

Critical Inquiry Topics Semester 2 AY2026/2027

Project IDs	Project Titles	Supervisors
AC-01	Analysis of communities	Alton Chua
AC-02	Analysis of user-generated content	Alton Chua
AC-03	Deception on social media	Alton Chua
AC-04	Rumors and rumor denials	Alton Chua
BK-01	Leading through stories	Brenda Lee
BK-02	Leadership through storytelling	Brenda Lee
BK-03	Storytelling in the AI race	Brenda Lee
BK-04	Organisational Practices	Brenda Lee
BK-05	Storytelling on Video	Brenda Lee
BK-06	Leadership in Literature	Brenda Lee
BK-07	Reading in Leadership	Brenda Lee
BL-01	The Social Context of Libraries and Librarians	Brendan Luyt
BL-02	Understanding Wikipedia as a social technology	Brendan Luyt
BL-03	Domain analysis of academic disciplines or sub-disciplines	Brendan Luyt
BL-04	Thinking about the animal and plant world in children's literature	Brendan Luyt
CK-01	Knowledge graph or graph database application development using Neo4j	Chris Khoo
CK-02	Information extraction of research results from research papers using LLMs to construct a scientific knowledge graph	Chris Khoo
CK-03	Using LLMs to summarize and synthesize narratives from recollections collected from the public on topics related to Singapore culture, history and society (in the Singapore Memory Project Collection)	Chris Khoo
CK-04	Analyzing thematic summaries generated by LLMs for paragraphs extracted from multiple chapters in a book	Chris Khoo

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CK-05	Dance video analysis	Chris Khoo
DG-01	Generative AI in work and Education Contexts	Dion Goh
DG-02	Perceptions of AI: Anxiety, Literacy and Influential Factors	Dion Goh
DG-03	Understanding Perceptions of Deepfakes	Dion Goh
FT-01	The Value and Impact on a Business' revenue through the use of Digital Proximity Solutions	Francis Tay
FT-02	Customer Intelligence collection methods and analysis	Francis Tay
FT-03	Digital Transformation	Francis Tay
FT-04	Data Analysis in the Workplace	Francis Tay
FT-05	Data Analytic Tools	Francis Tay
FT-06	Intelligent Automation Solutions and Tools	Francis Tay
FT-07	Marketing and Agentic AI	Francis Tay
FT-08	Data Management and Governance in the age of Artificial Intelligence (AI)	Francis Tay
HO-01	Biomedical Relation Extraction from PubMed Articles Using Large Language Models	Hamzah Osop
HO-02	Identifying Knowledge Gaps in Biomedical Knowledge Graphs	Hamzah Osop
HO-03	LLM-Based Question Generation from Biomedical Knowledge Graphs	Hamzah Osop
HO-04	Explainable Theme Discovery Using Graph Embeddings and Large Language Models	Hamzah Osop
HO-05	Analysing the spread of information	Hamzah Osop
JP-01	Defending Adversarial AI Attacks	Jonathan Pan
JP-02	Security Audit using LLM	Jonathan Pan

Project IDs	Project Titles	Supervisors
JP-03	Teaching Aids with Gen AI	Jonathan Pan
JP-04	Assistive Technology with Gen AI	Jonathan Pan
JS-01	Perception and use of libraries	Joanna Sin
JS-02	Everyday life information behaviour	Joanna Sin
JS-03	Information inequality: Status, effects, and remedies	Joanna Sin
JS-04	Trending topics in Library and Information Science	Joanna Sin
LCK-01	Porting the arXif dataset into Neo4j	Lee Chu Keong
LCK-02	Porting the movies dataset into Neo4j	Lee Chu Keong
LCK-03	Vertical farming: A bibliometric analysis	Lee Chu Keong
LCK-04	Storage of Family Tree Information Using Neo4J	Lee Chu Keong
LCK-05	Storage of Research Publications Using Neo4J	Lee Chu Keong
LCK-06	Constructing a Web Front-End for a Movie Community based on Neo4j database	Lee Chu Keong
LCK-07	An Investigation into the Career Anchors of Postgraduate Students	Lee Chu Keong
LCK-08	Bibliometrics on the publications of health communication	Lee Chu Keong
LCK-09	Storage and visualisation of bibliographic data using Neo4J	Lee Chu Keong
LCK-10	A Bibliometric Analysis of Knowledge Management Research Papers	Lee Chu Keong
LCK-11	Developing a Neo4J Database and Frontend for Researchers in Health Communication	Lee Chu Keong
LCK-12	Natural Language Processing	Lee Chu Keong
LCK-13	Bibliometric Analysis and Topic Modelling of Two AI Journals	Lee Chu Keong
LCK-14	An Analysis of the Abstracts of an Academic Journal using Topic Modelling	Lee Chu Keong
LCK-15	Social Capital and Knowledge Transfer	Lee Chu Keong
LCS-01	Understanding Cognitive Offloading in AI-Enabled Learning	Lee Chei Sian

