

**Critical Inquiry Topics
Semester 1 AY2022/2023**

| Project ID | Project Title | Supervisor |
|-------------------|--|-------------------|
| 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 |
| AC-05 | Reduction of Confirmation Bias | Alton Chua |
| AH-01 | Topics/Issues in Singapore History | Adrian Heok |
| AH-02 | Issues/topics in organisation management | Adrian Heok |
| AH-03 | Topics/Issues in Contemporary Singapore | Adrian Heok |
| AH-04 | Design Thinking/ UX | Adrian Heok |
| BK-01 | Leading through stories | Brenda Lee |
| BK-02 | Leadership through storytelling | Brenda Lee |
| BK-03 | Storytelling in speechmaking for an occasion | Brenda Lee |
| BK-04 | Storytelling in speechmaking during a crisis | Brenda Lee |
| BK-05 | Leading in a crisis through stories (COVID-19) | Brenda Lee |
| BK-06 | Leading in a crisis through stories (Climate Change) | Brenda Lee |
| BK-07 | Storytelling on Video | Brenda Lee |
| BK-08 | Leadership in Literature | 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 |
| CK-01 | Enhancing the Zubir Said Knowledge Graph Interface with Digital Music Technologies | Chris Khoo |

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| CK-02 | User Interaction and User Learning on Knowledge Graph Interfaces | Chris Khoo |
| CK-03 | Develop a Web API and Web Application for lexicon-based sentiment analysis | Chris Khoo |
| CK-04 | A Knowledge Graph Application | Chris Khoo |
| CK-05 | Analytics of Crime and Sentencing Information: Development of a Google Cloud-based system to perform data analysis, predictive modeling and visualization of a subset of Singapore State Court's judgments -- to predict likely sentences (penalties) based on key features of offences (crimes) | Chris Khoo |
| CK-06 | Developing a phrasal sentiment lexicon for product review texts | Chris Khoo |
| DG-01 | Understanding perceptions of deepfakes | Dion Goh |
| DG-02 | Gamification of crowdsourcing tasks | Dion Goh |
| DG-03 | Techniques for teaching coding to children | Dion Goh |
| DG-04 | Safety in the metaverse | Dion Goh |
| FT-01 | The Value and Impact on a Business' revenues 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 |
| JP-01 | Artificial Intelligence in Cyber Investigation and Digital Forensics | Jonathan Pan |

| Project ID | Project Title | Supervisor |
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| JP-02 | Artificial Intelligence application for Social Good | 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 |
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| LCK-01 | Development of a Graph Database (refer to graphs.be) | Lee Chu Keong |
| LCK-02 | Analysis of the Publications of WKWSCI Faculty | Lee Chu Keong |
| LCK-03 | Development of a Grounded Theory of Care Farming | Lee Chu Keong |
| LCK-04 | Development of a Grounded Theory of Therapeutic Spaces | Lee Chu Keong |
| LCK-05 | Philanthropy Then and Now | Lee Chu Keong |
| LCK-06 | Development of a website frontend for Neo4J database Using Python | Lee Chu Keong |
| LCK-07 | A Grounded Theory of Therapeutic Landscapes | Lee Chu Keong |
| LCK-08 | Nature Deficit Disorder: A Review of the Literature | Lee Chu Keong |
| LCK-09 | Philanthropy: A Comparison of East and West | Lee Chu Keong |
| LCK-10 | Fraud in Business: An Analysis of Motivations, Modus Operandi and Consequences | Lee Chu Keong |
| LCK-11 | Hitler: A Study of Hatred and Hubris | Lee Chu Keong |
| LCK-12 | Lab-Grown Meat | Lee Chu Keong |
| LCS-01 | Social Media for Teaching and Learning – The Future | Lee Chei Sian |
| LCS-02 | Investigating Crowdsourcing | Lee Chei Sian |

