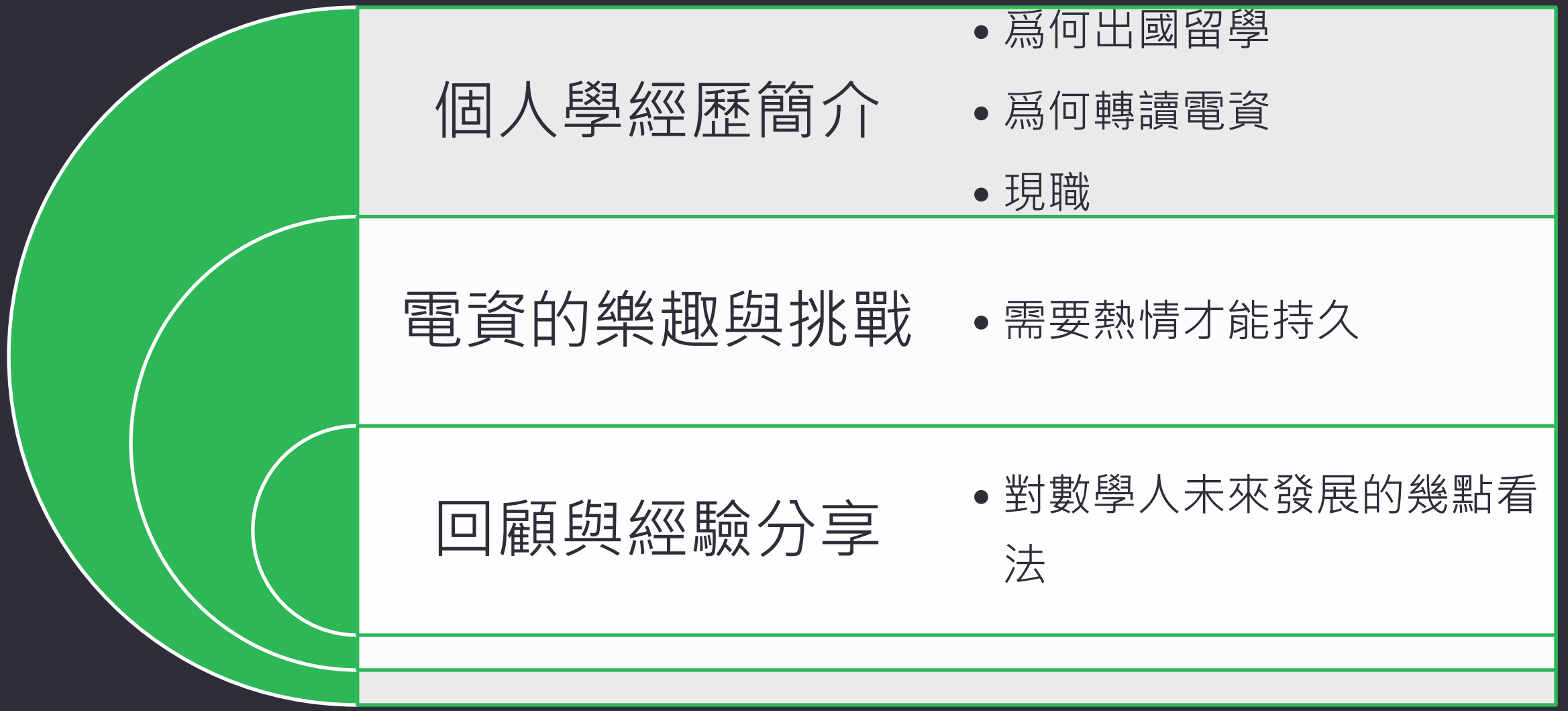
尋找你的熱情
finding your passion

劉勝助

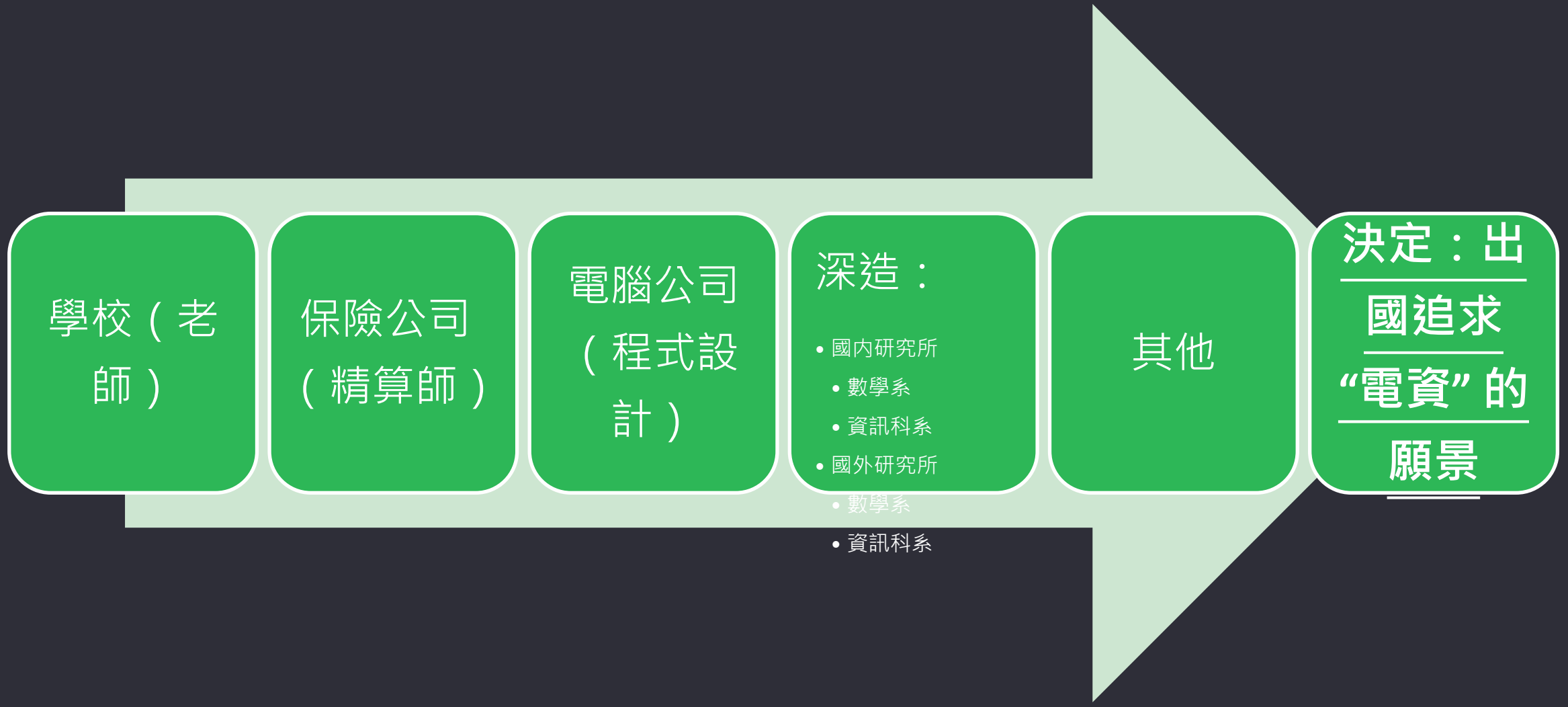
輔仁大學數學系校友

Building a better working world

大綱


個人學經歷簡介
• 爲何出國留學
• 爲何轉讀電資
• 現職
電資的樂趣與挑戰
• 需要熱情才能持久
回顧與經驗分享
• 對數學人未來發展的幾點看法

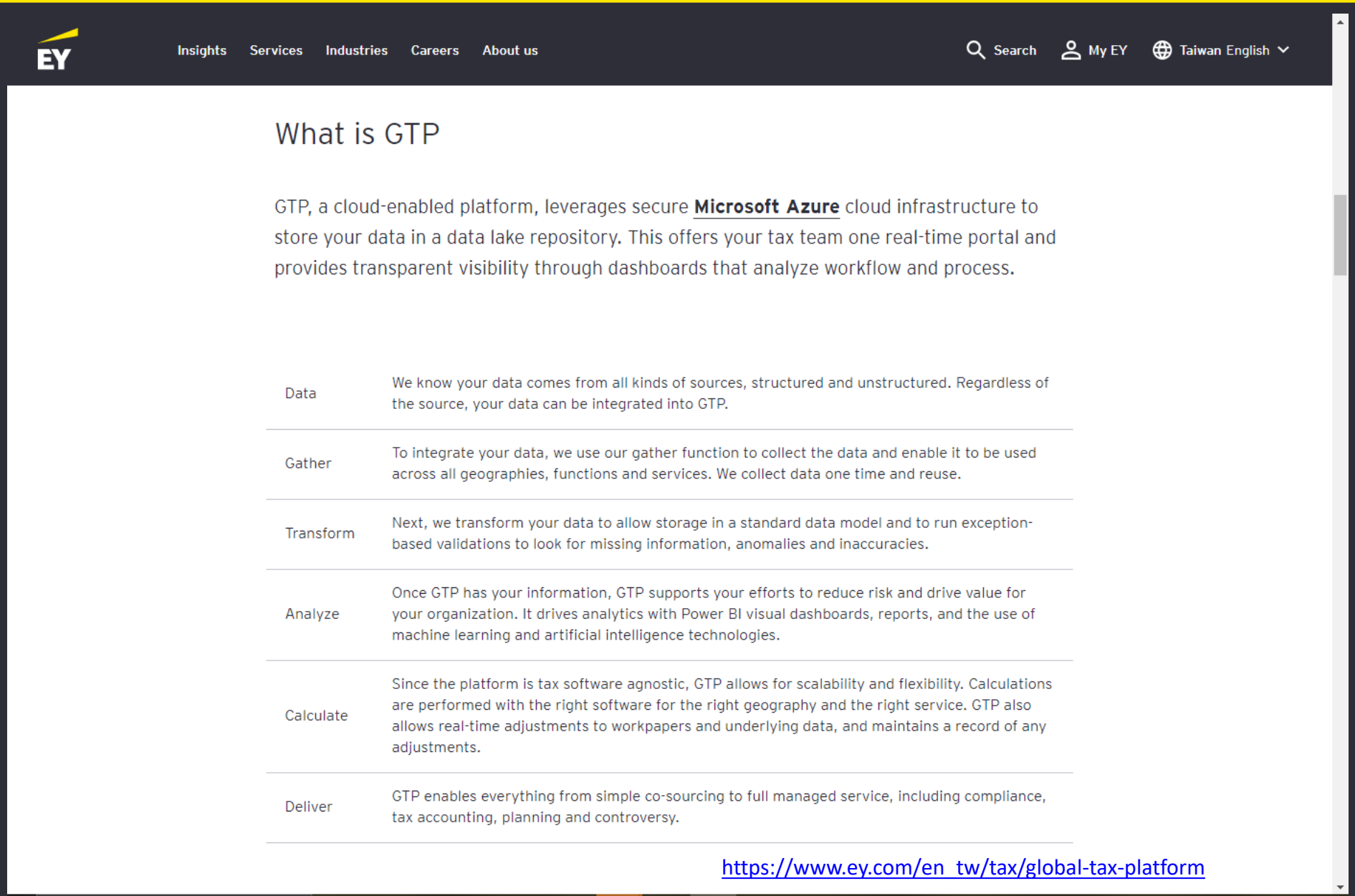
當年面對畢業后的選擇


學校（老師）
保險公司（精算師）
電腦公司（程式設計）
深造：
• 國內研究所
• 數學系
• 資訊科系
• 國外研究所
• 數學系
• 資訊科系
其他
決定：出國追求“電資”的願景

學經歷簡介

- 現職： Ernst & Young Global Tax Platform, Platform Architect
- 學歷：
  - BA, 1980, 第十四屆輔大純數系畢業
  - MS, 1985, Computer Information & Control Engineering, University of Michigan, Ann Arbor
- 經歷：
  - （醫學院）Program analyst, University of Michigan
  - （電話通信）Member of scientific staff, Bell-Northern Research
  - （電話通信）Senior System Engineer, Fujitsu
  - （電話通信） Software Development Manager, MCI
  - （網路視頻）Senior Engineering Manager, Silicon Graphic Inc
  - （公衛醫療）Lab Information Management System Consultant, State Labs of North Carolina, NC State Government
  - （網路資安）Enterprise Security Solution Architect, Deloitte
  - （基因學生技）Life Science Solutions Architect, Liaison Technologies
  - （財稅咨詢）Ernst & Young, GTP Platform Architect

