

Advanced Business Analytics Practicum

Pragmatic Data Science

Session 1. Introduction

Renyu (Philip) Zhang

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Agenda

Today

- Course Introduction
- Brief Introduction of Industry Partners
- Fundamental Mindset of Pragmatic Data Science
- Python Data Analytics Basics

Next Tuesday

- HK GS1 Sharing
- Case Study: How to get into Fudan or SJTU as a Shanghai kid?
- Case Study: Work with GenAI to improve your productivity.

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About Me



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About Me



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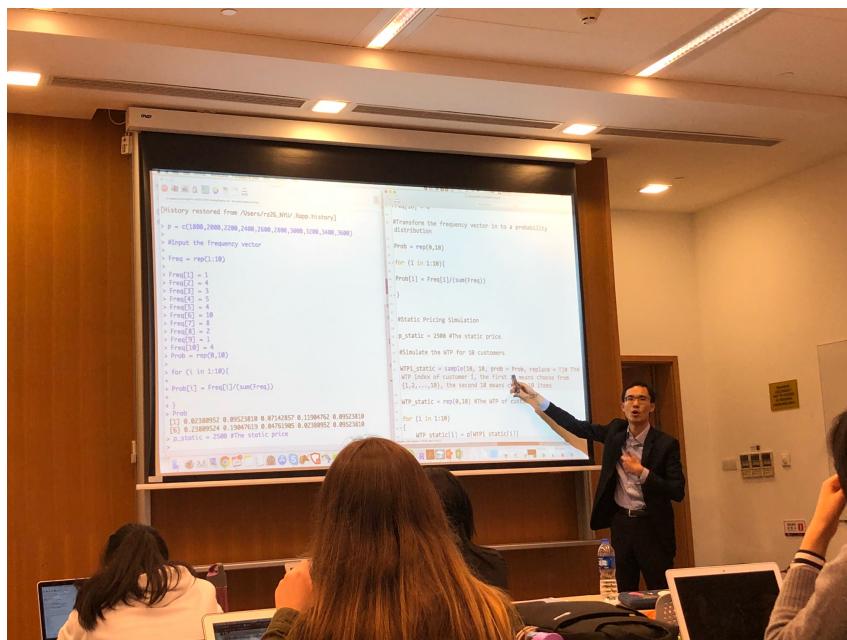
About Me



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About Me



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About Me



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About Me

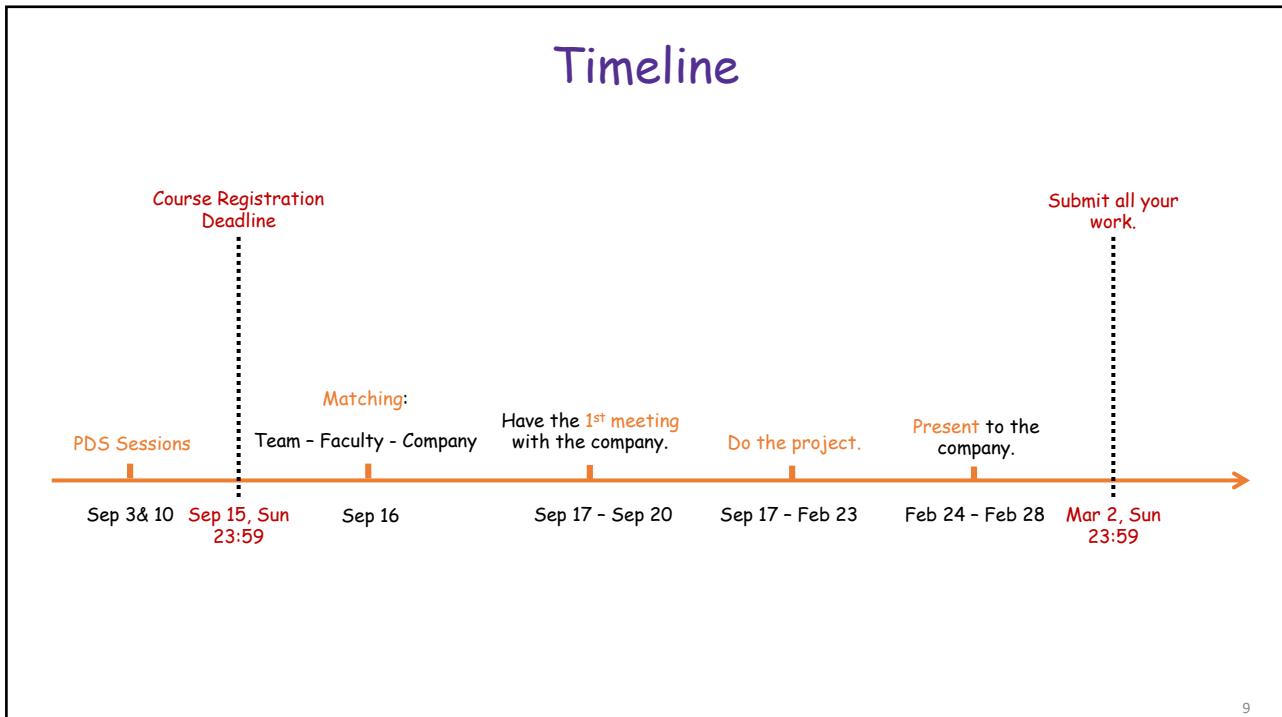
- I study **AI** and **data science** to improve business decision making, especially for **digitalized online platforms**.
- As an **economist** and **Tech Lead of Kuaishou** (快手), I build analytics framework to evaluate and optimize the **ecosystem of Kuaishou**.
- I teach you guys **pragmatic data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