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| LCS-03 | Making sense of social media data | Lee Chei Sian |
| LCS-04 | The Future of Work | Lee Chei Sian |
| LCS-05 | Effects of Cute Aesthetics Interface Design | Lee Chei Sian |
| LCS-06 | Investigating trade digital libraries and their users | Lee Chei Sian |
| LGP-01 | Sustainability and greenwashing analytics | L. G. Pee |
| LGP-02 | IT for social good | L. G. Pee |
| LGP-03 | Micro-learning app: A design science study | L. G. Pee |
| LGP-04 | Co-skilling in pre-university learning | L. G. Pee |
| LGP-05 | Co-skilling in adult continuous learning | L. G. Pee |
| NJC-01 | Sentiment Analysis of Social Media Content | Na Jin Cheon |
| NJC-02 | Analysis of Online Discussions about Emerging Subjects in Singapore | Na Jin Cheon |
| NPS-01 | Understanding the library trends in post-pandemic period | Nirmal Prabu S/O Sangar |
| RSD-01 | Managing Knowledge in a post covid era | Rajesh Singh Dhillon |
| RSD-02 | Mobile Based learning | Rajesh Singh Dhillon |
| RSD-03 | Knowledge Management as a tool of Productivity | Rajesh Singh Dhillon |
| RSD-04 | Impact of Hybrid working to organisational Knowledge Management | Rajesh Singh Dhillon |
| RSD-05 | Information/Knowledge Management systems | Rajesh Singh Dhillon |
| RSD-06 | Sustainable Knowledge Management | Rajesh Singh Dhillon |
| TYL-01 | Trend Analysis of Metaverse Technology by Altmetrics and Bibliometrics | Theng Yin Leng |

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| TYL-02 | Emerging Jobs and Skills Prediction & Visualisation | Theng Yin Leng |
| TYL-03 | Associations between Environmental Characteristics and Cognitive Functioning | Theng Yin Leng |
| TYL-04 | Improving Intergenerational Communication and Bonding through Applying Video-mediated Communication and Simultaneous Gameplay | Theng Yin Leng |
| TYL-05 | Conceptualisation of Self-administered Multidimensional Frailty Screening Tools | Theng Yin Leng |
| TYL-06 | Use of Gamification to Promote Medication Adherence through Patient Education | Theng Yin Leng |
| TYL-07 | Design, Development and Evaluation of ZurichMOVE Tablet Evaluation App | Theng Yin Leng |
| TYL-08 | The effects of gamified interventions on physical and cognitive frailty in community-dwelling older adults: A systematic review and meta-analysis | Theng Yin Leng |

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.

AH-01: Topics/Issues in Singapore History

AH-02: Issues/topics in organisation management

AH-03: Topics/Issues in Contemporary Singapore

AH-04: Design Thinking/UX

Please email the lecturer at adrian.heok@ntu.edu.sg to enquire if interested.

Lecturer and students will develop the topic together.

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 story 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 from the east, 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 extent of the leader's story use, uncover the types of story that the leader tells, and if possible, examine the effects of story choice on leadership.

BK-03: Storytelling in speechmaking for an occasion

This project will analyse the use of storytelling in speechmaking for one type of occasion. Students keen on this project will focus on a select group of leaders who are well-known for their speeches. The goal of the project is to uncover story types and storytelling strategies used by great speakers for that occasion of choice.

BK-04: Storytelling in speechmaking during a crisis

This project will analyse the use of storytelling in speechmaking during a crisis, whether personal or organisational. Students keen on this project will focus on a number of leaders in business and/or in politics, and study the stories they tell in their speeches to frame/reframe the crisis. The goal of the project is to uncover story types and storytelling strategies used by leaders during times of crisis.

BK-05: Leading in a crisis through stories (COVID-19)

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 times of crisis, the leader's skill in using storytelling as a communication tool becomes all the more critical.

In this project, students will take the COVID-19 pandemic as a crisis under study, select the political leaders in a country from the west or the east, and study the stories they tell in various modes of communication in the context of their leadership. The goal of the study is to uncover the types of story that the leaders tell and the reasons for telling them at different stages of the crisis.

BK-06: Leading in a crisis through stories (Climate Change)

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 times of crisis, the leader's skill in using storytelling as a communication tool becomes all the more critical.

