MMA 831: Marketing Analytics & AI

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Period: October - December, 2024
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Course Description

Analytics, Artificial intelligence (AI) and machine leaning (ML) quickly emerge as the most prized tool for cutting-edge marketing applications. This course is designed to provide understanding of the current and future role of AI in customer acquisition, relationship management and retention. We will discuss how AI transforms the strategic and tactical marketing decisions from personalized marketing, content generation and curation, voice and text recognition, understanding and predicting consumer behaviour and optimizing lead generation and sales. The methodological topics we will cover includes classification, logistic regression, non-parametric methods, decision trees, neural networks and support vector machines. Our focus will be on developing thought partnerships between machines and humans through which businesses can leverage the complexity and efficiency of AI and creativity and insights of executives for improving their market position and building stronger, longer lasting connections with consumers.

Through an entirely hands-on approach participants, by the end of the course, will be able to make sense of the information and knowledge available and create marketing strategy and programs based on both quantitative and qualitative factors. Via cases and real-life applications, students will 1) generate operational plans on important marketing decisions such as segmentation, targeting, positioning, marketing resource allocation, forecasting, advertising and sales promotions; 2) master the selection and use of various models, and 3) develop confidence and skills to successfully justify your strategic and tactical marketing decisions using the correct metrics.

While I will use R language to execute the concepts discussed in class, you are welcome to use any programming language of your choice (e.g. Python) in assignments.

Prerequisites: Good grasp of statistics, linear regression and intermediate level programming knowledge is required for the course.

Suggested Readings

1. Sterne, Jim. *Artificial Intelligence for Marketing: Practical Applications*
2. Ajay Agrawal, Joshua Gans & Avi Goldfarb. *Power and Prediction: The Disruptive Economics of Artificial Intelligence*
3. Bishop, Christopher. *Pattern Recognition and Machine Learning*
4. Katsov, Ilya. *Algorithmic Marketing*

Course Evaluation Overview

Item:	**Value**
Executive Marketing Challenge (Team)	50%
AI on-the-Spot (Team)	15%
Quiz (Individual)	15%
Discussion and Professionalism (Individual)	20%
Total	100%

COURSE EVALUATION DETAILS

Executive Marketing Challenge (EMC) – Team (50%)

For the term project, each team will be studying a marketing challenge faced by a real organization. You will apply Analytics, AI and ML techniques to address the problem, help with a managerial decision with an aim to improve market performance. Your team is flexible to choose any industry, organization and problem for the project but I am always available if you need help narrowing down your choices or other suggestions. The goal of the project is three-fold: 1) apply Analytics, AI and ML techniques learned in class in a real setting, 2) justify your decision using a proper marketing metric and 3) discuss the potential value of taking your "analytics" approach to address the problem.

You will present your project in class; you will be graded on your presentation style and content - no need for a written report.

In addition to the presentation slide deck with proper notes, you will submit **an excel file that includes your cleaned-up data** and **a clear outline of the steps you followed in your estimation** (e.g. **your program files**, if you use SAS, Python, R).

AI On-the-Spot (AIOS) – Team (15%)

We will have one applied mini assignment throughout the term. The AIOS assignment will focus on application of the Analytics, AI and ML techniques that we learn in class. You will work on the exercise with your team and submit a short reflection of your description of the exercise, results, main takeaways and how/where it can be useful in a business context. Specific requirements and page limits will be provided to you with the assignment.

Quiz – Individual (15%)

There will be an online quiz covering the concepts discussed in class. The quiz will comprise 20 multiple choice questions drawn at random from a larger database. The quiz will be open on D2L for three days. You must complete your quiz within that window. You will have 30 minutes to complete your quiz once you open it.

Discussion and Professionalism – Individual (20%)

Active participation and professionalism are important determinants of your individual performance. The latter refers to all conduct and interactions in the context of the class. Appropriate language/manners, competency and overall good judgment are signs for professionalism. Most of your learning happens as a result of our class discussions; therefore, your goal at each post should be to help foster a positive, open-minded and a learning-focused environment. Try to make comments that advance the discussion so that we can all learn from each other. Quality is obviously more important than the quantity of your comments; although quantity is necessary to reliably judge the general quality to give you a participation grade. I will expect you to attend all sessions with the exception of circumstances outside of your control (e.g. serious health issues, death in the family). Your professionalism grade will be a comprehensive assessment of your contributions including your in- and out-of-class engagement encompassing all interactions.

GENERAL COURSE POLICIES

Office Hours

Regular office hours will be held by Simon Chang (TA); see the portal for the timing. However, you can always email if you would like to set up other times to meet. I am generally in Kingston when I'm not teaching in Toronto but available for Zoom meetings!

References

Students must submit their own work and cite the work that is not theirs. Generative AI writing tools such as ChatGPT are welcome in this class, provided you cite the material that they generate. Any other use constitutes a Departure from Academic Integrity.

Readings

Every student is expected to have completed all the readings designated for each session prior to coming to class. Your learning will be severely inhibited if you have not done the readings, since I will use the class time to complement the readings and do hands-on exercises rather than repeat what they already cover.

Late Work

There will be a 10% penalty per day for late work.

Appealing Marks

You may appeal a mark if you believe an error has occurred. To appeal, write a brief memo outlining what the error was and how you recommend the assignment/project should be re-marked. Wait until **ONE WEEK AFTER** you receive your mark to submit your appeal. You must submit your appeal within **TWO WEEKS** of receiving your initial mark. Please note that if I re-mark your assignment, I reserve the right to decrease your mark if I feel that the initial mark was too generous.

Tentative Schedule

Session	Concepts Covered	Deliverables/Notes	Readings
1	Course Introduction Foundations: AI Fundamentals & Marketing Measurement		
2	Identifying Drivers of Outcomes: Advanced Topics in Regression	Submit EMC Proposal (Due date on the Portal)	Response Models Technical Note
3	New Frontier of Marketing		
4	Optimal Marketing Budget Allocation with and Without Data	**AIOS** (Due date on the Portal)	Resource Allocation Technical Note
5	Digital Transformation, Social Media and Consumer Insights		A primer on Programmatic Advertising
6	Marketing Causality Randomized Control Trials		Getting the Most out of Online Experiments
7	Executive Marketing Challenge Presentations	**Quiz** (Dates on the Portal)	