Project IDs	Project Titles	Supervisors
LCS-02	Exploring digital nudging	Lee Chei Sian
LCS-03	Understanding information practices in the transitions to university and workplace	Lee Chei Sian
LCS-04	Examining the online information environment for neurodivergent learners	Lee Chei Sian
LGP-01	Sustainability informatics in organisations	L. G. Pee
LGP-02	Use of generative artificial intelligence (AI) in organisations	L. G. Pee
LGP-03	Design principles for mobile games	L. G. Pee
LGP-04	Design principles for information systems	L. G. Pee
LGP-05	Perceptions of emerging technologies: topic modeling and sentiment analysis	L. G. Pee
LGP-06	Understanding older adults' information behavior	L. G. Pee
LL-01	Embodied AI Pets as Social Intermediaries: Supporting Human Connections	Lizzy Liu
LL-02	Aesthetic Diversity in AI-Generated Images	Lizzy Liu
LT-01	AI-Assisted Application-Level Reinforcement Learning	Luke Tan
LT-02	Study on Context Engineering	Luke Tan
LT-03	Harness Engineering for Autonomous AI Systems	Luke Tan
NJC-01	Fake News Detection on social media	Na Jin Cheon
NJC-02	Stance Detection of Social Media Content	Na Jin Cheon
NPS-01	Understanding the library trends in post-pandemic period	Nirmal Prabu S/O Sangar
NPS-02	Ensuring Accessibility in Libraries: Strategies and Tools for Providing Equitable Access to Information and Services	Nirmal Prabu S/O Sangar
RSD-01	Reconceptualising the Knowledge Value Chain for Contemporary Organisations	Rajesh Singh Dhillon
RSD-02	From Content Management to Knowledge Management: Building Trusted Organisational Knowledge	Rajesh Singh Dhillon
RSD-03	Governing Organisational Knowledge in the Age of Generative and Agentic AI	Rajesh Singh Dhillon
RSD-04	Tacit Knowledge, Institutional Memory and Knowledge Retention in the Future of Work	Rajesh Singh Dhillon

Project IDs	Project Titles	Supervisors
RSD-05	From Lessons Identified to Lessons Institutionalised: Knowledge Reuse in Disaster and Crisis Management	Rajesh Singh Dhillon
RSD-06	AI-Enabled Knowledge Management for Disaster Resilience: Governance, Trust and Organisational Learning	Rajesh Singh Dhillon
VH-01	The Impact of Generative AI on Business Decision-Making	Vaidhyanathan Hariharan
VH-02	Low-Code/No-Code Platforms: Empowering Citizen Developers and Redefining IT Roles	Vaidhyanathan Hariharan
VH-03	Analysis of Large Dataset Using Polars Open-Source Library	Vaidhyanathan Hariharan
VH-04	Blockchain for Supply Chain Transparency and Traceability	Vaidhyanathan Hariharan
VH-05	Evaluating the Effectiveness of DevOps Practices in Modern Software Teams	Vaidhyanathan Hariharan
VH-06	Cloud-Native Architectures and Their Impact on Information Systems	Vaidhyanathan Hariharan
VH-07	Vibe Coding and AI-Assisted Software Development	Vaidhyanathan Hariharan
VH-08	Cybersecurity Awareness and Security Culture in Organizations	Vaidhyanathan Hariharan
VH-09	Cloud Adoption Strategies in Organizations	Vaidhyanathan Hariharan
VH-10	Business Process Automation and Organizational Performance	Vaidhyanathan Hariharan
VZ-01	Disability and Technology	Victor Zhuang
ZMX-01	Privacy Management in Emerging Technological Contexts	Zhang Mingxin
ZMX-02	AI Companion, Privacy Perceptions and Psychological Well-Being	Zhang Mingxin

AC-01: Analysis of communities

This project requires students to analyze the relationship patterns among members of an online community. Members therein may transcend geographical and cultural boundaries but are bound together to pursue mutual goals or interests. The goal of this project is to study how members are brought together, and how they co-create content for the community. Students undertaking this project need to be conversant with the use of a web crawler.

AC-02: Analysis of user-generated content

The advent of Web 2.0 has promoted active user participation. Users can now easily contribute their own content, as well as comment on others'. This project requires students to collect and analyze user-generated content. The goal is to identify themes in the content and examine the interaction patterns among users. Students undertaking this project need to be familiar with web crawling and content analysis.

AC-03: Deception on social media

Deceptions on social media have become increasingly prevalent. This project seeks to better understand the ways in which deceptions present themselves, and how users can fall prey into these deceptions. Students undertaking this project need to be familiar with basic statistical techniques.

AC-04: Rumors and rumor denials

With the rise of the Internet, false rumors are ubiquitous. As a way to combat falsehood, some users and organizations develop rumor denial messages. For rumor denials to be effective, they must be shared. This project studies the factors which affect the virality of rumor denials. Students undertaking this project need to be familiar with basic statistical techniques.

BK-01: Leading through stories

Howard Gardner says that every great leader is a great storyteller. Much of this great storytelling skill is evident in the speeches of the great leader. In this project, students will select a notable woman leader in business or in politics, and study her speeches over the course of her leadership. The goal of the study is to determine the extent of the leader's story use, uncover the types of stories that the leader tells, and if possible, examine the effects of story choice on leadership.

BK-02: Leadership through storytelling

Howard Gardner says that every great leader is a great storyteller. Much of this great storytelling skill is evident in the way the great leader communicates, whether orally or in writing or in some other form. In this project, students will select a notable leader, whether in business or in politics, and study his various modes of communication in the context of his leadership. The goal of the study is to determine the leader's use of storytelling in his leadership.

BK-03: Storytelling in the AI race

Howard Gardner says that every great leader is a great storyteller. Much of this great storytelling skill is evident in the way the great leader communicates, whether orally or in writing or in some other form. In this project, students will select two tech leaders in the AI race, and study their various modes of communication in the context of leadership in AI. The goal of the study is to compare/contrast the leaders' use of stories and uncover the types of stories that they tell.

BK-04: Organisational Practices

This project will attempt to unravel the patterns of business that lead to the longevity of an organisation. Students keen on this project will select a group of companies that are at least a century old to determine how they are built to last.

BK-05: Storytelling on Video

Students keen on this project will take a story filmed on video that has attracted a significant amount of traffic, and analyse the attitudinal response of viewers to the story from the comments posted on major social media platforms. The goal of the project is to determine story impact and uncover storytelling strategies used in the video that have contributed to its virality, and if possible, measure the subjective effect of the emotional value of the story on the viewers in objective terms.

Students can select more than one video on a particular topic.

N.B. The videos that have already been worked on in previous CI projects are The Wave, Second Uncle, Escape from the British Museum, and Successor.