In this project, students will take the climate change as a crisis under study, select key leaders from various spheres of influence, and study the stories they tell in various modes of communication for climate change. The goal of the study is to survey the development of the climate change story as it emerges and evolves to its current status.

BK-07: 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 also select more than one video on a particular topic.

BK-08: 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 behavior 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.

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.

CK-01: Enhancing the Zubir Said Knowledge Graph Interface with Digital Music Technologies

Zubir Said is a pioneer musician and songwriter in postwar Singapore, who composed the Singapore National Anthem. A knowledge graph and visualization interface have been developed to support exploration of and research on resources in his personal archive, including music manuscripts of his compositions: <https://ZubirSaid.sg>

This project seeks to incorporate digital music technologies to this interface:

- Convert some music manuscripts into digital notation using MuseScore software
- Export digital notation to: MusicXML and MEI formats
- Use VexFlow to display the music notation on screen
- Play the music using a Web Audio API to synthesize the sound (e.g., Verivio for MEI file).

Build user functions based on the above technologies.

Requirements: 1 team member must have some IT background, and 1 team member must be familiar with Western music notation (e.g., play the piano).

CK-02: User Interaction and User Learning on Knowledge Graph Interfaces

This is a user study of user interaction with knowledge graph interfaces (<https://zubirsaid.sg> and <https://singpioneers.sg>), including information searching to answer questions, as well as learning from a knowledge graph to write a story/narrative.

CK03: Develop a Web API and Web Application for lexicon-based sentiment analysis

Develop a publicly-accessible Web API and Web application to carry out lexicon-based sentiment analysis using the WKWSCI Sentiment Lexicon. This will be implemented on a Node.JS and Python server on Google Cloud. The application will tag words in a text with sentiment scores from the sentiment lexicon, and also calculate sentiment scores for sentences and documents.

Requirement: MSc Info Systems students or IT background

CK-04: A Knowledge Graph Application

Student to propose a knowledge graph application

Requirement: K6307 Organisation of Knowledge course

CK-05: Analytics of Crime and Sentencing Information: Development of a Google Cloud-based system to perform data analysis, predictive modeling and visualization of a subset of Singapore State Court's judgments -- to predict likely sentences (penalties) based on key features of offences (crimes)

Requirements: the team members must have IT background

Main features of the project:

- To develop a prototype database of court cases, offences and sentencing information on Google Cloud (probably using Big Query Table)
- To develop a Web API (using Python+Flask on a Google App Engine) to perform data analysis/mining and predictive modeling (using analytic services available on Google Cloud)
- To develop a simple Web interface to accept user input (on type of offence and key features), and to present and visualize the analysis results.

Background: The Singapore Ministry of Law has set up a Sentencing Advisory Panel "to formulate and publish guidelines on matters relating to sentencing, to promote greater consistency, transparency and public awareness. ... Such guidelines could, for example, propose sentencing approaches for particular offences, including sentencing bands based on harm and culpability, as well as aggravating and mitigating factors."

(<https://www.mlaw.gov.sg/news/press-releases/2022-06-02-establishment-of-sentencing-advisory-panel>, and <https://www.sentencingpanel.gov.sg>).

At the same time, the Singapore Academy of Law (<https://www.sal.org.sg/Resources-Tools/LawNet>) maintains a Sentencing Information & Research Repository (SIR) of State Court judgements, including key information of the offences and the sentences passed. This sentencing database is used by judges as a guide in sentencing decisions, and by lawyers to advice clients on likely sentences.

The purpose of this project is to explore and prototype a cloud-based system for analyzing a subset of information from the SIR database for a small number of crimes.

CK-06: Developing a phrasal sentiment lexicon for product review texts

A general purpose sentiment lexicon (called WKWSCl Sentiment Lexicon) has been developed to do lexicon-based sentiment analysis. There are 2 issues with this lexicon: it contains mostly single words, and it is not optimised for analyzing product-review texts.

This project seeks to develop a dictionary of phrases associated with positive and negative reviews -- using n grams and skip grams. BERT models can also be explored to develop these positive/negative phrases. The second part of the project is to customize the single-word sentiment lexicon for product reviews, i.e. to identify words whose polarity is usually reversed in product-review text.