EY Global Tax Platform



https://www.ey.com/en_tw/tax/global-tax-platform

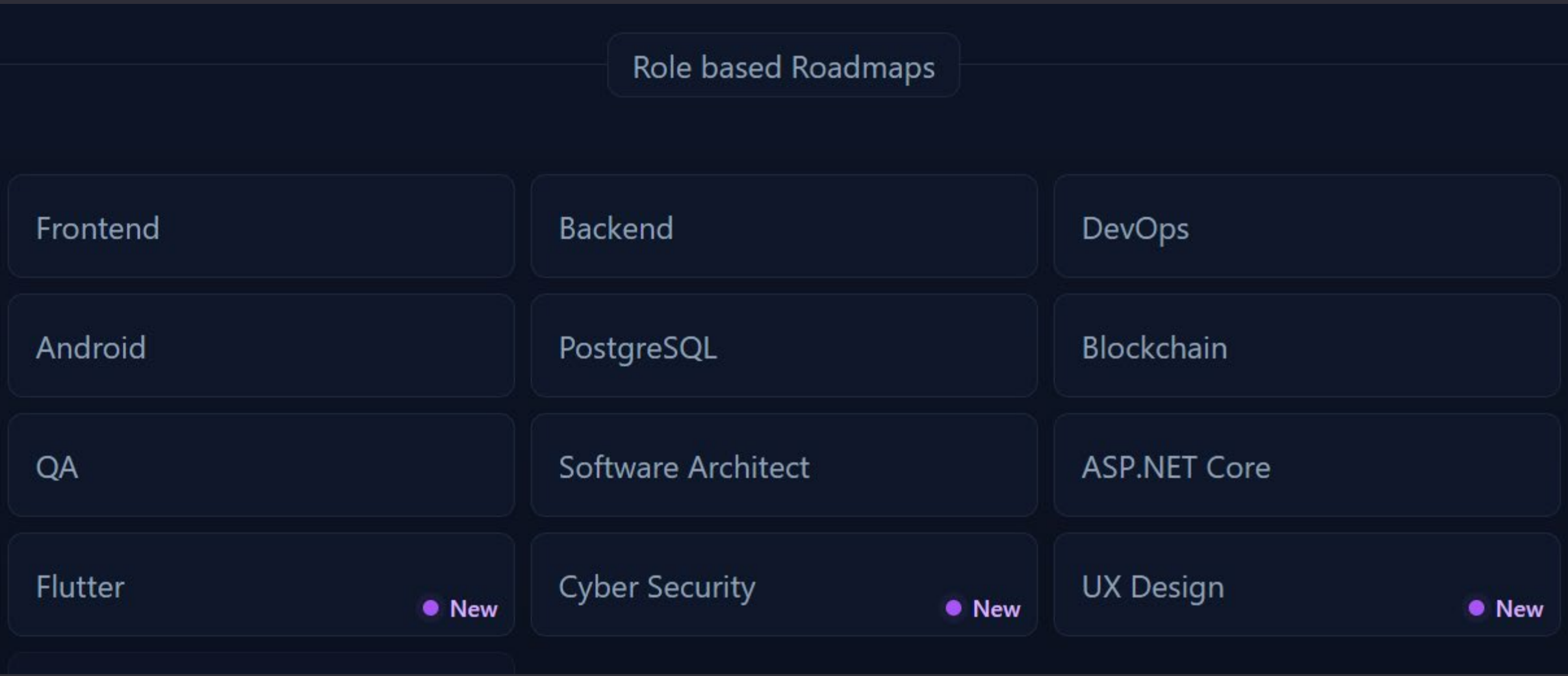
軟體的開創

- 團隊組織
- 技術與工具
- 製作過程
- 維修過程
- 銷售與收費

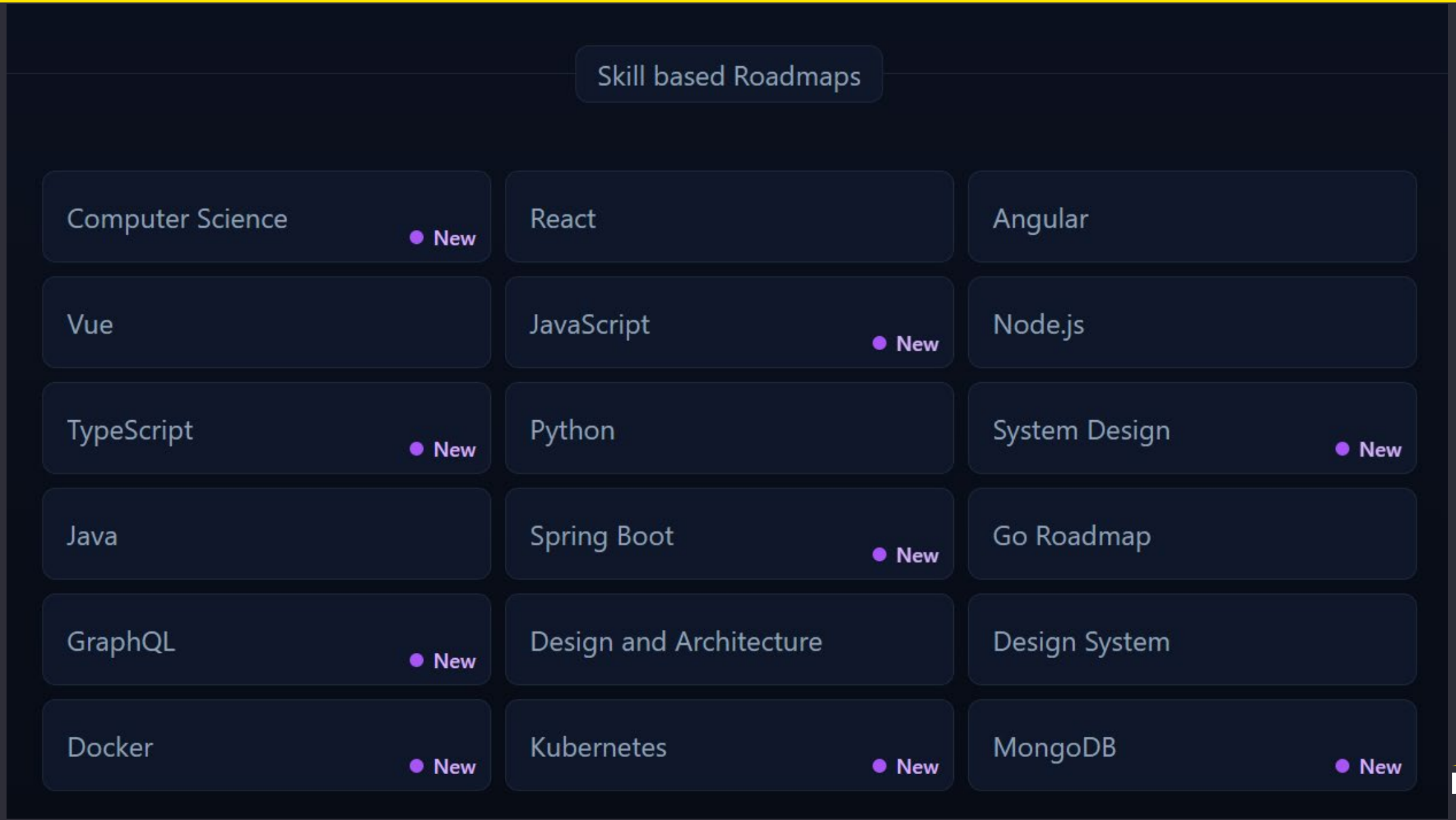
軟體業者的樂趣與挑戰

- 有很好的報酬與接觸先進技術的機會
- 要不斷學習才不被淘汰
- 產品要不斷的修改才被采用
- 需要對行業有不絕的熱枕才能持久

瞭解“電資”的一些分工


Role based Roadmaps
Frontend
Backend
DevOps
Android
PostgreSQL
Blockchain
QA
Software Architect
ASP.NET Core
Flutter
New
Cyber Security
New
UX Design
New

瞭解“電資”的一些分工


Skill based Roadmaps
Computer Science
New
React
Angular
Vue
JavaScript
New
Node.js
TypeScript
New
Python
System Design
New
Java
Spring Boot
New
Go Roadmap
GraphQL
New
Design and Architecture
Design System
Docker
New
Kubernetes
New
MongoDB
New

