



GLOBAL SUMMER PROGRAMME 2025

COR2222S AI FOR SOCIAL TRANSFORMATION

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COURSE DESCRIPTION

The notion that Artificial Intelligence (AI) has the capacity to transform the way society operates has long been a part of popular culture. Androids have been dreaming of electric sheep since 1968, and Tom Cruise was already arresting pre-criminals in 2002. With the explosion of data available to governments and companies, and cloud computing platforms making supercomputing power widely available, science fiction and reality have never been closer. However, the true capabilities and limitations of AI are often poorly understood, as some predict doom, while others promise the moon. Modern AI techniques have the capacity to improve the way organisations operate, improving decision-making and increasing human and environmental wellbeing, but also carry the potential to cause harm if used irresponsibly or ignorantly.

Accessible to technical and non-technical students alike, this course will introduce you to key techniques, showing how they can be flexibly applied to a range of problems, from using game theory to intercept wildlife poachers, through machine learning models for crime prediction, to risk-aware logistics scheduling. The course will guide you through the ethical implications of AI, considering the effects of biased data and the uncritical application of techniques. By the end of the course you will have a working understanding of the capacities and limitations of practical AI, equipping you to critically analyse new developments, and engage in responsible, informed decision-making in the workplace.

LEARNING OBJECTIVES

By the end of the course, students will:

- Have an accurate understanding of the potential impact of AI and its ethics, and be able to apply the understanding to assess the ethical implications of applying AI to other domains.
- Be able to apply the problem-solving process of breaking down a problem and selecting appropriate AI techniques to apply to its resolution.
- Be able to explain a range of AI techniques for societal transformation. This will equip them to act as a bridge in the workplace between technical and non-technical colleagues, to foster common understanding.

PRE-REQUISITES / REQUIREMENTS / MUTUALLY EXCLUSIVE COURSE(S)

This course does not require any pre-requisite.

ASSESSMENT METHODS

Individual assessments (70%):

- Class participation (10%)
- Quiz (30%)
- Reflections (30%)

Group Project (30%):

- Project final presentation (15%)
- Project poster/written explanation (15%)

INSTRUCTIONAL METHODS AND EXPECTATIONS

Method: Lectures - Total 12

Expectation: Student must attend and participate in the seminar-room lectures

Method: In class individual and team activities/discussions

Expectation: Discussions will be graded for participation. The purpose is to share ideas and develop deeper understanding of materials.

Method: Group Project

Expectation: Group presentation, 1 poster/written explanation

CONSULTATIONS

- In-person during and after class
- Consultations outside class timing can be scheduled via email
- General communication with the class through SMU email

RECOMMENDED TEXT AND READINGS

Suggested Reading:

Artificial Intelligence: A Modern Approach, 4th Edition by Stuart Russell and Peter Norvig, Pearson 2020
AI Ethics by Mark Coeckelbergh, MIT Press 2020

Relevant background articles and texts for each class will be made available via Elearn.

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Academic Integrity

All acts of academic dishonesty (including, but not limited to, plagiarism, cheating, fabrication, facilitation of acts of academic dishonesty by others, unauthorized possession of exam questions, or tampering with the academic work of other students) are serious offences.

All work (whether oral or written) submitted for purposes of assessment must be the student's own work. Penalties for violation of the policy range from zero marks for the component assessment to expulsion, depending on the nature of the offense.

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Accessibility

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LESSON PLAN		
LESSONS	SESSIONS	REMARKS
LESSON 1	Overview and Introduction – What is AI?	
LESSON 2	AI Methods: Machine Learning 1	
LESSON 3	AI Methods: Machine Learning 2	
LESSON 4	AI Case Studies: Public Health & Wellbeing	
LESSON 5	AI Methods: Decision-making & Agents	
LESSON 6	AI Methods: Game Theory AI Case Studies: AI and the Environment	
LESSON 7	Guest Lecture and Mid-Term Quiz	In-class quiz (30%) Reflection 1 due (15%)
LESSON 8	AI Methods: Optimization	
LESSON 9	AI Case Studies: Law Enforcement	Project Group Formation
LESSON 10	Social Transformation Snapshots Initial Project Brainstorming	
LESSON 1	Group Project research and design	
LESSON 2	Project Presentations	Group Project Submissions (30%) Reflection 2 due (15%) Group Peer Feedback