Prerequisite: Have taken a text mining course.

DG-01: Understanding perceptions of deepfakes

This project investigates deepfakes, videos that replace a person's face with another. 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 the extent to which deepfakes are believable, why people fall prey to them, and how they verify the authenticity of videos.

DG-02: Gamification of crowdsourcing tasks

One of the challenges of crowdsourcing is to collect sufficient, good quality contributions. Various approaches have been used to motivate participation including appealing to a sense of altruism, and monetary incentives. This project investigates whether gamification can motivate participation. The project team will conduct an experiment that compares a gamified crowdsourcing application against a non-gamified one to evaluate user experience and perceptions of effectiveness. Results will have important implications on the design of crowdsourcing applications.

DG-03: Techniques for teaching coding to children

In recent years, there is an increased focus in teaching coding skills to children. Many innovative techniques have been used including visual programming languages, tangible computing and robotics. However, it is unclear whether these techniques have been effective in imparting coding skills or cultivating interest in coding. The goal of the project is to survey the available offerings by examining either available curricula, products in the market/research, and/or the research literature.

DG-04: Safety in the metaverse

The metaverse refers to virtual/online spaces where people can create and explore with other people. Although the technology is emerging and potentially useful, concerns about safety and wellbeing are already raised by researchers, end-users and policymakers. The goal of this project is to investigate perceptions of safety about potential metaverse users and how to keep them safe from such concerns. Possible topics include identify possible harms in relation to personal safety among different groups (e.g. children or females), how to encourage safety and wellbeing, and proposing types of measures that could be taken. Research methods may include interviews, surveys and systematic literature reviews.

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 approach the use of such technologies to have a positive impact on their business.

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 B-to-B or 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 will be on what companies' perception of digital transformation is, what it entails, and are already implementing. Students will write-up case examples as part of their final report.

FT-04: Data Analysis in the Workplace

Students will research what type and level of data analysis is being done, the expectation by companies, and the tools or software used, by employees in companies. The objective is to better understand the job skills expected of employees today and in the future. Students, through interview and surveys, come up with a list of must have skills that employees should have in the future.

FT-05: Data Analytic Tools

Students will do a comprehensive research on the tools available in the market that can be used to conduct basic and advanced data analysis. The objective is to come up with an unbiased toolkit list that can be used by companies for the varying analysis across the value-chain. The final report will be primarily based on secondary research but supplemented with user and/or customer survey.

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) and Augmented Reality (AR). Students will write-up case examples as part of their final report.

JP-01: Artificial Intelligence in Cyber Investigation and Digital Forensics

Artificial Intelligence (AI) algorithms improve Cyber Investigation and Digital Forensics. This project seeks to validate this claim through a developmental experiment. The CI group will need to develop a prototype and validate the claim. Programming and knowledge of artificial intelligence algorithms and cyber security will be the prerequisites.

JP-02: Artificial Intelligence application for Social Good

This project explores the opportunity to apply Artificial Intelligence (AI) algorithms for social good. The project involves identifying a specific problem or challenge associated with the environment, community or society at large. The project should seek to maximize the positive impact of the novel AI solution. A working prototype and academic report are the expected deliverables for this project. Programming and knowledge of artificial intelligence algorithms will be the prerequisites.

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.

JS-05: Investigating trade digital libraries and their users

Global trade is undeniably an important engine of growth for many economies. Access to timely and relevant information is thus critical for individuals involved in trade-related activities. The project offers two options.

In Option 1, the goal of this project is to develop a checklist of important features for trade-related digital libraries based on literature and existing implementations of digital libraries in general. The project team will then find trade-related digital libraries and evaluate them against the checklist.

In Option 2, the goal is to understand the information needs of users of trade digital libraries, to extent to which existing systems can meet their needs, the challenges

they face, and useful aspects of the systems they use. This will be accomplished through an interview of appropriate users.

This project is a collaboration between WKWSCI and Hinrich Foundation, a philanthropic organization focusing on global trade.