BK-06: Leadership in Literature

According to Shoup and Hinrichs (2020), great literature can serve as tutors and mentors in the ways of leadership, equipping leaders and managers with the knowledge and skills to navigate the drama of leadership and engage in meaningful sensemaking to help organizations thrive. The plot and characterizations in novels, novellas, and short stories can act as simulations of real-world situations, fostering empathic growth and prosocial behaviour in real-world interactions, equipping readers to properly and adequately handle the often-tangled knot of real-life problems and personalities and improve their social-inference skills.

Students keen on this project will read fiction drawn from the canon of great literature, and elicit key insights useful for effective, empathetic, and ethical leadership.

BK-07: Reading in Leadership

Harry Truman, the 33rd President of the United States, says that not all readers are leaders, but all leaders are readers. This project will survey speeches made by political or business leaders who profess or are well-known to be voracious readers to locate indications of reading activities. The goal of the project is to determine if leaders demonstrate their relationship with reading through their speechmaking.

BL-01: The Social Context of Libraries and Librarians

Libraries and librarians are integral parts of a wider social landscape which shapes and filters their image, policies and general discourse. This project would see students examine some aspect of the relationship with libraries, past or present, and this wider environment.

BL-02: Understanding Wikipedia as a social technology

Wikipedia is much maligned in information studies circles as an inaccurate and even dangerous source of information. However, those studies which have been done suggest that its accuracy is comparable to more traditional encyclopedias. What is perhaps of more interest is the social dynamics of the organization as it represents a novel and collective approach to the dissemination of knowledge. Students undertaking projects in this area would examine, with the aid of the instructor, various aspects of these dynamics.

BL-03: Domain analysis of academic disciplines or sub-disciplines

Knowledge is generated by people working within various disciplinary traditions. The study of these traditions is important in order to develop a deeper theoretical and practical understanding of how people look for and use information. The domain analytic approach is one way to study the knowledge traditions of a discipline. In this project students would apply this approach to particular academic disciplines or sub-disciplines.

BL-04: Thinking about the animal and plant world in children's literature

One of the functions of children's literature is to socialize children, that is, enable children to assume appropriate roles in their culture. Animals and, to a lesser extent, plants tend to play a large role in this literature and so how they are portrayed in the books given to children is likely an important index to viewpoints and ideologies of the natural world held by the societies that produce this literature. This project would examine a set of children's literature titles with the goal of exploring these viewpoints and ideologies.

CK-01: Knowledge graph or graph database application development using Neo4j

Student to propose a knowledge graph or graph database application-to develop using Neo4j graph database software and Web technologies.

Requirement: K6307 Organisation of Knowledge will be helpful but not mandatory.

CK-02: Information extraction of research results from research papers using LLMs to construct a scientific knowledge graph

The project seeks to extract and model research results from research papers in a selected discipline (e.g. agriculture crop disease, sociology, biological science, mechanical engineering). The focus is on research results in the form of Cause and Effect together with supporting information and arguments. The method is to use LLMs (OpenAI, Google Gemini, Claude.ai) with appropriate prompts to extract information from text to produce structured output. Then the Cause-Effect information extracted from different parts of a research paper (Abstract, Introduction, Conclusion, Discussion) will be compared and integrated into a knowledge representation.

Requirement: At least one member must be proficient in Python coding and Jupyter Notebook. A course in Text mining or Knowledge Graph will be helpful.

CK-03: Using LLMs to summarize and synthesize narratives from recollections collected from the public on topics related to Singapore culture, history and society (in the Singapore Memory Project Collection)

The project seeks to develop a method to extract summary information from recollections collected from the public on particular topics (e.g. hungry ghost festival, chingay, Chinese New Year/Spring Festival), and to generate a mindmap and a fluent narrative using LLMs.

The recollections can be retrieved from:

<https://www.nlb.gov.sg/main/onesearch/result?page=1&collection=Singapore+Memory+Project+Collection+%282011+to+2015%29&nlonline=true>

CK-04: Analyzing thematic summaries generated by LLMs for paragraphs extracted from multiple chapters in a book

A chat interface for a book (<https://signaturepedagogy.org/>) has been developed to help readers to explore themes across the chapters in the book. Given a particular theme or topic, the chat interface retrieves relevant paragraphs from chapters in the book (using a vector database) and generates a summary that compares perspectives from different paragraphs. This study will analyze how the chat interface selects information and synthesizes a summary in comparison to summaries written by the book editors in the Conclusion chapter.

Requirement: At least one team member must have a background in linguistics, language, literature or writing.

CK-05: Dance video analysis

An earlier CI project has developed a video processing pipeline for analyzing ballet dance videos and segmenting the videos into 11 main dance moves, using a skeleton-based method. This project will continue to develop the project to analyze poses and smaller actions and their features within the dance moves. This study is related to computer vision research in “action recognition”.

Requirement: At least one member must be proficient in Python coding, Jupyter Notebook and Machine Learning. Prior experience with video analysis will be helpful.

DG-01: Generative AI in work and education contexts

Given the increasing popularity and advancement of generative AI (GAI) systems like ChatGPT, Gemini, and others, there are concerns about how these technologies will impact people’s lives and livelihoods. The goal of this project is to understand how people currently use GAI to search for information in various contexts such as education or work. There are two options available: (1) Uncover issues such as the types of problems people are trying to address, challenges in using GAI platforms, and strategies undertaken to overcome these challenges. Both surveys and interviews will be conducted. (2) Compare the effectiveness of Generative AI (GAI) tools versus search engines on various task types. Psychosocial factors influencing task performance will also be investigated. Depending on the specific task undertaken, experiments and surveys will be conducted as part of this project.

DG-02: Perceptions of AI: Anxiety, literacy and influential factors

Because of the widespread use of artificial intelligence (AI), AI anxiety is increasing experienced in many segments of society. However, little is known about how environmental conditions are interpreted and transformed into this emotional response. This project offers various areas of work including: (1) mechanism of the AI anxiety formation process, (2) adaptive and maladaptive coping mechanisms, and (3) interventions to mitigate AI anxiety. Depending on the specific task undertaken, surveys, interviews and experiments will be conducted to study this phenomenon.

