Course Outline

Course Code : MKT4761J
Course Title : SIM: AI in Marketing
Semester : Semester 2, AY 2024/2025
Faculty : Mr Alvin Tan
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Overview

In the age of AI, harnessing the power of AI in marketing is essential for businesses to stay competitive. Success hinges on enhancing the marketing team's analytical skills ("left AI brain") to utilize AI for data-driven insights, while cultivating their creative instincts ("right AI brain") through the strategic use of generative AI.

This course offers a practical guide to empower marketers to use AI in marketing through a no-code approach that uses visual programming. You will engage in interactive discussions and participate in hands-on labs and workshops to build your confidence and competence to develop AI-driven marketing strategies.

Course Objectives

At the end of this course, students should be able to:

1. Explain core AI concepts, including machine learning and generative AI for marketing.
2. Apply AI techniques and tools to extract data-driven insights and develop creative content.
3. Evaluate the applications of AI in marketing, including risks and ethical implications.
4. Develop AI-driven marketing strategies and solutions that align with business objectives.

This course employs a no-code approach to help you gain the confidence to explore AI concepts and evaluate the applications of AI in marketing. Through the use of no-code AI tools in hands-on projects, this course serves as a stepping stone for you to dive into the evolving field of AI for business in the digital economy.

General Guide & Reading

This course adopts selected frameworks from the recommended textbooks. However, **you are not required to purchase it for this course**. The recommended textbooks are available for loan at the NLB library. Suggested readings and references will be provided to enhance your understanding of the topics covered.

Recommended Textbooks

- Sterne, J. (2017). *Artificial intelligence for marketing: practical applications.* John Wiley & Sons.
- Villarroel, F. (2023). *Meet Your Customers: The Marketing Analytics Collection*. KNIME Press.

Assessment

Assessment Components	Weightage
Class Participation	20%
Individual Assignment	20%
Group Project	40%
Individual Project	20%

Learning Community & Study Group

This course places an emphasis on leveraging the diverse experiences and perspectives of all students to enrich the learning experience and foster a learning community. You will form your own study groups to collaborate on in-class learning activities and the group project.

Assessment Outline

- **Class Participation:** The sectionals consist of ML Labs and GenAI workshops designed for experiential and active learning. You can contribute to fostering a learning community by completing your online e-certifications and facilitating learning activities for the class and within your groups.
- **Individual Assignment:** You will create a GenAI marketing playbook — a strategic guide covering use cases, prompt design, tools, ethics, and governance to help marketing teams effectively and responsibly leverage generative AI.
- **Group Project:** You will work with your group to develop an AI-driven marketing strategy using the CRISP-DM methodology. You can choose an AI marketing use case for a real or fictitious company. You will present your project plan at the group project presentation.
- **Individual Project:** You will build a machine learning solution to solve a marketing problem using visual programming. You will apply data and algorithms to train a model that aligns with business objectives and reflect on your experience from the project journey.

Academic Honesty & Plagiarism

Academic integrity and honesty are essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

Additional guidance is available at:

- http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
- http://nus.edu.sg/osa/resources/code-of-student-conduct

Schedule and Outline

Lesson	Topic	Assessment
1	**Marketing in the Age of AI** • Describe marketing in the age of AI • Explain the four kinds of marketing AI **Course Introduction Session** • Course Overview and Icebreaker Reference • TED. (2023, December 12). *What Will Happen to Marketing in the Age of AI?* YouTube. • Davenport, T.H. (2023, July 1) *How to design an AI marketing Strategy*. Harvard Business Review.	
2	**AI Fundamentals for Marketers** • Explain AI, machine learning (ML) and generative AI (GenAI) • Describe visual programming for machine learning **ML Lab 0 Introduction to KNIME Analytics Platform** • Visual programming with KNIME analytics platform • KNIME user interface, workflow and nodes • Build Your First Workflow e-Certification • Google Cloud Skills Boost: Introduction to Generative AI Reading • Brown, S. (2021, April 21). Machine learning, explained. MIT Sloan. • Siegel E. (2023, March 24) How Machine Learning Can Improve Customer Experience. Harvard Business Review.	
3	**GenAI and Prompt Engineering** • Describe the applications of GenAI in marketing • Explain large language models (LLMs) and prompt engineering **GenAI Workshop 1 Prompt Engineering** • Design effective prompts using the COSTAR framework e-Certification • Google Cloud Skills Boost: Introduction to Large Language Models Reading • Acar, O. A. (2023, December 11). *A practical guide for marketers who want to use GenAI*. Harvard Business Review. • *Prompt Engineering Playbook* (Beta v3). (2023, August 30). GovTech Data Science & AI Division.	**Individual Assignment** Due: End of Week 4
4	**GenAI Tools and Risks**	

	• Identify the types of GenAI tools for marketing • Describe the four types of GenAI risks **GenAI Workshop 2 GenAI Tools** • Explore GenAI tools for different marketing applications e-Certification • Google Cloud Skills Boost: Introduction to Responsible AI Reading • Isik, Ö. (2024, September 6). *4 Types of gen AI risk and how to mitigate them.* Harvard Business Review.	
5	**CRISP-DM and Business Understanding** • Explain machine learning for marketing • Define machine learning types and functions • Describe CRISP-DM method for machine learning **ML Lab 1 Data Understanding and Data Preparation (I)** • Data Literacy with KNIME Analytics Platform	**Group Project** Due: End of Week 7 Present: Week 8
6	**Data Understanding and Data Preparation** • Explain categorical and numerical data • Define univariate and bivariate exploratory data analysis (EDA) • Describe data collection, cleaning and transformation **ML Lab 2 Data Understanding and Data Preparation (II)** • Data Literacy with KNIME Analytics Platform e-Certification • KNIME: Data Literacy with KNIME Analytics Platform	
Recess Week		
7	**Group Project Consultation**	
8	**Group Project Presentation**	
9	**Supervised Learning: Classification** Machine Learning for Marketing Mix: Promotion • Explain the principles of classification and decision tree algorithm • Train classification model using decision tree algorithm • Evaluate classification model using metric (confusion matrix, roc) **ML Lab 3.1 Modeling, Evaluation and Deployment** • Classification model for promotional campaign • Classification model for churn prediction	**Individual Project** Due: End of Week 13 **Class Participation** **Peer Evaluation** Due: End of Week 13
10	**Supervised Learning: Regression**	

	Machine Learning for Marketing Mix: Price • Explain the principles of regression and linear regression algorithm • Train regression model using linear regression algorithm • Evaluate regression model using metric (r2, mae, rmse) **ML Lab 3.2 Modeling, Evaluation and Deployment** • Regression model for sales forecast • Regression model for price optimization	
11	**Unsupervised Learning: Clustering** Machine Learning for Marketing Mix: Place • Explain the principles of clustering and k-means algorithm • Train clustering model using k-means algorithm • Evaluate clustering model using metric (silhouette coefficient) **ML Lab 3.3 Modeling, Evaluation and Deployment** • Clustering model for geographical location • Clustering model for customer segmentation	
12	**Unsupervised Learning: Association Rule** Machine Learning for Marketing Mix: Product • Explain the principles of association rule and apriori algorithm • Train association rule model using apriori algorithm • Evaluate association model using metric (support, confidence, lift) **ML Lab 3.4 Modeling, Evaluation and Deployment** • Association rule model for product recommendation using market basket analysis	
13	**Individual Project Consultation**	