LCK-01: Development of a Graph Database (refer to graphs.be)

In this project, students will be enhancing a graph database of publications. This database has already been deployed at <https://graphs.be/>, but will need additional features. Students will work on incorporating the data from DBLP (<https://dblp.org/>). The first part of the project involves studying the structure of the data from DBLP (dblp.xml). The second part of the project involves the parsing the data and incorporating it into graphs.be.

LCK-02: Analysis of the Publications of WKWSCI Faculty

This project involves the analysis of the publications of the past and present WKWSCI faculty. The objective is to parse the data from DBLP into a Neo4J graph database. Bibliometric analysis will then be performed on the data.

LCK-03: Development of a Grounded Theory of Care Farming

Care farming refers to “the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity”. Care farms originated in Europe, but has spread around the world. In recent years, care farming has become very important due to the cases of nature deficit disorder. In this project, students will plough through the care farming literature, and develop a theory of care farming. In the first part, students will study the methodology of grounded theory. In the second part, they will use this methodology to analyse the care farming literature.

LCK-04: Development of a Grounded Theory of Therapeutic Spaces

Therapeutic spaces refer to “the interior built environment in which expressive arts therapy, mental health counseling, psychotherapy, and/or other mental health services take place”. They have been “designed and created with intention and purpose... [and] supports the well-being of those utilizing the space”. This project examines the concept of therapeutic spaces and develops a grounded theory of it. In the first part, students will study the methodology of grounded theory. In the second part, they will use this methodology to analyse the therapeutic spaces literature.

LCK-05: Philanthropy Then and Now

Philanthropy involves charitable giving to worthy causes on a large scale. This project examines the differences in how philanthropy was practiced in the past compared to how it is in the present. The biographies of Andrew Carnegie, Milton Hershey, Johns Hopkins, Bill Gates, Warren Buffet and George Soros will be analysed.

LCK-06: Development of a website frontend for Neo4J database Using Python

In this project, students will be working on Python (with the Django web framework) to display a graph created from a Neo4j database of companies and their board of directors. Students should have some knowledge of Python, and an interest to explore graph databases. Contact Dr Lee directly to obtain more information.

LCS-01: Social Media for Teaching and Learning

This project examines the use of social and mobile communication media for teaching and learning. Educators are increasingly interested in the social tools available to facilitate engagement and encourage learning. What trends are emerging for teaching and learning? What are the motivations driving educators and students to use some tools? What concerns might be keeping educators and students from using them? How should learning be conducted in the new “normal”?

LCS-02: Investigating Crowdsourcing

Crowdsourcing is the practice of engaging a 'crowd' or a group for a common goal. Put differently, crowdsourcing relies on the power of the crowd and has the ability to draw from the collective memory, expertise and experience of other people. The project will investigate different crowdsourcing approaches/techniques for play and work.

Examples of projects include: (1) Motivations for participating on a crowdsourcing platform. (2) Incentives and mechanisms (including gaming techniques) to motivate participation on a crowdsourcing platform. (3) Exploring the feasibility of crowdsourcing at work. (4) Developing mobile crowdsourcing applications for different contexts of use. (5) Investigating factors influencing quality of participation on a crowdsourcing platform. Students who are interested to explore crowdsourcing can also propose related projects.

LCS-03: Making sense of social media data

This is an interdisciplinary research project that explores the use of computation techniques and analytics to provide insights from social media data.

LCS-04: The Future of Work

This is an interdisciplinary research project that examines the challenges and opportunities in the future workplace. New technologies, data analytics and online social networks have huge impacts in the workplace by enabling new ways to communicate and collaborate. Indeed, they have created new industries and business models as well as disrupted some traditional industries. Possible (but not limited to) research areas in this project include: examining job characteristics and hiring practices in the future workplace, investigating the roles played by intelligent technologies in the workplace, studying the changing nature of work in the different industries.

LCS-05: Effects of Cute Aesthetics Interface Design

This project aims to explore the cognitive and affective effects of cute aesthetics design (mobile and web-based application) on online user behaviors. Specifically, the project will examine how cute aesthetics interface design effects user experiences and usage intention across different demographic profiles and different types of online applications (mobile and web).

