Advanced Business Analytics Practicum

Pragmatic Data Science

Session 1. Introduction

Renyu (Philip) Zhang

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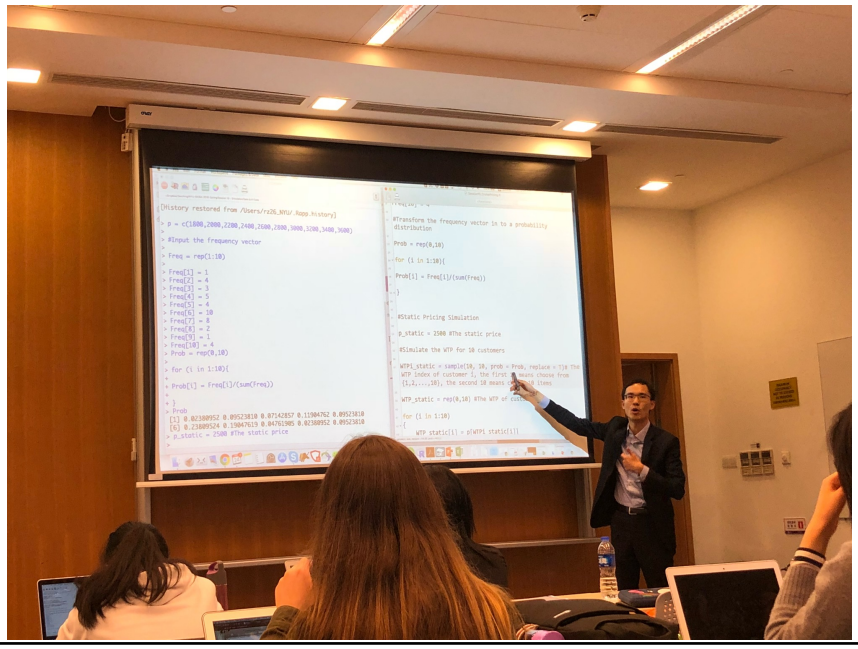
About Me



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About Me

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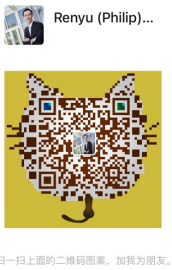
About Me

- I study AI and data science to improve business decision making, especially for digitalized online platforms.
- As an economist and Tech Lead of Kuaishou (快手), I build analytics framework to evaluate and optimize the ecosystem of Kuaishou.
- I teach you guys pragmatic data science/AI.



- CUHK Business School, Associate Professor (*with tenure*), since 2022
- NYU Shanghai, Assistant Professor, 2016-2022; Visiting Scholar, since 2022
- Washington University in St. Louis, PhD, 2011-2016
- Peking University, BS, 2007-2011

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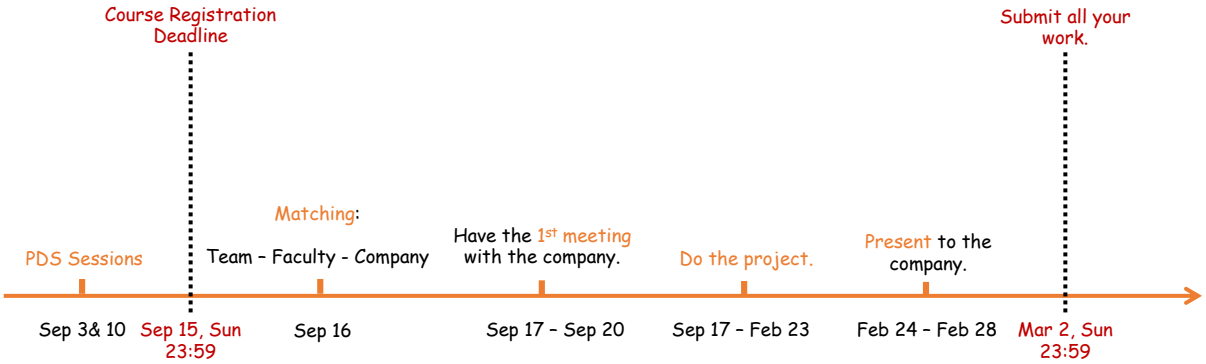
Timeline



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Pragmatic Data Science Training

Two mandatory lectures on pragmatic data science:

- 6:30pm-8:30pm, Sept 3 & Sept 10.
- CYT 201 (for registrants) or Zoom (for hesitators)
- Necessary mindset and toolbox for a mostly harmless analytics professional.