DG-03: Understanding perceptions of deepfakes

This project investigates deepfake videos. Studying deepfakes is important as people become more dependent on various online information services and could fall prey to misinformation. This project will study how people perceive and respond to deepfakes. Topics include but are not limited to: (1) multimodality and its influence on perceptions of deepfake videos; (2) realism of deepfakes and AI-generated video and its influence on people's perceptions; (3) use of LLMs to teach people about deepfakes. Depending on the specific task undertaken, research methods may include interviews, surveys and experiments.

FT-01: The Value and Impact on a Business' revenues through the use of Digital Proximity Solutions

Students will explore the various ways that businesses can use digital proximity solutions for marketing, customer service, etc. The students will compare how businesses in different markets or sectors approach the use of such technologies to have a positive impact on their business revenues.

FT-02: Customer Intelligence collection methods and analysis

Students will look at the array of ways to gather customer intelligence across the various customer touch points. The focus can be on Business-to-Business (B-to-B) or Business-to-Customer (B-to-C) business models. Students would develop a framework on what would be a good way to collect customer intelligence for different types of business models.

FT-03: Digital Transformation

Students will research how companies are transforming themselves, if at all. The focus is on the motivation, initiatives and outcomes of companies that choose to digitally transform their business. Through secondary research of companies that have digitally transformed themselves, students will come up with a framework of how to initiate and implement digital transformation in a business.

FT-04: Data Analysis in the Workplace

Students will research into data analysis activities in businesses. The focus is on what is being done and by whom in the organization; and the tools, software and application used. The objective is to better understand the job skills (hard and soft) needed by employees today and in the future.

FT-05: Data Analytic Tools

Students will do comprehensive research on the tools available in the market that can be used to conduct data analysis. The objective is to come up with an unbiased toolkit list that can be used by companies for the varying data analysis done across the different departments/functional lines.

FT-06: Intelligent Automation Solutions and Tools

Students will research the extent of interest and use of Intelligent Automation solutions in business operations. The focus will be on the awareness, interest and use of solutions and tools like Robotics Process Automation (RPA), Keyboard Automation, WebApps, Virtual Reality (VR), Augmented Reality (AR), Robots, Generative AI, Agentic AI, etc. Students will write-up case examples as a means of understanding intelligent automation and its impact on business operations.

FT-07: Marketing and Agentic AI

Students will explore the evolving relationship between modern marketing practices and the increasing use of autonomous artificial intelligence systems. Students will also look into how business and organizations can leverage on Agentic AI's transformative potential and manage the governance challenges of integrating Agentic AI into marketing ecosystems.

FT-08: Data Management and Governance in the age of Artificial Intelligence (AI)

Students will explore how organizations can effectively manage and govern data in an era where artificial intelligence amplifies both the value and the risks of information. The study will look into how data governance frameworks – covering ownership, stewardship, transparency, and security – can enable innovation while safeguarding ethical standards and societal interests.

HO-01: Biomedical Relation Extraction from PubMed Articles Using Large Language Models

Recent Large Language Models demonstrate promising capabilities in information extraction; however, their effectiveness for biomedical knowledge graph construction remains unclear. This project compares multiple LLMs in extracting biomedical entities and semantic relations from PubMed articles. Students will evaluate extraction accuracy, consistency, and completeness against gold-standard biomedical datasets.

HO-02: Identifying Knowledge Gaps in Biomedical Knowledge Graphs

This project investigates methods for detecting missing or potentially incomplete relationships within the biomedical knowledge graph. Students will compare ontology-based rules, graph topology measures, and path analysis techniques to identify candidate knowledge gaps suitable for further investigation.

HO-03: LLM-Based Question Generation from Biomedical Knowledge Graphs

This project investigates whether large language models can transform biomedical graph structures into meaningful research questions. Students will use existing graph paths and generate natural-language questions that may lead to new biomedical discoveries.

HO-04: Explainable Theme Discovery Using Graph Embeddings and Large Language Models

Biomedical knowledge graphs contain complex relationships among diseases, genes, drugs, symptoms and biological processes. This project investigates whether graph embedding techniques can discover hidden disease communities within biomedical KG and whether Large Language Models (LLMs) can generate meaningful explanations and biomedical themes for the discovered clusters. Students will generate disease embeddings using graph representation learning methods such as Node2Vec, identify communities through clustering algorithms, and employ LLMs to interpret cluster characteristics, generate cluster labels, and explain underlying biological mechanisms. The project evaluates both the quality of discovered disease communities and the usefulness of LLM-generated explanations.

HO-05: Analysing the spread of information

Small enterprises often lack direct access to mass audiences and rely on multiple social media tools to generate reach. In this project, students investigate the gap between information producers and consumers, such as through an Information Propagation model, to increase the spread of information to the wider public.

JP-01: Defending Adversarial AI Attacks

This project studies and evaluates techniques or solutions used to protect AI models from a specific adversarial attack technique. The project entails a comprehensive and in depth paper survey and technical evaluation of defensive solutions to deal with specific adversarial technique. Programming and knowledge of artificial intelligence algorithms will be the prerequisites.

JP-02: Security Audit using LLM

This project involves the development of audit tools that perform cyber security audit using Large Language Models (LLM). Working prototypes and academic report are the expected deliverables for this project. Some knowledge of cyber security will be the prerequisites. The project will provide an opportunity to learn about prompt engineering with LLM.

JP-03: Teaching Aids with Gen AI

This project explores how Gen AI could be used as teaching aids to educators. A comprehensive literature survey is to be done and a novel application prototype in Gen AI is to be developed. Coding experience in UX and AI will be advantageous. The project will provide an opportunity to learn about developing a Gen AI application.

