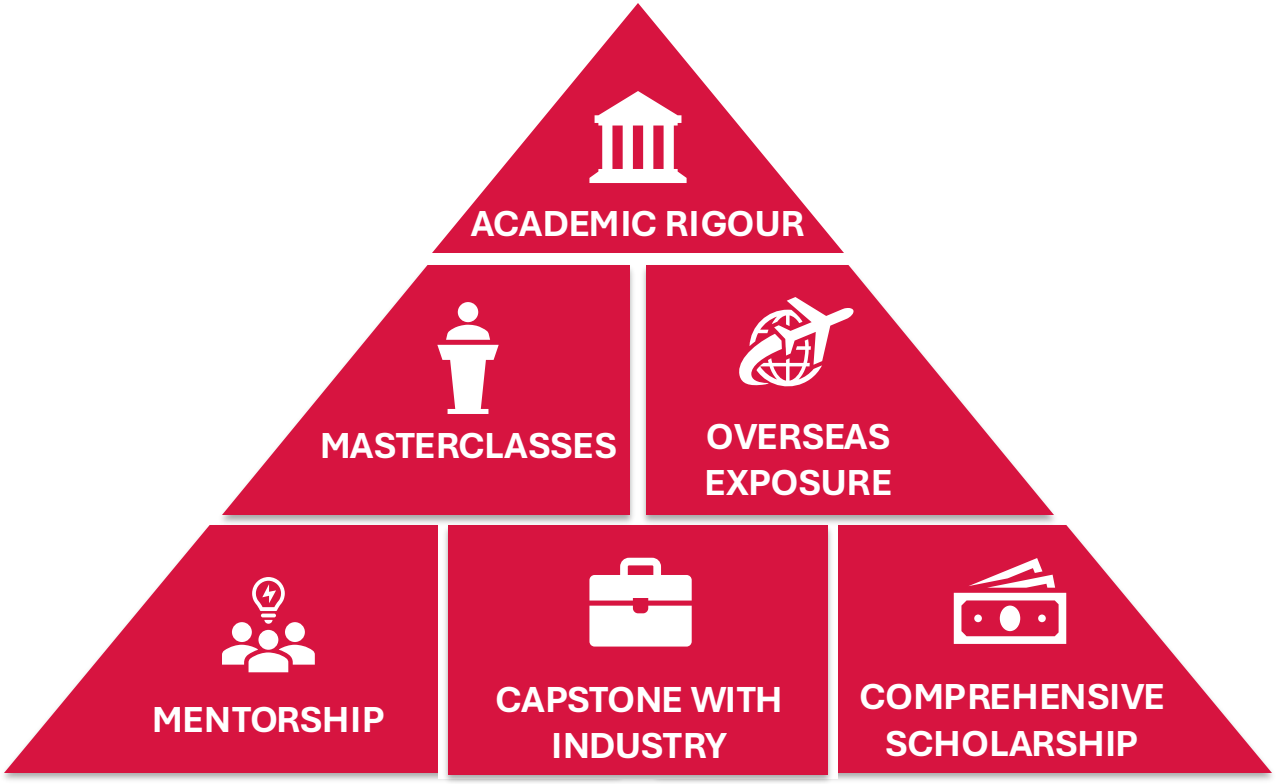
- Minor in AI for ALL NTU students
- Continuing Education & Training (CET) in AI, DS, & Cybersecurity

TURING AI SCHOLARS PROGRAMME (TAISP)

