BACHELOR OF SCIENCE

Major in *Statistics*
Major in *Decision Analytics*

Major in STATISTICS

STATISTICS

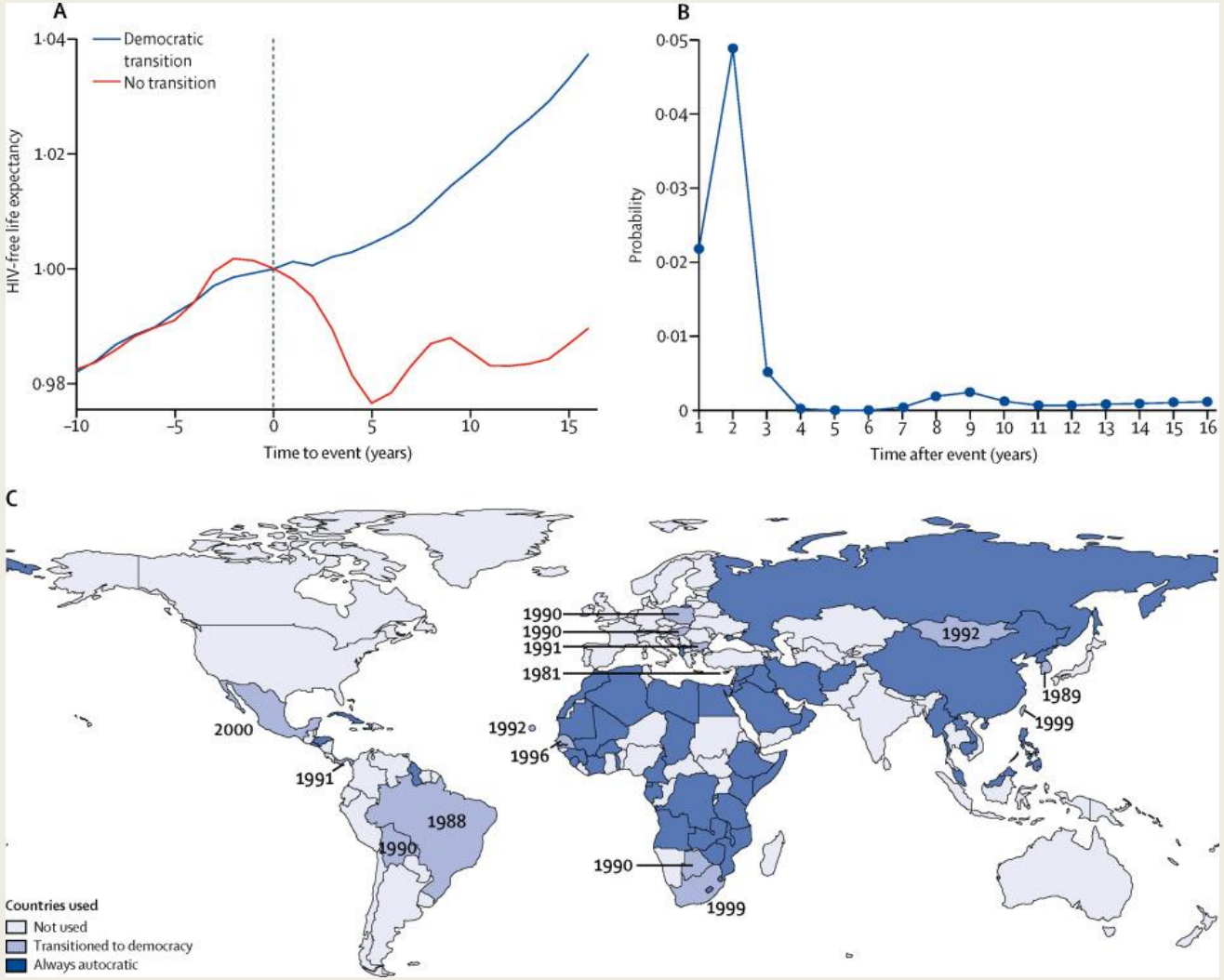
addresses an important human endeavour…

a desire to make "sense" of *observations*

STATISTICAL REASONING

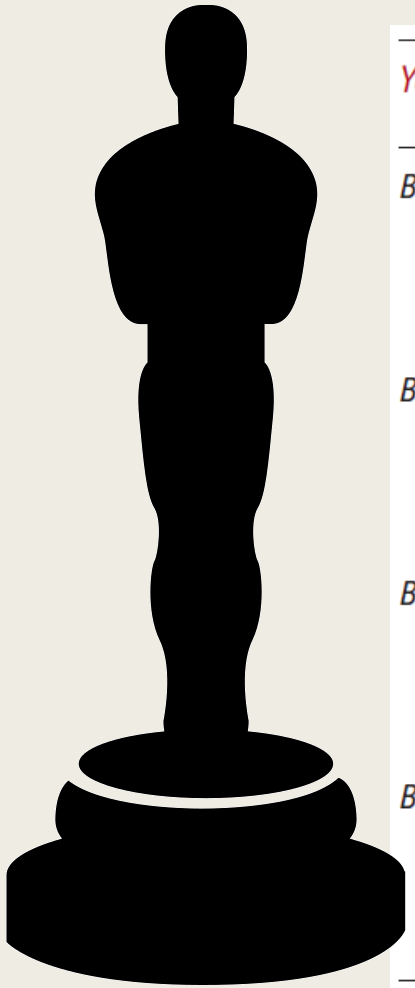
THE LANCET

The relationships between democratic experience, adult health, and cause-specific mortality in 170 countries between 1980 and 2016: an observational analysis



