

Transforming Business with Artificial Intelligence

General Information

- Course Website: HKUST Zoom , Canvas
- Instructor: Dr. Jiying Wang (Jean)

Course Description

The use of artificial intelligence (AI) becomes an emerging trend in various business areas and industries for its exponential power to transform operations, customer experiences, and business management. Harnessing AI's potential for competitive performance requires a new type of professionals, who understand how machine learning (ML) models work, what they can deliver and how they can be applied into various business context.

This course is intended to **bridge the gap between business strategy and technical knowhow**. Through guest speaker talks, lectures, case discussion, and experiments in real-world data sets, students will gain a broad understanding of ML and AI concepts, explore the state-of-art use cases of AI and ML technology in business, identify new opportunities and potential risks brought by AI, and recognize how to effectively communicate with the data science and machine learning team.

Course Intended Learning Outcomes

On successful completion of the course, students will be able to:

- Understand the core technical attributes of ML and AI
- Identify current AI development trends
- Connect business insights to technological possibilities of AI
- Navigate the ethical and societal implications of AI projects
- Facilitate effective communication between technical and managerial teams

Assessments and Weighting (tentative)

- **Attendance* + Class Participation (35%)** *Estimated workload: 0-1 hours reading per week*
In each class, students will be given a real-world business data set, some AI model, and a set of instructions to complete an analytics task, which adds intelligence into a business application using the trained AI model. Case study may also be conducted in class to discuss the technical, organizational, and ethical issues in deploying the AI projects. These are individual continuous assessments, and students will be assessed by their participation.
- **Group Presentation (35%)** *Estimated workload: 10-20 hours*
Students will form in a group of 4 to 5, submit and present a business idea that leverages AI technology for value creation. The case could be a new business idea or for an existing company. Presentation will be held in the 8th week, with 20 minutes for each group (including Q&A). Each group member must participate in the presentation and is expected to answer at least one question from the audience.
- **Individual Report (30%)** *Estimated workload: 10-20 hours*
This is an individual assessment replacing the final exam. Students need to conduct analysis on a given dataset or research an AI application related topic, and summarize their findings. The pool of dataset and topics will later be released on Canvas.

* Attendance policy complies with the MBAO's. Prior notification to the instructor and the MBA office is required for any absence.

Teaching Schedule (tentative)

Class Topic	Lab
Introduction to AI and ML - Business trend, technology trend, job market, AI project development cycle, performance measure	<i>Lab1 - Customer Pregnancy Prediction by Azure ML</i>
AI for Financial Service - Technology: Classification, Anomaly Detection	<i>Lab2 - Credit Risk Prediction by Azure ML</i>
AI for Human Resource Management - Technology: Clustering, Principal Component Analysis	<i>Lab3 - Employee Retention Analysis by Azure ML</i>
AI for Sales & Marketing - Technology: Association Rule, Collaborative Filtering	<i>Lab4 - Restaurant Rating Prediction by Azure ML</i>
AI for Customer Service - Technology: Natural Language Processing, Chatbot	<i>Lab5 - Tweeter Sentiment Analysis by Azure ML</i>
AI for Supply Chain Management - Technology: Computer Vision, Deep Learning	<i>Lab6 - Sign Language Image Classification by IBM Watson</i>
Concerns of AI and AI Ethics - Technology: Transfer Learning, Data Augmentation, Machine Learning Model Interpretation, Privacy Preserving Machine Learning	No Lab
Group Project Presentation	No Lab

References

- Microsoft: AI Business School
<https://www.microsoft.com/en-us/ai/ai-business-school>
- Microsoft: Machine Learning Crash Course
<https://aischool.microsoft.com/en-us/machine-learning/learning-paths/ml-crash-course>

- Cases | Harvard Business Publishing Education
<https://hbsp.harvard.edu/cases/>
- McKinsey Survey: The State of AI in 2020
<https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/global-survey-the-state-of-ai-in-2020>
- International Institute of Communications (IIC): Artificial Intelligence in the Asia-Pacific Region
<https://www.iicom.org/wp-content/uploads/IIC-AI-Report-2020.pdf>