The Hong Kong Polytechnic University

Subject Description Form

Subject Code	COMP5934
Subject Title	Agentic AI Systems Project
Credit Value	6
Level	5
Pre-requisite & Exclusion	Having completed 15 credits of study with a GPA equivalent to or above the grade point value of C+ (** Full-time students who have completed 9 credits of study and fulfilled this GPA requirement may consider doing Project from the second semester of their study.) Exclusion: all project and dissertation subjects (e.g., COMP5940)
Objectives	The objectives of this subject are to: • provide students with the opportunity to engage in a collaborative project that applies research and development principles within the domain of agentic AI. • encourage the creation of concepts, models, frameworks, or systems that embody autonomy, adaptivity, and intelligent behaviour. • foster critical thinking about the design, implementation, and impact of agentic AI solutions in real-world contexts.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Design an agentic AI system that demonstrates autonomous decision-making, adaptivity, and collaboration between agents. b. Implement the designed system by applying appropriate research methods, software engineering practices, and evaluation techniques to meet defined requirements and quality standards. c. Evaluate and justify design and implementation choices in relation to established theories and principles of agentic AI. d. Reflect critically on the project outcomes, including system performance, ethical implications, and potential applications in complex environments.

Subject Synopsis/ Indicative Syllabus	Students will form teams of up to 4 members and work on an agentic AI project under the supervision of a faculty member. Each group will explore a research or application area related to autonomous and intelligent systems, either proposed by the students or assigned by the supervisor. Through the project, students will integrate knowledge and techniques acquired in preceding and concurrent subjects, such as artificial intelligence, multi-agent systems, human–agent interaction, reasoning, and adaptive systems, to extend their understanding and skills in agentic AI. During the project, students will: • Identify a problem or opportunity that can be addressed through agentic approaches with a proposal. • Design concepts, models, and frameworks that embody autonomy, adaptivity, and agent collaboration. • Develop proof-of-concept prototypes that demonstrate agentic behaviours such as decision-making, negotiation, coordination, or interaction with human users. • Construct suitable test scenarios and evaluation strategies to assess the system against functional requirements, quality standards, and ethical considerations. Where possible, supervisors and student teams are encouraged to engage in collaboration with industry partners, allowing projects to address real-world challenges, enhance applicability, and provide students with experience in professional environments. During the project, students will apply project management methods to plan, monitor, and deliver their work effectively, including the division of tasks, milestones, and progress reviews. Upon completion of the subject, students are expected to communicate their project outcomes clearly and persuasively through a combination of well-prepared project reports, oral presentations, and live demonstrations of their prototypes.
Teaching/Learning Methodology	Students will work in groups of up to four members, each supervised by a faculty member. Projects may optionally be carried out in collaboration with industry partners, providing opportunities to address real-world challenges and gain professional experience. Students are expected to: • Work independently and collaboratively, showing initiative and taking responsibility for the success of their project.

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Integrate knowledge from agentic AI and related areas (e.g., multi-agent systems, reasoning, human–agent interaction) into their project work.
Hold regular meetings with their supervisor (and/or other collaborators suggested by the supervisor), at least once every two weeks, to review progress, receive guidance, and refine project objectives.
Produce regular progress reports and maintain project documentation as part of project management practice.
Engage in reflective practice, critically evaluating their design decisions in relation to technical performance, ethical issues, and industry impact (where applicable).

Duration of the subject: Two semesters (spanning Semester 2 and the Summer Term).
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<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td></tr>
<tr><td>Continuous assessment (proposal, final presentation with demo, and report).</td><td>100%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="4"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
The project proposal assesses students' ability to design an agentic AI system (ILO a) by requiring them to define the problem, outline objectives, and plan a suitable system architecture and methodology. The final presentation with demo provides direct evidence of students' ability to implement their system using appropriate research methods, software engineering practices, and evaluation techniques (ILO b), while also showcasing system behaviour in action. The final written report allows students to evaluate and justify their design choices in relation to theories of agentic AI (ILO c) and to critically reflect on the project outcomes, including technical performance, ethical considerations, and potential applications (ILO d).
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<tr><td>Student Study Effort Expected</td><td>
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<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Group activities (discussion, study)</td><td>80 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Projects, Presentation, Experiment</td><td>130 Hrs.</td></tr>
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	Total student study effort	210 Hrs.
Reading List and References	1. Russell, S., & Norvig, P. (2020). Artificial intelligence: A modern approach (4th ed.). Pearson. 2. Boden, M. A. (2018). Artificial intelligence: A very short introduction (2nd ed.). Oxford University Press. 3. Shoham, Y., & Leyton-Brown, K. (2008). Multiagent systems: Algorithmic, game-theoretic, and logical foundations. Cambridge University Press. 4. Yanev, M. (2024). Building AI applications with OpenAI APIs: Leverage ChatGPT, Whisper, and DALL-E APIs to build 10 innovative AI projects (2nd ed.). Packt. 5. Raieli, S., & Iuculano, G. (2025). Building AI agents with LLMs, RAG, and knowledge graphs: A practical guide to autonomous and modern AI agents (1st ed.). Packt.	