JP-04: Assistive Technology with Gen AI

This project explores how Gen AI could be used to develop assistive technology solution to overcome specific disability. A comprehensive literature survey is to be done and a novel application prototype in Gen AI is to be developed. Coding experience in AI will be advantageous. The project will provide an opportunity to learn about developing a Gen AI application

JS-01: Perception and use of libraries

Nowadays, individuals often turn to sources beyond libraries for their information needs. This project aims to study the perception and use of libraries by a specific group (e.g., adolescents, parents, etc.). Researchers may also focus on a particular type of library (e.g., public, school, or academic libraries). The goal is to identify how libraries can improve and promote their services.

The study may examine: How do individuals perceive and use libraries and other sources such as social media platforms? What library services are most valuable to the user group? What services do users want the library to provide or enhance? What are the demographic, cognitive, affective and contextual factors that contribute to use or non-use?

JS-02: Everyday life information behaviour

The advent of social media and mobile communication has led to an explosion of information being disseminated through many channels. How do individuals stay informed about daily happenings and topics of interest to them? Researchers may focus on a specific demographic group and investigate some of the following areas: Everyday information needs and information barriers; information behaviour on social media; information overload; credibility assessment; or factors affecting users' everyday life information behaviour.

JS-03: Information inequality: Status, effects, and remedies

Recent technological development has not mitigated the unequal access and use of information resources among different user groups. It may even have exacerbated the digital and information divide. In this project, researchers may study specific demographic groups, types and channels of information (e.g., health information, printed materials, the Internet), and geographic scopes. The study may focus on: mapping and charting the status and changes in information inequality; identifying the factors that contribute to unequal access and usage; examining the effects of information inequality on different groups; or exploring practices and policies that address information gaps.

JS-04: Trending topics in Library and Information Science

Research in Library and Information Science (LIS) plays an important role in informing the effective provision of up-to-date library and information services. This topic explores the subjects and issues central to LIS and its subfields. The research may focus on: longitudinal changes in topics discussed in Singapore and worldwide; changing usage of theories and methods in LIS research; and differences in topics covered by scholarly publications and informal channels such as social media.

LCK-01: Porting the arXiv dataset into Neo4j

The arXiv dataset contains the metadata of over 1.7 million scholarly papers. In this project, students will study the arXiv dataset (downloadable from <https://www.kaggle.com/datasets/Cornell-University/arxiv>) and write a Python program to port the data over to a graph database (specifically, the Neo4J database). We will then use the Neo4j database to perform graph theoretic analysis on the collaboration/co-authorship graph.

LCK-02: Porting the movies dataset into Neo4j

The Movies dataset contain the metadata of 45,000 movies. In this project, students will study the Movies dataset (downloadable from <https://www.kaggle.com/datasets/rounakbanik/the-movies-dataset>) and write a Python program to port the data over to a graph database (specifically, the Neo4J database). We will then use the Neo4j database to perform graph theoretic analysis on the dataset.

LCK-03: Vertical farming: A bibliometric analysis

Vertical farming involves growing plants indoors in multi-storied structures. LED lighting is used to control growth and nutrition is carefully monitored. In this project, we will perform a bibliometric analysis of the academic literature of vertical farming.

LCK-04: Storage of Family Tree Information Using Neo4J

In this project, students will explore two things:

1. the possibility of using Neo4J for the storage and retrieval of information related to family trees
2. the visualisation of family trees on the Web using the Django web framework

The deliverable is a basic website that displays family configurations.

LCK-05: Storage of Research Publications Using Neo4J

In this project, students will explore two things:

1. the possibility of using Neo4J for the storage and retrieval of bibliometric information related to academic publications (journal papers, conference papers and monographs)
2. the visualisation of collaborative patterns on the Web using the Django web framework

The deliverable is a basic website that displays collaborative patterns between academics.

The two projects have some overlaps, and the two groups working on the projects are encouraged to collaborate. For more information, please email me at ascklee@ntu.edu.sg.

LCS-01: Understanding Cognitive Offloading in AI-Enabled Learning

LCS-02: Exploring Digital Nudging

LCS-03: Understanding information practices in the transitions to university and workplace

LCS-04: Examining the online information environment for neurodivergent learners

LGP-01: Case study of sustainability informatics in organizations

LGP-02: Perceptions and expectations of climate change: A survey

LGP-03: Survey of sustainability information management in organizations

LGP-04: Use of generative artificial intelligence (AI) in organizations

LGP-05: Use of generative artificial intelligence (AI) by professionals

LGP-06: Understanding older adults' information behaviour

Please email the faculty at leecs@ntu.edu.sg to enquire if interested.

Please email the faculty at peelg@ntu.edu.sg to enquire if interested.

LL-01: Embodied AI Pets as Social Intermediaries: Supporting Human Connections

How do people use embodied AI pets to connect with others? This project examines the social roles of robotic pets beyond individual companionship, including initiating conversations, making friends, and participating in communities. Students will analyze publicly available user reviews and online discussions using computational text analysis and qualitative coding. The study will identify reported social practices, the contexts in which they emerge, and potential challenges. It aims to understand how embodied AI pets facilitate—or complicate—relationships between people, rather than focusing solely on human–AI attachment.

LL-02: Aesthetic Diversity in AI-Generated Images

Do image-generation models accommodate diverse aesthetic styles, or favor particular visual conventions? This project empirically investigates potential aesthetic bias of AI-generated images. Students will develop structured prompts across subjects and styles, generate images using selected models, and examine differences in composition, color, realism, and stylistic expression. It will also test whether explicit style instructions meaningfully diversify outputs or reveal persistent aesthetic preferences.