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Registration/Drop-off Deadline

Hard Deadline: 11:59pm, Sept 15

- NO add/drop will be allowed after the deadline.
- Overenrollment requests on CUSIS are only available between Dec 2 and Dec 16.
- Anyone who wishes to enroll in this course, please scan the following QR code and submit the registration form, regardless of whether you have registered on CUSIS.

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Matching

All matching will be finished and announced by 11:59pm, Sep 16.

- We will use your industry/job intention and your academic background to do the matching with your teammates and the company.
- We will then assign a faculty mentor to your group.
- We will also assign a group coordinator, who will serve as the point of contact for your group throughout the project.

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First Meeting

Please schedule your first meeting with the matched company in the week of Sep 16.

- As soon as we connect you with your matched faculty mentor and company, each group coordinator please schedule a meeting with them.
- Try to pin down the exact project with the company as soon as possible.
- **Project proposal (with feedback from faculty and practitioner mentors)**: Due at 11:59pm, September 29 (Sunday).

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Do the Project

Work with your groupmates to finish the project until the end of February 2025.

- Submit a weekly project report by 11:59pm every Sunday starting from October 6.
- Submit a midterm report by 11:59pm, December 8 (Sunday).
- The midterm report should have the feedback from your faculty and practitioner mentors.
- Expected workload: 8 hours per week per student.
- Most of the works will be done online, but you can discuss with the company (if it is located within HK SAR) to see whether there are some onsite opportunities/necessities.

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Final Presentation

Please schedule the final presentation in the week of Feb 24.

- The final presentation should be attended by the company and your faculty mentor.
- Submit by 11:59pm, Mar 2, Sunday on Blackboard:
  - Presentation slides deck;
  - Final report (with feedback from both faculty and practitioner mentors);
  - Code/demo/prototype (if applicable).

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Faculty Mentor

The faculty mentor is to help you. It is still your responsibility to carry out the project.

- You can schedule meetings with your faculty mentor if you encounter any technical challenges, but do not over utilize this opportunity.
- Your faculty mentor will also provide feedback on your work.
- If you have any conflict or tension with the company, please also report to your faculty mentor.
- Your faculty mentor will assign the grade to you.
- Feel free to talk to me if you have any questions.

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Practitioner Mentor

The practitioner mentor is the point of contact for the company.

- You can ask your practitioner mentor questions about your project or the company.
- When you get stuck, try to seek for some help from your practitioner mentor first.
- Your practitioner mentor will also provide feedback on your work.

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Course Communications

- No class meeting after Tuesday, September 10
- Office hour: By appointment
- WeChat group: Online discussion forum
- Instructor contact
  - Office: CYT_911
  - Email: philipzhang@cuhk.edu.hk
  - Tel: 852-3943-7763
  - WeChat: rphilip_zhang
- Teaching Assistant: Qinlu Hu
  - Email: qinlu.hu@link.cuhk.edu.hk

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Course Materials

- Syllabus
  - https://docs.google.com/document/d/13-MqYXHFfyGE5Hi-sNbzCC6oagWhjggI1ifUI1nNLOQ/edit?usp=sharing
- Blackboard
  - Proposal, Weekly Report, Final Report, Slides, and Code Submission
- GitHub:
  - https://github.com/rphilipzhang/DOTE6696-24

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Grading

- Quality of your delivered work: 60%
- Final presentation: 20%
- Final report: 20%
- Industry partner feedback: 20%
- You will also need to evaluate each other within each group (to avoid free-riders), whereas I may calibrate the grades of different teams based on the submitted works and comments.