瞭解“電資”的一些分工

- Front-end developer roadmap：
https://roadmap.sh/frontend

- DevOps developer roadmap:
https://roadmap.sh/devops

- Back-end developer roadmap:
https://roadmap.sh/backend

- Cyber Security Expert roadmap
https://roadmap.sh/cyber-security

https://roadmap.sh/

對數學人較有利的例子– 人工智慧、機器學習

- Machine Learning
  - Machine Learning Roadmap

https://www.kdnuggets.com/2022/12/complete-machine-learning-study-roadmap.html

- Calculus - Mathematics for Data Science - Machine Learning

1. Prerequisite

In order for you to understand the concept of Machine Learning and everything about it - you need to know the fundamentals in and out. This includes the theories, concepts, methods, and algorithms behind it - why they do what they do and how they all act as a building block to Machine Learning. These prerequisites are surrounding analytical work, which helps you further down the line as a Machine Learning Engineer:

- Standard Deviation
- Linear Algebra
- Statistics
- Probability

Here are some resources that can help you get a more in-depth understanding:

1. Mathematics for Machine Learning - Book

uTube

demy - YouTube

e Learning - Udemy

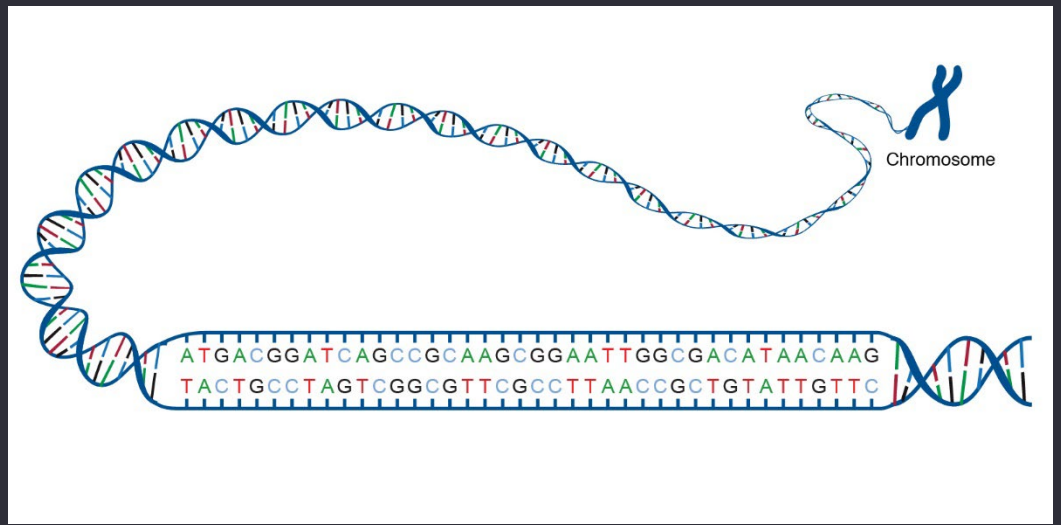
WHY CALCULUS?