LT-01: AI-Assisted Application-Level Reinforcement Learning

This project requires students to explore AI-assisted application-level Reinforcement Learning (RL), focusing on integrating intelligent policy learning into software systems, autonomous agents, and interactive digital applications. While traditional RL is often studied within abstract simulated benchmarks, application-level RL targets real-world operational constraints—such as user-in-the-loop interaction, system resource scheduling, and adaptive software workflows—enhanced by AI-driven reward modeling and LLM-assisted state representations. Essentially, this approach bridges algorithmic decision-making with production software layers, enabling applications to dynamically adapt their behavior, optimize performance metrics, and personalize experiences based on continuous environmental feedback. Students undertaking this project need to be familiar with core Reinforcement Learning algorithms, Large Language Model (LLM) concepts, and Python programming.

LT-02: Study on Context Engineering

This project investigates Context Engineering, an emerging approach for designing intelligent systems that reliably interpret and act on context. Context Engineering is defined as the systematic identification, structuring, integration, and governance of contextual information—such as semantic cues, domain rules, user intent, and environmental conditions—to improve the performance and explainability of AI systems. The study attempts to develop a framework describing types of context and methods for incorporating them into large language model (LLM) and agentic workflows. Through empirical evaluation and case studies, the project examines how engineered context influences accuracy, consistency, interpretability, and safety.

LT-03: Harness Engineering for Autonomous AI Systems

This project investigates Harness Engineering, an emerging discipline focused on building the operational, observational, and safety infrastructure that wraps around Large Language Models (LLMs) and autonomous agents. Harness Engineering is defined as the systematic design, integration, and control of runtime scaffolding—including sandboxed execution environments, cognitive loops, dynamic tool interfaces, multi-agent orchestration, and real-time guardrails—to ensure AI agents act deterministically,

securely, and reliably in open-ended domains. The study aims to develop a modular testbed and harness architecture that monitors internal reasoning states, intercepts unintended actions, and isolates agent execution during complex task resolution. Through empirical evaluation and real-world system benchmarks, the project examines how robust engineering harnesses influence fault tolerance, task completion rates, security containment, and runtime reliability in agentic workflows. Students undertaking this project need to be familiar with LLM architectures, agentic frameworks, and Python systems programming.

NJC-01: Fake News Detection on Social Media

Social media enables the wide spread of fake news. The extensive spread of fake news has the potential for extremely negative impacts on individuals and society. Therefore, fake news detection on social media has recently become emerging research that is attracting tremendous attention. Fake news is intentionally written to mislead readers to believe false information, which makes it difficult and nontrivial to detect based on news content; therefore, we need to include auxiliary information, such as emotions, stances, and user social engagements on social media, to assist in decision-making. The aim of this study is to develop fake news detection algorithms using a deep learning approach. Text/Data mining and computer programming skills will be useful for the project.

NJC-02: Stance Detection of Social Media Content

Stance analysis of social media content is a type of sentiment or opinion analysis that aims to determine the attitude or position (stance) of a person or organization on a specific topic, issue, or event as expressed in social media posts. Unlike traditional sentiment analysis, which focuses broadly on whether content is positive, negative, or neutral, stance analysis goes a step further by assessing a user's position (i.e., in favor, against, or neutral) regarding a specific topic or entity. The CI group will investigate stance analysis of user generated content using deep learning algorithms. Especially, the CI group will explore target-based stance analysis of social media content. Text/Data mining and computer programming skills are required for the project.

NPS-01: Understanding the library trends in post-pandemic period

Information about the CI project: The impact of the COVID-19 pandemic on library services has been significant, and these changes are still ongoing. Libraries face a fundamental shift that will extend far into the future and beyond the pandemic. This project requires students to analyse the current technological trends and how it can be mapped to the different libraries, including public and academic libraries. The goal of this project is for students to survey and understand what technological trends are important to patrons and librarians. The results will need to be analysed and assessed on how it can be fed into the Library Management System.

NPS-02: Ensuring Accessibility in Libraries: Strategies and Tools for Providing Equitable Access to Information and Services

The paper should cover:

- What accessibility means in the context of libraries and library systems, including the importance of ensuring that all members of a community have equal access to information and services.
- The barriers that people with disabilities may face in accessing library resources, including physical barriers (such as stairs or narrow aisles) and digital barriers (such as inaccessible websites or online resources).

- Strategies and best practices for ensuring accessibility in libraries, such as creating accessible physical spaces, providing assistive technology and devices, and designing accessible websites and online resources.
- Examples of successful accessibility initiatives in libraries, and the impact these initiatives have had on patrons with disabilities.
- The role of librarians and library staff in promoting accessibility, including the importance of training and education on accessibility issues.

Overall, this topic would allow students to explore the ways in which libraries can promote equity and inclusion by prioritizing accessibility and ensuring that everyone has equal access to information and services.

RSD-01: Reconceptualising the Knowledge Value Chain for Contemporary Organisations

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine how the Knowledge Value Chain (KVC) can be reconceptualised for contemporary organisations. Students will review established KVC and knowledge lifecycle literature and investigate the human, technological and governance enablers required for knowledge to move effectively from identification and acquisition through codification, storage, sharing, application and protection.

The study builds upon a pre-existing seven-stage KVC architecture developed by Rajesh S. Dhillon. Students will use literature and comparative analysis to critique and validate the architecture and recommend evidence-based refinements that reflect contemporary organisational, technological and knowledge-governance environments.

Suggested Research Questions

RQ1: How have established Knowledge Value Chain and knowledge lifecycle models conceptualised organisational knowledge flow?

RQ2: What human, technological and governance enablers are required for knowledge to move effectively across the Knowledge Value Chain?

RQ3: How should the Knowledge Value Chain be reconceptualised to reflect contemporary organisational, technological and knowledge-governance environments?

Contribution: The pre-existing intellectual contribution is Dhillon's KVC architecture/framework. Student research contribution will comprise literature search, evidence synthesis, comparative analysis, critique/validation and proposed refinements.

RSD-02: From Content Management to Knowledge Management: Building Trusted Organisational Knowledge

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine the relationship between Content Management (CM) and Knowledge Management (KM), and how organisations can move beyond storing and organising content towards creating trusted, contextualised and reusable organisational knowledge.