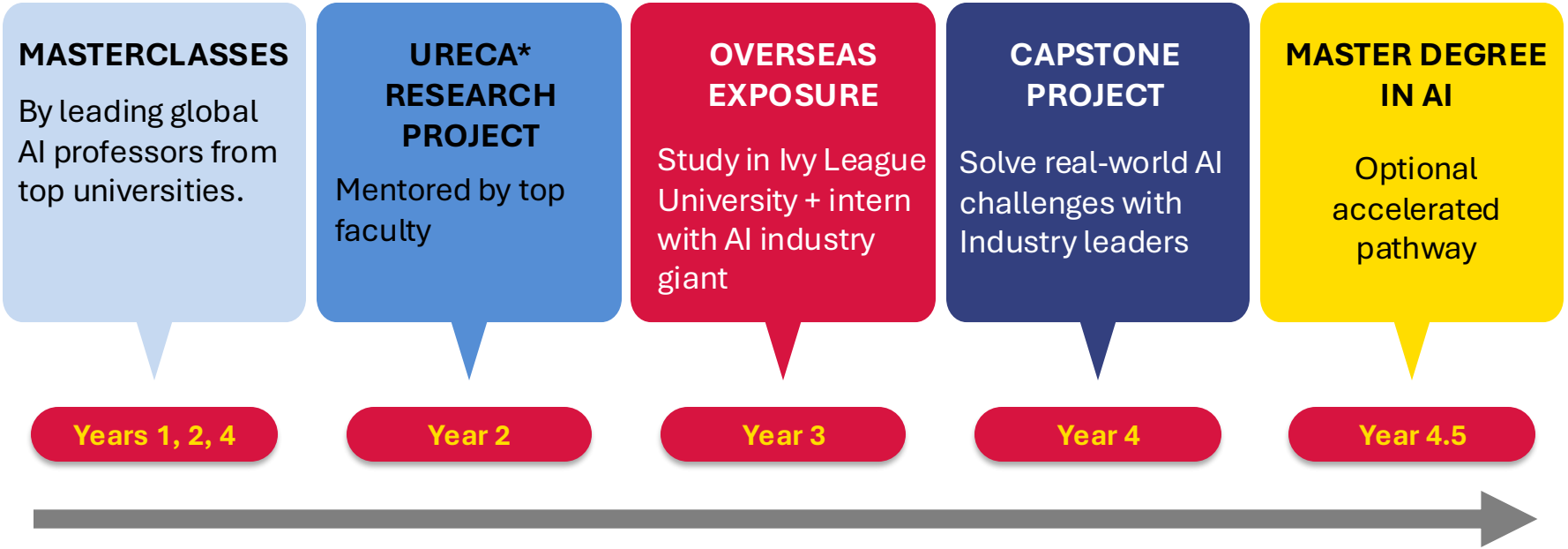
- Highly selective programme for top students driven by a passion for AI
- For those aspiring to postgraduate research or a career in the AI industry
- Open to students in
  - BComp (Computer Science)
  - BComp (Data Science & AI)
  - BComp (AI & Society)



TAISP: ELITE TRACK FOR AI LEADERS



TURING AI SCHOLARS' JOURNEY



***URECA:** Undergraduate Research Experience on Campus

BComp in AI & SOCIETY: A SNAPSHOT

YEAR 1	YEAR 2	YEAR 3	YEAR 4

FOUNDATIONAL MODULES IN COMPUTER SCIENCE & AI

- Algorithm Design and Analysis
- Artificial Intelligence
- Data Structures & Algorithms, etc.

CORE AI MODULES

- Natural Language Processing
- Computer Vision
- Introduction to Generative AI, etc.

INTERDISCIPLINARY COLLABORATIVE CORE (ICC) MODULES

DESIGN PROJECT
Group Project on Responsible AI (RAI) Implementation

RAI CAPSTONE PROJECT

ESSENTIAL MODULES IN AI ETHICS & SOCIETY

- AI for Social Good
- AI for Society
- Ethical AI

MAJOR PRESCRIBED ELECTIVES

- Social Group
- Technical Group

EMPOWERING SMART USERS: AI AS A MINOR

- Open to all NTU undergraduates.
- Equips students with core AI skills regardless of their discipline.
- Empowers future professionals to apply AI meaningfully in their fields.