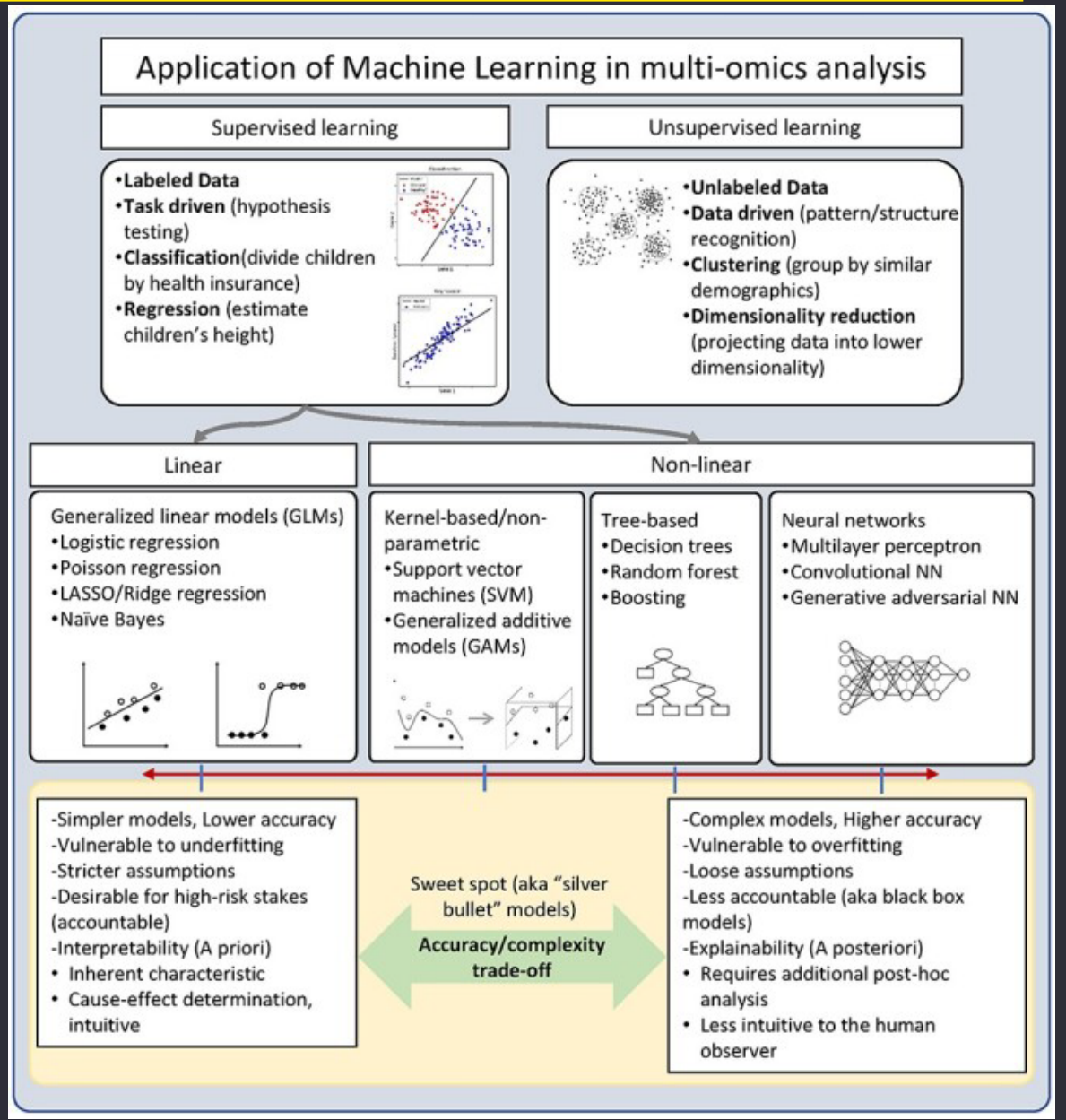
- Calculus is absolutely key to understanding the linear algebra and statistics you need in machine learning and data science.
- If you can understand machine learning methods at the level of derivative you will improve your intuition for how and when they work.
- A deeper understanding of the algorithm and its constraints will allow you to customize its application and better understand the impact of tuning parameters on the results.

對數學人較有利的例子 - 生物信息學

- Bioinformatics
  - A roadmap for multi-omics data integration using deep learning

https://pubmed.ncbi.nlm.nih.gov/34791014/





追求 “熱門科系” 的願景

- (親朋好友問) 選讀數學系，對嗎？
- (自己問) 別的科系較“熱門”，不是嗎？
- 發現你的熱情：
  - 熱門科系大都需要數學，你離熱門其實不遠。
  - 數學打開許多機會之門，你去推門探索過了嗎？
  - 很多熱門科系較適合學士后深造，你是否做好了準備呢？

追求個人的願景

- 瞭解自己，確認你的目標
  - 我會不會被新的東西改變方向？
  - 我碰到困難會不會輕易氣累？
  - 我定了目標后，能長久持續下去嗎？
  - 我願意為這目標努力嗎？
  - 我能堅持直到目標完成嗎？
  - 我選的目標和我的興趣吻合嗎？我的興趣會不會再改變呢？
  - 我會勤快努力的去做該做的嗎？
  - 我會不會只暫時興奮一下就失去興致？
  - 我能刻服可能的挑戰嗎？