Students will investigate content and knowledge lifecycles, taxonomy, metadata, information architecture, findability, knowledge quality, ownership and governance.

The project should identify the capabilities required to transform content into organisational knowledge that supports learning and decision-making. AI readiness may be considered as an emerging application, but is not the primary focus. Relevant areas include knowledge codification, repositories, retrieval, knowledge governance, knowledge quality and organisational learning.

RSD-03: Governing Organisational Knowledge in the Age of Generative and Agentic AI

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine how organisational knowledge should be governed when Generative and Agentic AI increasingly retrieve, synthesise, generate and potentially act upon organisational knowledge. Students will investigate knowledge ownership, provenance, validation, access, confidentiality, human oversight, accountability, cybersecurity and the management of outdated or conflicting knowledge.

The project should identify governance capabilities required specifically for AI-enabled Knowledge Management rather than examining AI ethics generally. Students may compare KM governance and AI governance literature and propose an integrated conceptual framework. Focus areas include KM policy, knowledge governance, knowledge risk, leadership, knowledge protection, responsible AI and accountability.

RSD-04: Tacit Knowledge, Institutional Memory and Knowledge Retention in the Future of Work

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine how organisations can retain and transfer critical knowledge as workforces change through staff turnover, retirement, mobility, hybrid work and evolving technologies. Students will explore tacit knowledge, professional judgement, experience, organisational memory and the risks associated with the loss of knowledge-critical personnel.

The project should investigate approaches such as mentoring, Communities of Practice, storytelling, knowledge repositories, succession planning and knowledge-transfer mechanisms. AI may be considered as one emerging intervention or risk, but the primary focus is the management of human and organisational knowledge. Relevant areas include tacit and explicit knowledge, knowledge retention, organisational learning, culture and the future of work.

RSD-05: From Lessons Identified to Lessons Institutionalised: Knowledge Reuse in Disaster and Crisis Management

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine why disaster and crisis-management organisations frequently

capture lessons through After-Action Reviews, evaluations, reports and lessons-learned systems but struggle to convert them into reusable organisational knowledge. Students will investigate how lessons can move from capture and codification into training, planning, procedures and future operational decision-making.

Students should examine AARs, lessons learned, organisational memory, knowledge repositories, knowledge transfer and organisational learning. AI-enabled retrieval and synthesis may be considered as an emerging mechanism for improving reuse, but is not required. Focus areas include the KVC, organisational learning, knowledge reuse, institutional memory and disaster-management KM.

RSD-06: AI-Enabled Knowledge Management for Disaster Resilience: Governance, Trust and Organisational Learning

Research Approach: This project is designed primarily as a literature and secondary-research study. Students should use peer-reviewed literature, published institutional sources, frameworks, standards and credible secondary evidence. Interviews and surveys are not required.

This research study will examine how Generative AI can support Knowledge Management across disaster preparedness, response, recovery and organisational learning. Students will investigate applications such as knowledge discovery, multilingual access, lessons-learned retrieval, synthesis of operational knowledge, knowledge-gap identification and decision support.

The study should critically examine risks involving accuracy, provenance, bias, contextual knowledge, accountability and human oversight. Focus areas include AI-enabled KM, knowledge governance, knowledge risk, organisational learning, institutional memory, human judgement and disaster resilience. The topic is intended to support deeper scholarly work at the intersection of AI, KM and disaster management.

VH-01: The Impact of Generative AI on Business Decision-Making

This study examines how Generative AI (GenAI) tools (e.g., ChatGPT, Copilot, Claude) influence decision-making processes in businesses. Students will investigate how organizations integrate these AI models into strategic planning, data analysis, risk assessment, and operational efficiency – while also assessing challenges such as bias, misinformation, and over-reliance on AI-generated insights.

VH-02: Low-Code/No-Code Platforms: Empowering Citizen Developers and Redefining IT Roles

Low-code/no-code (LCNC) platforms allow users with little to no programming knowledge to build applications through visual interfaces and pre-built modules. These tools are increasingly used within organizations to speed up digital transformation, reduce backlog for IT departments, and enable rapid prototyping by business users — often referred to as citizen developers.

The goal is to study how LCNC platforms are transforming organizational workflows, IT governance, and the balance of responsibilities between business users and traditional IT professionals.

VH-03: Analysis of large dataset using Polars open-source library

Students will conduct a data-driven research study using Polars (Python) to analyze a real-world dataset, derive insights, and present findings. The focus is on applying technical skills (data cleaning, transformation, aggregation) while addressing a practical business or societal problem.

Examples include:

- Study purchasing patterns, customer segmentation, and sales trends using Amazon Product Sales Dataset (Kaggle) <https://www.kaggle.com/datasets/karkavelrajaj/amazon-sales-dataset>
- Process large volumes of social media posts (e.g., Twitter/X) to gauge public sentiment on a topic <https://www.kaggle.com/datasets/crowdflower/twitter-airline-sentiment>

VH-04: Blockchain for Supply Chain Transparency and Traceability

The objective is to study how blockchain can improve supply chain transparency, particularly in industries such as food, pharmaceuticals, or luxury goods. Focus on how decentralized ledgers ensure data immutability and traceability of goods from origin to destination.

Research areas include:

- Case studies on companies using blockchain for provenance tracking (e.g., VeChain).
- Challenges in adoption (cost, scalability, integration with legacy systems).
- Evaluating impact on consumer trust or compliance (e.g., ESG standards).

VH-05: Evaluating the Effectiveness of DevOps Practices in Modern Software Teams

DevOps has become a dominant approach in modern software engineering, integrating development and operations through automation, collaboration, and continuous improvement. While many organisations claim to “do DevOps,” the actual level of adoption, effectiveness, and benefits achieved often vary significantly across teams.