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Industry Partners

Platform-Based

- Kuaishou
- Xiaohongshu
- Tomato of Love (高竞游戏)
- All Saints Music (万声音乐)
- AviGo/JetBay (掌上包机)
- Prime Union (智联汽车)

Finance

- Guotai Junan
- SynFutures
- Arrakis Green FinTech

Consulting

- Bain
- CSPI Rating
- Datality Lab
- GS1 Hong Kong

Manufacturing/Agriculture/Logistics

- Mengniu (蒙牛)
- DCH Auriga (Hong Kong) Limited
- Hong Kong Air Cargo Terminal Limited (Hactl)
- OseanAlpha USV

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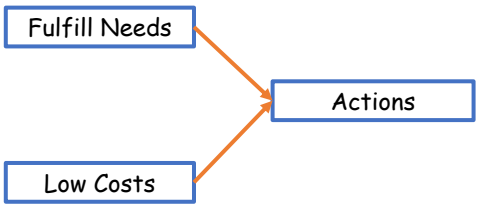
Fundamental Mindset of Pragmatic Data Science

Can your stakeholder do anything with your results?

- Actionable insights: Your stakeholder can directly improve something following your results.
- Useful knowledge: Your stakeholder can make some long-term strategic shifts based on your results.



A very useful YouTube channel in pragmatic data science: https://www.youtube.com/@pragmaticdata.

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Python and Jupyter

- Python: Very close to English, so not hard to learn.
- Most widely used programming language by data scientists.
  - A huge community with extensive external packages (especially ML & AI).
  - Very easy to find solutions and support when running into problems.
- Jupyter Notebook: A web-based interactive computing environment.
  - Use Anaconda to install Jupyter.
  - Install Python: https://www.python.org/downloads/
  - Install Anaconda: https://docs.anaconda.com/anaconda/install/
  - Alternative: Google Colab https://colab.research.google.com/notebooks/intro.ipynb
- Wisely (or even blindly?) use Google/ChatGPT/Claude/Copilot.
  - https://cuhk-edtech.padlet.org/web/use-of-generative-ai-in-education-h4kuir1lgo42fi0m

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Code Distribution via GitHub

- GitHub (https://github.com/) is a platform for storing code and conducting version control for software development.
  - We use the GitHub for code distribution: https://github.com/rphilipzhang/DOTE6696-24
  - Read this doc for getting started with GitHub: https://docs.github.com/en/get-started/quickstart
- Our GitHub site has only 1 repository (a.k.a. mono-repo).
  - Please remember to pull from this repo to your own computer when necessary.

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Data Base and SQL

- In practice, data are stored in the data base(s) of the firm/organization you work for. You need to pull them out using SQL (Structured Query Language).
  - SQL is the standard language for storing, manipulating and retrieving data in databases.
  - An important technique to gain edge on the job market.
- SQL tutorial: https://www.w3schools.com/sql/, https://www.sqltutorial.org/, http://www.mathcs.emory.edu/~cheung/Courses/377/Others/tutorial.pdf, https://cs.uwaterloo.ca/~tozsu/courses/CS338/lectures/4%20Basic%20SQL.pdf
- SQL questions (and reference solutions) from Leetcode: https://github.com/rphilipzhang/DOTE6696-24

You can learn more in Database and Big Data Management.

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NumPy and Pandas

- Basic libraries in Python to work with arrays (i.e., matrices).
- Foundations of data analysis.
  - Most data analytics tools are based on NumPy and Pandas.
  - https://numpy.org/
  - https://pandas.pydata.org/pandas-docs/stable/index.html
- Important operations:
  - Data loading, extracting, joining, aggregating, etc.
- In this course, you should be reasonably familiar with them (leveraging the help from Google/ChatGPT/Claude/Copilot, etc.).
- Reference book: *Python for Data Analysis*, 2nd Edition, by Wes McKinney
  - Email me if you need a PDF copy of this book.

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