LCS-06: Investigating trade digital libraries and their users

Global trade is undeniably an important engine of growth for many economies. Access to timely and relevant information is thus critical for individuals involved in trade-related activities. The project offers two options.

In Option 1, the goal of this project is to develop a checklist of important features for trade-related digital libraries based on literature and existing implementations of digital libraries in general. The project team will then find trade-related digital libraries and evaluate them against the checklist.

In Option 2, the goal is to understand the information needs of users of trade digital libraries, to extent to which existing systems can meet their needs, the challenges they face, and useful aspects of the systems they use. This will be accomplished through an interview of appropriate users.

This project is a collaboration between WKWSCI and Hinrich Foundation, a philanthropic organization focusing on global trade.

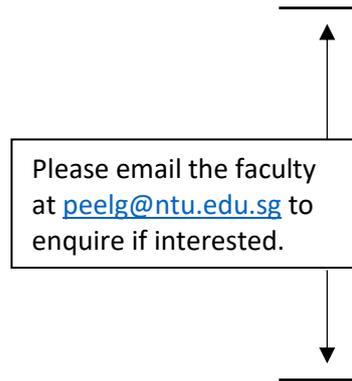
LGP-01: Sustainability and greenwashing analytics

LGP-02: IT for social good

LGP-03: Micro-learning app: A design science study

LGP-04: Co-skilling in pre-university learning

LGP-05: Co-skilling in adult continuous learning



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

NJC-01: Sentiment Analysis of Social Media Content

Sentiment analysis is a type of subjectivity analysis which analyses sentiment in each textual unit with the objective of understanding the sentiment polarities (i.e., positive, negative, or neutral) of the opinions toward various aspects of a subject. The CI group will investigate sentiment analysis of user generated content using machine learning algorithms. Especially, the CI group will explore aspect-based sentiment analysis of social media content using a deep learning approach. Text/Data mining and computer programming skills are required for the project.

NJC-02: Analysis of Online Discussions about Emerging Subjects in Singapore

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.

RSD-01: Managing Knowledge in a post covid era

Knowledge management has regained its stand as an essential part of business success and has become even more essential with the COVID-19 pandemic's scattering of staff among homes and work [sites.in](https://www.sites.in) this project, students will select an industry (other than healthcare) and explore the options and strategies that business have and should embark on managing their knowledge.

RSD-02: Mobile Based learning

Organizations have embarked on mobile based learning as a learning tool especially during the covid pandemic, in this project students will select a learning platform and study the benefits or disadvantages this brings to the future of work. lecture and students will explore and develop the topic together.

RSD-03: Knowledge Management as a tool of Productivity

KM has regained its stand as an essential part of business efficiency and has become even more essential with the COVID-19 pandemic's hybrid work structure. In this project students will look at the efforts to ensure effective and efficient use of its diverse resources and information in their quest to achieve competitiveness as well as to increase productivity that must be managed.

RSD-04: Impact of Hybrid working to organisational Knowledge Management

The future of work has seen a global take-up, with staff working remotely from anywhere in the world and yet contributing to their work organisations, in this study the students will study the impact of a hybrid work environment to how organisations manage knowledge and the pros and cons.

RSD-05: Information/Knowledge Management systems

Innovation and collaboration are key in managing information and knowledge, today more so Tech-enabled tools, allow organisations to leverage cloud technology to facilitate sharing and collaboration in an innovative ecosystem. in this study the students will select a platform of their choice and study the benefits it brings to organisational management of critical knowledge and information.

RSD-06: Sustainable Knowledge Management

This topic is open and students who are keen will develop the topic with the lecturer.

TYL-01: Trend Analysis of Metaverse Technology by Altmetrics and Bibliometrics

The metaverse is a fast-growing trend with a considerate penetration rate of users for various applications such as gaming, content creation, social interaction, learning and training, online shopping and healthcare. This study aims to gain insights into the overall application of metaverse technology in the study of healthcare areas with the following two steps:

1) analyse research papers for metaverse in healthcare research using Altmetrics and Bibliometrics methods. Altmetrics can be described as new or alternative metrics based on activities on social media for measuring scholarly impact. Different altmetrics systems exist that offer dashboards and tools for viewing bibliometrics and altmetrics.

