GLOBAL SUMMER PROGRAMME 2024

COR-MGMT2239 AN INTRODUCTION TO ARTIFICIAL INTELLIGENCE: IMPLICATIONS FOR WORK AND BUSINESS MODELS

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A. COURSE DESCRIPTION

Artificial Intelligence (AI) has bloomed this year, entering the lives of many students and the general public's use. Historically, there have been different types of AI, but the type underlying the most popular and current AI – neural networks – has become greatly influential in recent years, and has actually been working in the background of many applications for several years already. This AI technology resembles human thinking at neural levels, but are not clear matches to how humans process knowledge. The are now adapted to process language and images, and underlie the most popular kinds of AI, such as ChatGPT and Midjourney. As such, we will focus on these types of AI.

Studies of AIs' impacts from just a few years ago are already outdated due to the rise of these new AIs. In part, this is because the current AI has shown itself to be capable of many feats. This has led to a surge of funding of AI startups, and the emerging industry could be expected to supercharge some firms, tasks, and types of work.

In order to understand the implications of this type of AI, we will investigate the differences in types of AI and the current technologies that have so attracted investors, firms, and users alike. We will delve into human intelligence and concepts of how intelligence, understanding and meaning are conceived to exist in humans, and to be created in AI.

We will focus on two implications of the new types of AI. (These will be grounded in the understandings of human intelligence and AI arrived at in the first part of the course). The first is the implications for how work tasks can change (based partly on your own experiments and introspections), and consequently, on the future of jobs and employment. Much of this will be based on the direct use of ChatGPT to assess its capabilities for various kinds of work.

A second type of implication we will study from this grounded basis is that of how different kinds of AI firms and startups, and uses of AI, are emerging. Since much of the impact will come from the embedding of AI in the broader automation of work systems and firms, the broader context will be kept in mind. A business model approach will be used to study these forms of entrepreneurship and transformation.

The course does not employ mathematics or computational work, but AI applications are used and explored, but generally involves higher levels of reasoning, and multi-disciplinary approaches.

B. LEARNING OBJECTIVES

- Understand and describe the different types of AI, their strengths and limitations, and issues on the differences with human intelligence.
- Understand and use the abilities of AI to support your work, and its implications for work and

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employment.
- Develop a business model around a use of AI (including accounting for the risks and "returns", i.e., value proposition to individuals and firms).
- Develop an ability to formulate questions about different AI scenarios and futures (as a result of current trends), with their implications for firms and societal risks.

C. PRE-REQUISITES / REQUIREMENTS

No academic prerequisites.
Basic familiarity with ChatGPT and DALL-E (or its equivalent) is assumed, or should be picked up sooner after the course begins.

D. ASSESSMENT METHODS / GRADING DETAILS

25% Class participation
35% Individual assignments (multiple short writeups and reflections)
40% Group project (including group presentation on last day of class)

E. INSTRUCTIONAL METHODS AND EXPECTATIONS

Lecture, practice and reflection with AI (mostly ChatGPT prompts).

F. IMPORTANT ASSIGNMENT DATES

To be confirmed (individual assignments and projects generally due at the end of term, but short individual assignments and intermediate check points for projects may be due mid-way through the term.

G. CONSULTATIONS

Available upon request. Group consultations may be scheduled.

H. RECOMMENDED TEXT / READING LIST / CASE STUDIES LIST

Not confirmed, but could include:
- Mitchell, M. (2019). Artificial Intelligence: A Guide for Thinking Humans (note: this primerdoes not cover the latest trend in language models underpinning ChatGPT, which took place during 2022).
https://www.amazon.com/Artificial-Intelligence-Guide-Thinking-Humans/dp/0374257833.

Several working papers, including (non-technical) parts, e.g.
- Bender, E., & Koller, A. (2020,July). Climbing towards NLU: On meaning, form, and understanding in the age of data. In *Proceedings of the 58th annual meeting of the association for computational linguistics* .
- Blaise Agüera, Y. A. (2022). "Do large language models understand us?" *Daedalus* 151.2 (2022): 183-197.
- Bubeck, S., etc. (2023). Sparks of artificial general intelligence.
- Kaddoura, J. et al (2023). Challenges and Applications of Large Language Models.

A number of other sources, including journal articles and magazine and news articles, e.g.
- Tschang, F. T., & Almirall, E. (2021). Artificial intelligence as augmenting automation: Implications for employment. *Academy of Management Perspectives*, *35*(4), 642-659.

I. UNIVERSITY POLICIES

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.

When in doubt, students should consult the instructors of the course. Details on the SMU Code of Academic Integrity may be accessed at https://oasis.smu.edu.sg/Pages/DOS-WKLSWC/UCSC.aspx.

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Accessibility
SMU strives to make learning experiences accessible for all. If you anticipate or experience physical or academic barriers due to disability, please let me know immediately. You are also welcome to contact the university's disability services team if you have questions or concerns about academic provisions: DSS@smu.edu.sg.

Please be aware that the accessible tables in our seminar room should remain available for students who require them.

Digital Readiness for Teaching and Learning (DRTL)
As part of emergency preparedness, instructors may conduct lessons online via the Zoom platform during the term, to prepare students for online learning. During an actual emergency, students will be notified to access the Zoom platform for their online lessons. The class schedule will mirror the current face-to-face class timetable unless otherwise stated.

Note: topics are subject to confirmation.

LESSON PLAN	
LESSONS	**TOPICS**
Part 1. Introduction to the technology	
LESSON 1 Introduction (Tuesday, 25 June)	Introduction to the course. The history of industrial revolutions, computing history, and relationship of computing to AI. The notion of a general purpose technology.
LESSON 2 Types of AI (Wednesday, 26 June)	History of artificial intelligence. Early AI to recent. Discussion of types of AI.
LESSON 3 Human and artificial intelligence (Thursday, 27 June)	Human intelligence (e.g. the notion of embodiment) Historical and contemporary debates about intelligence (e.g. Turing test, "stochastic parrots "or "towards artificial general intelligence").
Part 2. How AI impacts on your work and specialized areas of work.	
LESSON 4 Implications of AI on work (Tuesday, 2 July)	Exercises and discussions of how AI impacts on your (personal) work. Types of work (creative, productive, etc.) and impacts of AI.
LESSON 5 Implications of AI on work (part 2) (Wednesday, 3 July)	AI impacts on personal work (continued). How impacts on personal work translate to impacts within firms (e.g.s from law and radiology).
LESSON 6 AI and "science work" (Thursday, 4 July)	The recent image and language revolutions within AI (success and issues in games, biology).
LESSON 7 Primer on entrepreneurship and business models (Tuesday, 9 July)	Selected dimensions of entrepreneurship and business models. Discussion of class group projects. Presenting an AI business model (short version based on your insights)
LESSON 8 AI, entrepreneurship and firms (Wednesday, 10 July)	The AI startups: how a typical AI startup functions (e.g.s from Silicon Valley). Business models based on features (and risks) of AI. The broader ecosystem around AI.
LESSON 9 Guest speaker (Thursday, 11 July)	Guest speaker or field trip (to be announced)
LESSON 10 Robots and their broader social impacts and (cost-benefit) calculations (Tuesday, 16 July)	Robot revolutions (driverless vehicles, planning problems and recent breakthroughs in multimodal AI) Risks and "rewards" to companies. Cost-benefit analysis as a frame. Implications for business

LESSON 11 Wrap-up (Wednesday, 17 July)	Final overview, miscellaneous topics
LESSON 12 Project presentations (Thursday, 18 July)	Group projects