This research proposes to examine how DevOps practices - such as Continuous Integration (CI), Continuous Delivery/Deployment (CD), automated testing, infrastructure-as-code (IaC), monitoring, and cross-functional collaboration- affect software delivery performance, team productivity, and product quality.

The study will explore:

- How different teams interpret and implement DevOps
- Whether DevOps implementation correlates with faster releases, higher quality, and better team morale
- What cultural, organisational, or tooling barriers impact DevOps success

This investigation aims to produce practical insights that organisations can use to optimise their DevOps adoption and improve development outcomes.

VH-06: Cloud-Native Architectures and Their Impact on Information Systems

Cloud-native architectures - built around microservices, containers, orchestration platforms, and managed cloud services -are increasingly used to modernise information systems. This study examines how adopting cloud-native approaches affects system scalability, reliability, performance, and development efficiency. It also considers organisational implications such as skills, tooling, and integration with existing systems.

Research Goals:

- Identify the cloud-native practices and components commonly used in modern software development (e.g., microservices, containers, serverless, CI/CD).
- Evaluate how cloud-native adoption influences system performance and agility, based on developer and architect perceptions.
- Understand challenges faced during cloud-native adoption, including architectural complexity, skill requirements, and migration issues.
- Recommend strategies that improve the effectiveness of cloud-native implementations for information systems.

VH-07: Vibe Coding and AI-Assisted Software Development Synopsis

Vibe coding refers to the increasing practice of using AI coding assistants (e.g., GitHub Copilot, ChatGPT, Claude, Cursor, Windsurf) to generate and refine software solutions through natural language prompts. The topic explores how AI changes programming practices, learning outcomes, productivity, code quality, and developer skills.

Research Goals

- Does AI-assisted coding improve software development productivity?
- How does vibe coding affect novice programmers' learning?
- What factors influence students' trust in AI-generated code?
- Does AI-generated code introduce new security or quality risks?

VH-08: Cybersecurity Awareness and Security Culture in Organizations

Description

Modern organizations have implemented cybersecurity awareness programs, security policies, employee training initiatives, phishing simulations, and compliance requirements to foster a strong security culture.

This research area examines how organizations promote cybersecurity awareness among employees and how such practices contribute to secure workplace behaviour. Students will investigate industry approaches to cybersecurity awareness, including training strategies, policy enforcement, security communication, incident reporting practices, and organizational efforts to build a culture of cybersecurity. The topic seeks to understand the effectiveness of these initiatives, the challenges organizations face in maintaining employee awareness, and the factors that influence employee adherence to cybersecurity best practices.

Research Goals

1. Examine and evaluate cybersecurity awareness practices and initiatives implemented by organizations.
2. Identify organizational factors that contribute to successful cybersecurity awareness and compliance.
3. Explore challenges and barriers organizations face in maintaining a strong cybersecurity awareness culture.
4. Develop recommendations for improving cybersecurity awareness strategies and strengthening organizational security practices.

VH-09: Cloud Adoption Strategies in Organizations

Description

Organizations are increasingly migrating applications and services to the cloud to improve scalability, flexibility, and business agility. However, cloud adoption involves strategic decisions regarding deployment models, migration approaches, vendor selection, and organizational readiness. This topic investigates how organizations plan and execute cloud adoption initiatives and the factors influencing successful implementation.

Research Goals

1. Examine cloud adoption strategies used by organizations.
2. Identify factors influencing cloud adoption decisions.
3. Evaluate challenges and success factors in cloud migration initiatives.
4. Investigate organizational readiness for cloud transformation.
5. Develop recommendations for effective cloud adoption practices.

VH-10: Business Process Automation and Organizational Performance Description

Organizations are increasingly adopting Business Process Automation (BPA) to streamline operations, reduce manual effort, improve accuracy, and enhance service delivery. By leveraging technologies such as workflow automation, robotic process automation (RPA), and business process management platforms, organizations can automate repetitive tasks and optimize business processes across functions such as finance, human resources, customer service, and supply chain management.

This research area examines how organizations implement and manage automation initiatives to improve organizational performance. It focuses on the benefits, challenges, and success factors of BPA, as well as its impact on productivity, operational efficiency, service quality, and digital transformation efforts.

Research Goals

1. Examine how organizations adopt and implement Business Process Automation initiatives.
2. Investigate the impact of automation on organizational performance, including productivity, efficiency, cost reduction, and service quality.
3. Evaluate how organizations measure the effectiveness and business value of automation initiatives.
4. Develop recommendations for organizations seeking to improve performance through business process automation.

VZ-01: Disability and Technology

This CI topic considers the intersection of disability with technology in contemporary society. In this project, students will adopt theories from critical disability studies, combined with insights from communication and information studies to study their choice of technology and its impact on disability. Examples of technologies may include, but are not limited to genAI, AI, automation, smart cities, QR codes, autonomous vehicles, self-checkout machines, mobile apps, national ID apps, and so on. This year's focus will be on autonomous vehicles/shuttles and/or digital twins.

ZMX-01: Privacy management in emerging technological contexts

New technologies, particularly AI, have transformed how people manage their personal information. Individuals increasingly share data with AI systems, use AI-assisted services, interact on AI-driven social media platforms, and receive personalized content recommendations. As technology becomes ubiquitous in daily life, concerns about privacy have also intensified. People may worry that their personal information is being overly collected or used without their consent. This project seeks to investigate how individuals perceive privacy risks associated with emerging technologies and explore strategies for privacy management.

ZMX-02: AI companion, privacy perceptions, and psychological well-being

AI-powered chatbots are used as companions that provide not only informational support but also social and emotional support. Individuals turn to AI companions during periods of life transition, stress, or uncertainty, seeking advice on issues such as romantic relationships, family conflicts, career decisions, and personal well-being. While such self-disclosure may enhance psychological well-being, it may also raise concerns about privacy. This project seeks to examine how interactions with AI companions shape users' privacy perceptions and psychological well-being.

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