- Perform trend analysis of data (already) collected over the last 3 - 4 months;
- Visualize the data.

2) establish a visual and unbiased approach to exploring hotspot knowledge frontiers in the metaverse research area. The distribution and research influence of countries, regions, institutions, and journals will be analysed.

- Determine whether the usage of altmetrics would better quantify research impact compared to using bibliometric measurements;
- Build some machine learning models to predict bibliometrics based on altmetrics.

TYL-02: Emerging Jobs and Skills Prediction & Visualisation

Faced with rapid changes brought by the ageing population and COVID-19, it is urgent to re-locate and re-map employees, especially the ageing workforce in their career paths. New emerging skills will also enlarge the existing skills gaps between the new requirements of this sector and individuals. This study aims to investigate the million historical job postings, reflecting the skills employers demand in Singapore.

- Perform trend analysis of job roles from job postings (existing available);
- Perform trend analysis of skills in demand;
- Perform clustering analysis by job role and skills;
- Visualize Job Postings and Skills.

TYL-03: Associations between Environmental Characteristics and Cognitive Functioning

GPS technology has the potential to examine the highly detailed geographic and temporal scope of mobility in older adults, thus providing a “holistic view” of mobility in real-time and enabling prompt interventions to prevent adverse health events resulting from mobility limitations. This study aims to identify meaningful GPS-derived mobility patterns and develop standardized guidelines for GPS use and data analytics (e.g., distance, recording period, and speed).

- Perform points clustering analysis of GPS data (existing available);
- Perform correlation analysis between environmental parameters and mobility variables (speed and distance);
- Perform correlation analysis between mobility variables and socio-demography;
- Visualize / Animate raw GPS data.

TYL-04: Improving Intergenerational Communication and Bonding through Applying Video-mediated Communication and Simultaneous Gameplay

Risks of COVID-19 have aggravated social exclusion of older persons through measures to restrict movement and contact such as stay-at-home restrictions and lockdowns. While such measures are crucial for ensuring the safety of all, they have increased the elderly's social isolation, disrupt their connectivity with others, and worsen their health outcomes. Moreover, United Nations has recently reported an increase in ageism and discrimination towards older people during this pandemic crisis. Communication across generations needs to be strengthened to foster intergenerational solidarity. Since the Covid-19, video-mediated communication technology has been massively adopted across the globe. It provides a vital infrastructure for (re-)connecting elderly so to mitigate social isolation risk while remaining at safe physical distance from others.

Using motion-based sensors, our team has developed Virtual Exercise Therapist System (VETS) which allows single-player offline exergames (video games for the purposes of exercising) to promote physical and intergenerational activity between elderly and youths. In this proposal, leveraging on existing teleconferencing platform (e.g., Zoom), we will first incorporate Video Communication Components to VETS (VETS-VCC). It will allow exergameplay between 2 (or more) players simultaneously within the video call. To evaluate the benefits of the VETS-VCC, 60 elderly-youth pairs will be recruited. They will be communicated over 8 weeks through VETS-VCC or video call only (without exergame). Impact on changes in well-being, exercise motivation, and intergenerational perceptions will be compared. Conversational analysis will also be conducted based on the audio and video streams of the video call to understand the development and dynamics of the intergenerational bonding.

We aim to introduce an inexpensive, accessible, potentially scalable technology solution to improve the connectivity of elderly through exergaming within video-mediated communication platform so to mitigate the negative effect of the social distancing. The intergenerational bonding fostered during the exergaming can also improve the mental well-being of the elderly.

TYL-05: Conceptualisation of Self-administered Multidimensional Frailty Screening Tools

Using Singapore as a case example, this project aims to develop a Mobile-based Frailty Screening Tool to help detect frailty early so that it can further reduce the existing healthcare burden. The concept and procedure of self-screening for frailty conditions is still developing on the global stage. The detection for frailty is usually done in primary care setting (e.g., hospitals, clinics) through trained medical personnel and focuses mainly on physical frailty.

