

ACC3715 Accounting Analytics and AI

AY2024/2025 Semester 2

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Class time: Tuesdays 3-6 pm
Venue: Biz 1 03-05
Office hour: TBA

COURSE DESCRIPTION

Data analytics has been widely used to handle vast volumes of transaction data, detect anomalies in financial reports, and arrive at accurate diagnoses about emerging issues. It is hence essential for accounting practitioners to understand and harness the power of accounting data analytics.

This data analytics course will introduce you to modern analytical tools and provide hands-on coding experiences using Python to solve real accounting problems.

LEARNING OUTCOMES

By the end of this course, you should be able to:

- Understand and discuss the role and contributions of accounting data analytics within firms.
- Understand and apply modern analytical learning tools.
- Develop accounting insights from analysis of large data sets.

TOPICS

- Classical data analysis tools: linear regression; logit; etc
- Machine learning tools: k-nearest neighborhood; decision tree; random forests, boosting, etc

READINGS

Recommended Textbook

N/A

Supplementary Material

N/A

PRECLUSION

N/A

PREREQUISITE

N/A

ASSESSMENTS

Component	Weightage
Short Questions	15%
Individual Python Web-Crawler Project	15%
Class Participation and Attendance	20 %
Group Data Project – Kaggle Data Competition and Presentation	25% (Group project and presentation 15% + individual presentation performance 10 %)
Individual Project – using machine learning to detect financial misstatements	25%
Total	100%

Tentative Plan: subject to changes depending on the class progress

Session	Description
1	Course Overview: syllabus Review of Linear Regression + Hypothesis Testing Logistic Regression [with applications to detecting financial misstatements in Python] How AI affects Accounting Jobs at Big 4 Auditing Firms (reading + discussion)
2	LASSO regression (a powerful way to reduce and interpret a large set of predictors). Implementing and interpreting LASSO models using Python
3	No- class (Chinese New Year)
4	Machine learning method: K-means (K-nearest neighborhood) Implementing and interpreting K-means using Python
5	Using accruals anomaly to predict stock return (applying the regression and machine learning methods)
6	Using Python to crawl online data (web-crawler) (with real applications to Singapore Exchange (SGX) data on IPO prospectus, corporate filings, etc)
Recess Week	
7	Web-crawler -continued using ChatGPT's API through Python (ChatGPT can help you analyze text data – better than all existing text analysis tools)
8	Machine learning method: Decision tree

	Implementing and interpreting Decision tree method using Python with real applications to catching misstatement for US public firms.
9	Machine learning method: Random forest (a really powerful machine learning method) Implementing and interpreting Random forest using Python
10	Machine learning method: Boosting (a method to significantly improve your ml method) Implementing and interpreting Boosting using Python;
11	Using machine learning to predict firm quality (with real data on public firms and applications in Python)
12	Group presentation - Kaggle Data Competition
13	Group presentation - Kaggle Data Competition

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ACADEMIC HONESTY & PLAGIARISM

Academic integrity and honesty is 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.

Artificial Intelligence (AI) tools such as ChatGPT do not require specialist knowledge to use. Many of these AI tools are commonly used in social media, for example, to create content and disguise and refine content created from programmes like ChatGPT. We understand that students will be drawn to using these AI Tools, as they would for any other electronic aid.

However, to be clear, normal academic rules still apply. As noted in the Code of Student Conduct:

"The University takes a strict view of cheating in any form, deceptive fabrication, plagiarism and violation of intellectual property and copyright laws. Any student who is found to have engaged in such misconduct is subject to disciplinary action by the University."

With respect to AI tools (e.g., ChatGPT and image generation tools), your instructor will clarify whether the use of these tools as inputs into your assignment development process is acceptable. AI is a technology that requires skill to use, and knowledge about when and how to use it. If you use ChatGPT or any other such AI tool in your work, you must provide a proper representation of how you used the tool and what prompts you used to generate output. Failure to cite its use constitutes academic misconduct.

Further, as with any information source, be aware that minimal efforts yield low quality results. You will need to refine your work and fact check the output, as you would double-check information from any source. Further, you should be selective in how and when you use such tools instead of using it for each and every assignment you create.

To summarise:

1. Always check with your instructors on what are the permitted uses of AI tools.
2. Have a discussion at the start of a course about the use of AI.
3. Where permitted, acknowledge your use of AI.
4. You remain responsible for the quality of your work and its appropriate representation.
5. Failure to follow the above steps can lead to a concern about plagiarism (academic dishonesty).

As always, 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 entirely your own work. This is a minimum standard.

Additional guidance can be found at:

Admission Condition: <http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct>

NUS Code of Student Conduct: <http://nus.edu.sg/osa/resources/code-of-student-conduct>

Academic Integrity Essentials: <https://libguides.nus.edu.sg/new2nus/acadintegrity#s-lib-ctab-22144949-4>

Guidelines on the Use of AI Tools For Academic

Work: <https://libguides.nus.edu.sg/new2nus/acadintegrity#s-lib-ctab-22144949-3>