如何發掘你的熱情（ passion)

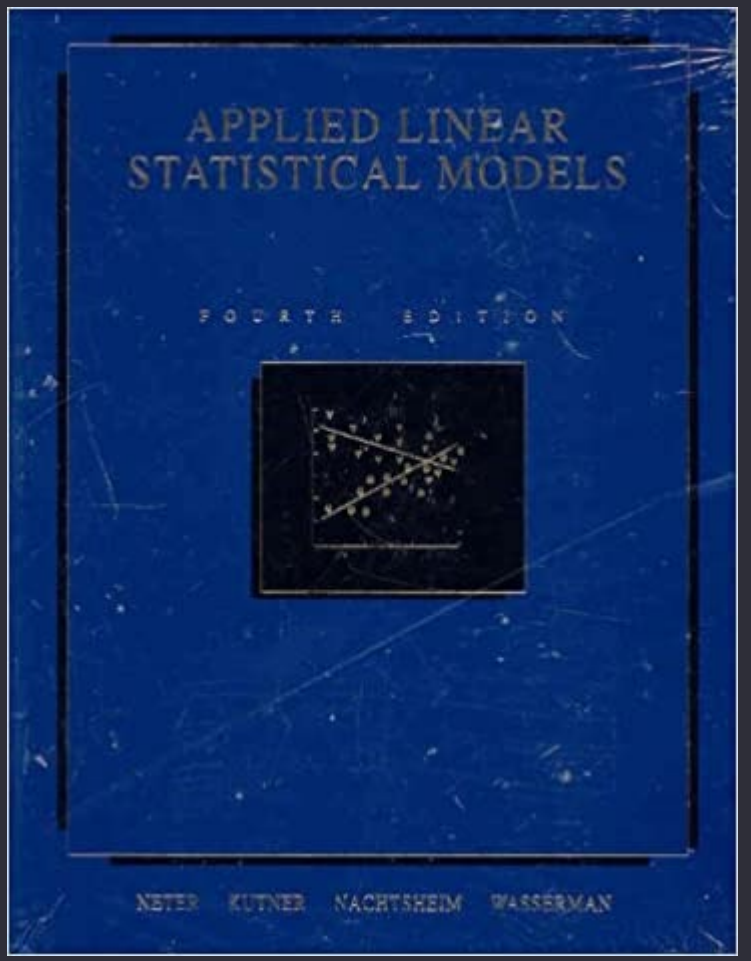
- 嘗試修一些你覺得有興趣的課
  - https://www.coursera.org/ 有很多免費的課可以嘗試
  - 很多著名大學也都有免費綫上課程 OpenCourseWare
- 做好準備
  - 無論你的選擇是什麽，你大都需要好的基礎：
    - 英文、日文、或是其他第二語言。英文可以說是必要的，她可帶你走向大半的地球。
    - 學一種電腦程序語言：這也是任何深造或升遷都是必備的。
    - 數學：她是科學之母，只要你想在理工、生物、財務界發展，這是不可或缺的。
  - 多交朋友、建立個人品牌
    - 學問只是一個課題，只有“人”能同意你的領導
    - Build your personal network
    - Build your own brand
- 當你成功時
  - 不要忘記你的成就是多人默默幫助下的結果：give back to the world

如何發掘你的熱情（passion)

- 嘗試讀一本好教科書
  - **Applied Linear Statistical Models (數學系絕對能讀!!!)**

    by John Neter et al

There are two approaches to undergraduate and graduate courses in linear statistical models and experimental design in applied statistics. One is a two-term sequence focusing on regression followed by ANOVA/Experimental design. Applied Linear Statistical Models serves that market. It is offered in business, economics, statistics, industrial engineering, public health, medicine, and psychology departments in four-year colleges and universities, and graduate schools. Applied Linear Statistical Models is the leading text in the market. It is noted for its quality and clarity, and its authorship is first-rate. The approach used in the text is an applied one, with an emphasis on understanding of concepts and exposition by means of examples. Sufficient theoretical foundations are provided so that applications of regression analysis can be carried out comfortably. The fourth edition has been updated to keep it current with important new developments in regression analysis.



https://www.amazon.com/Applied-Linear-Statistical-Models-Neter/dp/0256117365