The current project proposes to develop a multidimensional frailty (physical, cognitive, and social) screening tool that can be self-administered through a smartphone or web-browser (i.e., mobile-based) that is suitable for large-scale screening for the local Singaporean multilingual population. Specifically, we aim to (i) systematically review of the existing physical, cognitive, and social frailty indicators and diagnostics tools to identify the potential to be implemented as a self-screening tool for the senior citizens (50 years or above) and (ii) conceptualise an assistive mobile-based (smartphone or web-based) tools to be used for self-

screening of frailty among older adults in the community with different modality such as computerised task or voice-bot to accommodate various literacy and language proficiency levels.

The proposed self-screening frailty tool will radically improve the process of identifying frailty in the community. It will supplementing the existing frailty assessment that often requires trained personnel/clinician to perform. It can also help to early detect and alerts of pre-frail older adults in the community so that it allows follow up for early frailty intervention to reverse or delay the progression to frailty.

TYL-06: Use of Gamification to Promote Medication Adherence through Patient Education

In this project, we aim to explore the use of technology and gamification to educate and improve patients' understanding of their medical conditions and medications. Through greater understanding of their medical conditions and medications, we hypothesise that patients will be more adherent to their prescribed medications. Based on previous works in Patient-ACE Frameworks and Tamamon game, we propose to design, develop and evaluate a mobile game module to the PACE prototype for patients to use during their in-patient stay at the Integrated Care Hub (ICH) Trial Ward, as well as on-discharge and post-discharge. PACE mobile game module will equip and educate patients with knowledge to better understanding their medical conditions and medications. There are two phases: Phase 1 - Assessment and Conceptualisation: (i) To assess patients' level of understanding of their health conditions and prescribed medications; and (ii) To conceptualise the PACE mobile game module with purpose to prepare, guide and assist patients during their in-patient stay at ICH, on-discharge and 1 month post-discharge. Phase 2 – Development and Evaluation: (i) To develop the PACE mobile game prototype; and (ii) To evaluate PACE mobile game module usability with patients at ICH Trial Ward.

In this project, the Beliefs about Medication Questionnaire (BMQ) will be administered to patients who consent to participate in the project. This will form the baseline measure of the patient's beliefs about medications. Patients will then be introduced to the PACE mobile game module during their stay at the hospital. The PACE game will have content that can be customised to their healthcare needs such as management of hypertension, diabetes, pain, bowel movement, etc.

TYL-07: Design, Development and Evaluation of ZurichMOVE Tablet Evaluation App

Most injurious falls occur during walking, not surprising as it is the most common activity of daily living. In order to walk effectively, we need intricate coordination of our limbs both spatially and temporally, for maintaining balance in a continuous manner. Age-related decline poses challenges in being able to walk and this burden is further intensified by the individual's susceptibility to injurious falling. By synergising novel wearable technology ZurichMOVE with the state-of-art machine/deep learning/statistical modelling approaches we will provide personalized assessment of fall risk in an ecologically valid manner.

In this project, walk data are collected by data collectors/field researchers using wearable devices (e.g., the ZurichMove sensors). An app was developed based on earlier requirement

gathering from stakeholders to integrate the wearable data and streamline the process of data collection.

The aim is to enhance the user Interface (UI) and user experience (UX) of the ZurichMove tablet app prototype, with the possibility of conducting a User Acceptance Test (UAT) and Pilot Test with data collectors and elderly adults through the development process.

TYL-08: The effects of gamified interventions on physical and cognitive frailty in community-dwelling older adults: A systematic review and meta-analysis

Frailty is a public health priority, since it is highly prevalent, negatively affects the quality of life of older adults and their families and generates significant social and economic costs. Numerous interventions and programmes to promote healthy behaviours and lifestyle, have been introduced to address frailty prevention and delay.

Game-based interventions (GBIs) have been used to promote health-related outcomes, including physical and cognitive functions. However, criteria for selecting game-elements (GE) have not been adequately described in terms of their ability to address older adult's conditions or targeted health outcomes. This present review aims to identify the GE applied in GBI and their effectiveness for physical and cognitive frailty.