COMPULSORY COURSES

- Python Programming
- AI Fundamentals and Applications …

INTERDISCIPLINARY ELECTIVES

- Built-in flexibility to align AI learning with each student's field – whether it's Science, Maths, Business, Law, Philosophy, or the Arts

MASTERS BY COURSEWORK @ CCDS

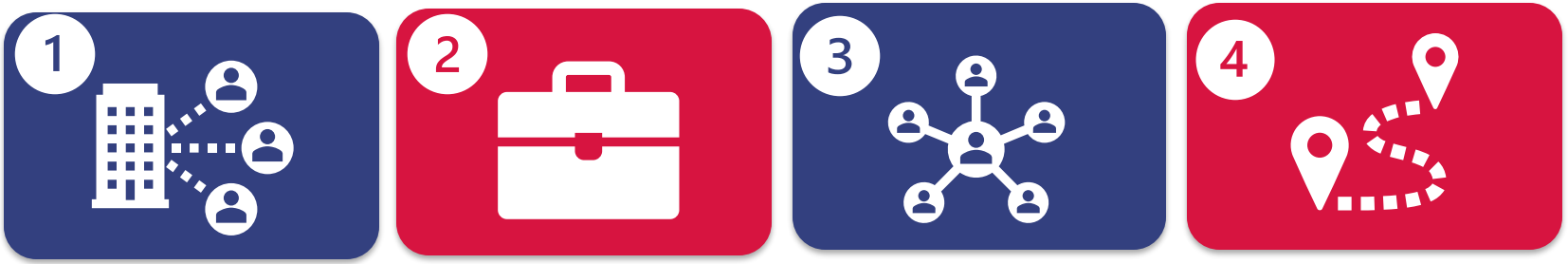
FOR AI CREATORS

- MSc in Artificial Intelligence
- MSc in Data Science

FOR SMART USERS

- MComp in Applied AI

MComp in Applied AI



AI WHERE YOU ARE

Learn to apply AI directly in your current work context

BRING YOUR PROBLEM TO SCHOOL

Solve a real workplace challenge through a **company-sponsored capstone project**

RESPONSIBLE AI BY DESIGN

Build trustworthy, ethical AI systems with governance-focused electives

MULTIPLE PATHWAYS

Choose from foundational or advanced electives based on individual's background

Reflections on Building CCDS

A Dean's Perspective on Purpose, Potential & Progress

DIFFERENCES BETWEEN OXFORD & NTU

- Resources for research
- Decision making: top-down vs bottom-up
- Research assessment & university rankings

NTU's GLOBAL STANDING

QS World University Rankings

2025

#5 (World) **#1** (Asia)

in Data Science & AI

#6

in Computer Science & Information Systems

U.S.News Best Global Universities

2024

#2

in Artificial Intelligence

#2

in Computer Science

THE World University Rankings

2025

Top

20

in Computing

Forbes

2021

Top

10

Best AI & Data Science Undergraduate Programmes

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Research is to be understood as original investigation undertaken to gain knowledge and understanding, including work of direct relevance to the needs of commerce and industry, as well as to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, and artefacts, including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products, and processes, including design and construction. **The content of a paper is more important than publication metrics or the identity of the journal in which it is published.** However, the research output must be complete and its content available for the Committee to review if it wishes.

An excerpt from University of Oxford’s *Recognition of Distinction 2023*

NAVIGATING THE TOUGH QUESTIONS

1. How should we **evaluate ourselves**?
2. How to **promote** & **incentivise teaching**?
3. How to teach AI & computing and produce **future-proof** graduates?
4. How to **recruit** talent?

THANK YOU

MComp in Applied AI (USP)

1. AI Where You Are
Learn to apply AI directly in your current work context

4. Responsible AI Training
Build trustworthy, ethical AI systems with governance-focused electives

2. Bring Your Problem to School
Solve a real workplace challenge through a **company-sponsored capstone project**

5. Multiple Pathways
Choose from foundational or advanced electives based on individual's background

COLLEGE OF COMPUTING & DATA SCIENCE

Established to lead NTU's strategic push in AI, the College of Computing & Data Science is built for impact.

Nurture faculty and student community defined by excellence and purpose.

Prioritise strong fundamentals while integrating computing across disciplines.

Prepare graduates for roles that demand both depth and adaptability.

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We don’t just teach AI. We shape its future.