群聊: BA
Practicum-F24'



该二维码7天内(9月8日前)有效，重新进入将更新

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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**: 40%
- **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

Check out here for more details: <https://drive.google.com/drive/folders/1twI9IZzGnDAhtwANHZzuSpDAo40mAom?usp=sharing>

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Warnings

"Big data is like teenage sex; everyone talks about it, no one really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it." ---Dan Ariely, Duke University

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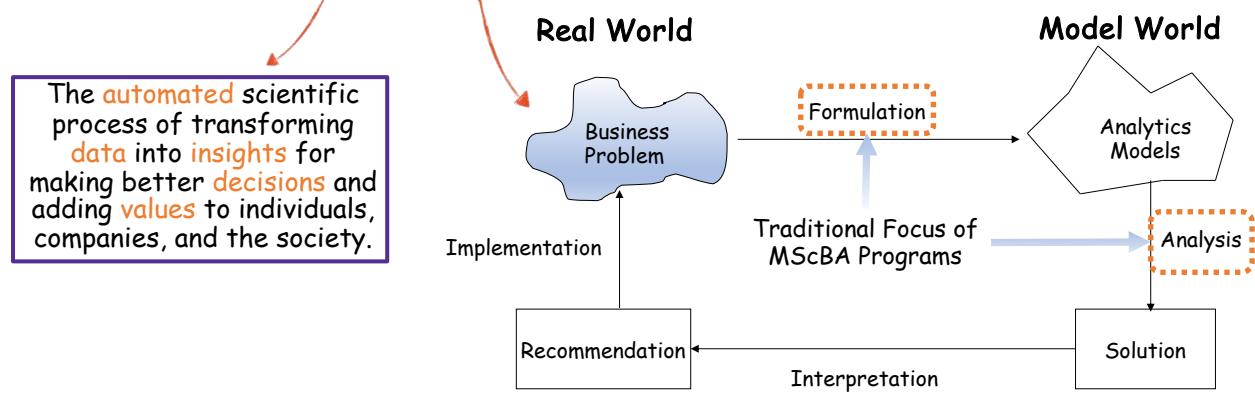
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Data Science is Craft

You could learn data science/analytics only by doing it yourself.

纸上得来终觉浅
绝知此事要躬行

- Formal but useless **definition** and **flow chart** of business analytics :



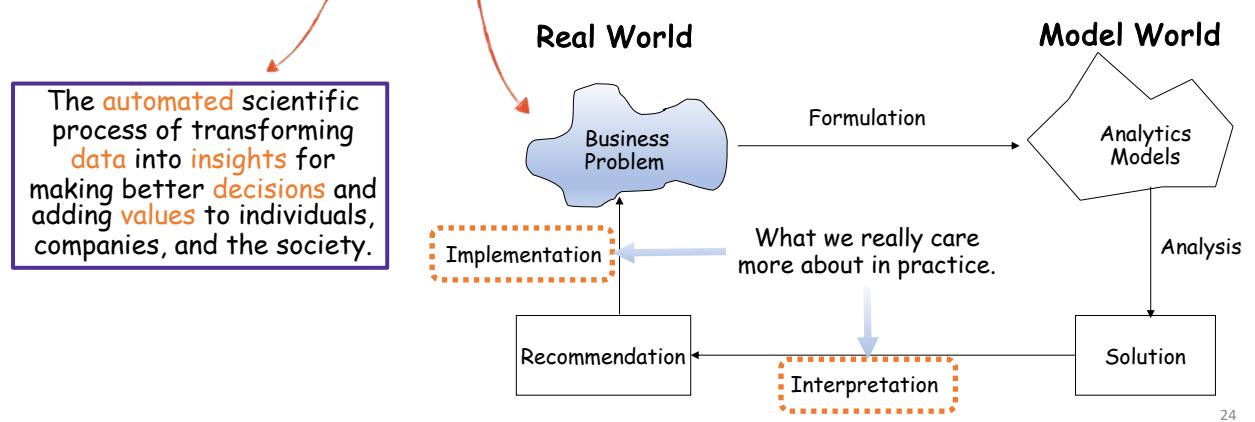
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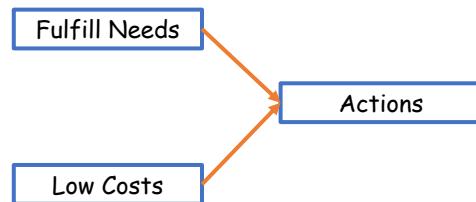


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Fundamental Mindset of Pragmatic Data Science

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-h4kuir1lqo42fi0m>



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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.
- As a data scientist, you should be reasonably familiar with them (**leveraging the help from Google/ChatGPT/Claude/Copilot, etc., whenever possible**).
- 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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