Predicting Oscar winners

significance december2007



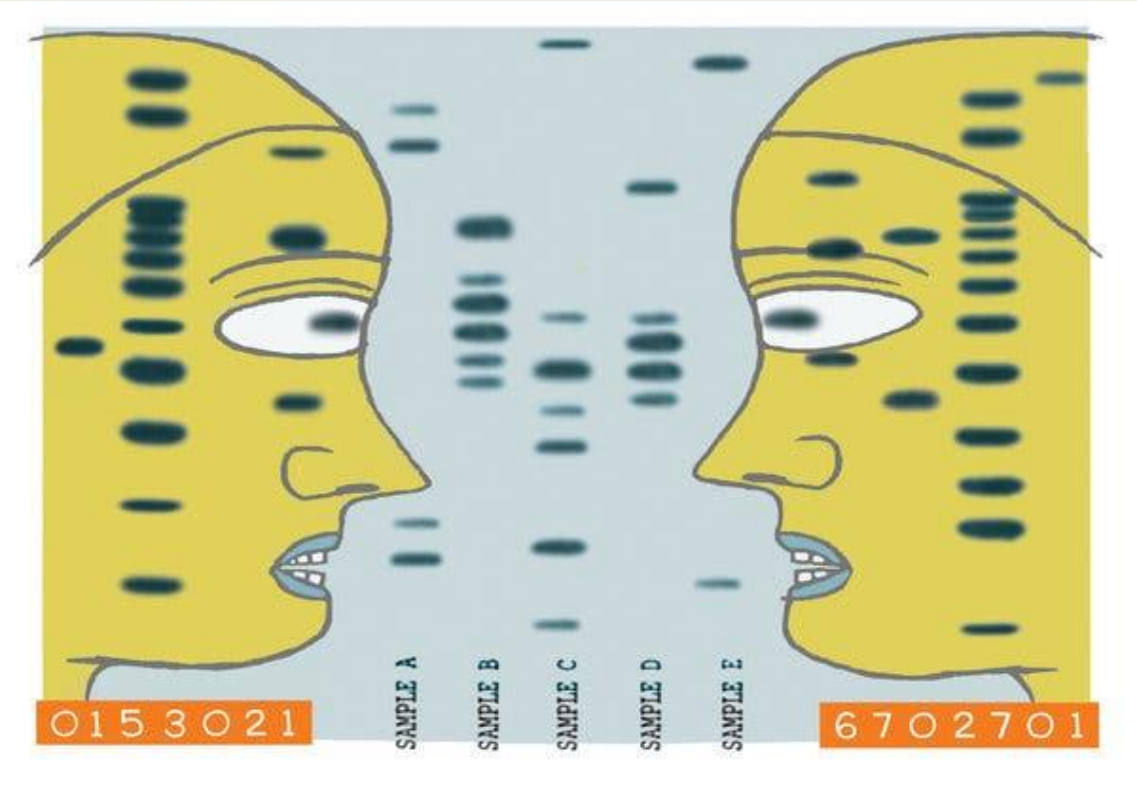
Year	Winner	Probability	Predicted	Probability
Best Picture				
1948	*Hamlet*	0.01	*Johnny Belinda*	0.97
2004	*Million Dollar Baby*	0.01	*The Aviator*	0.97
1981	*Chariots of Fire*	0.01	*Reds*	0.88
Best Director				
2000	Steven Soderbergh	0.01	Ang Lee	0.95
1968	Carol Reed	0.02	Anthony Harvey	0.97
1972	Bob Fosse	0.03	Francis Ford Coppola	0.96
Best Actor				
2001	Denzel Washington	0.00	Russell Crowe	0.99
1968	Cliff Robertson	0.00	Peter O'Toole	0.88
1974	Art Carney	0.02	Jack Nicholson	0.87
Best Actress				
2002	Nicole Kidman	0.07	Renée Zellweger	0.90
1985	Geraldine Page	0.07	Whoopi Goldberg	0.70
1950	Judy Holliday	0.09	Gloria Swanson	0.76

Examples of applications

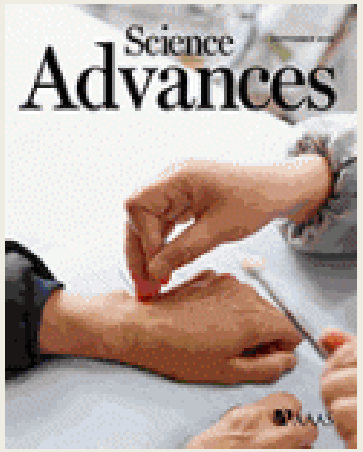
The New York Times

One Twin Committed the Crime — but Which One?
A New DNA Test Can Finger the Culprit

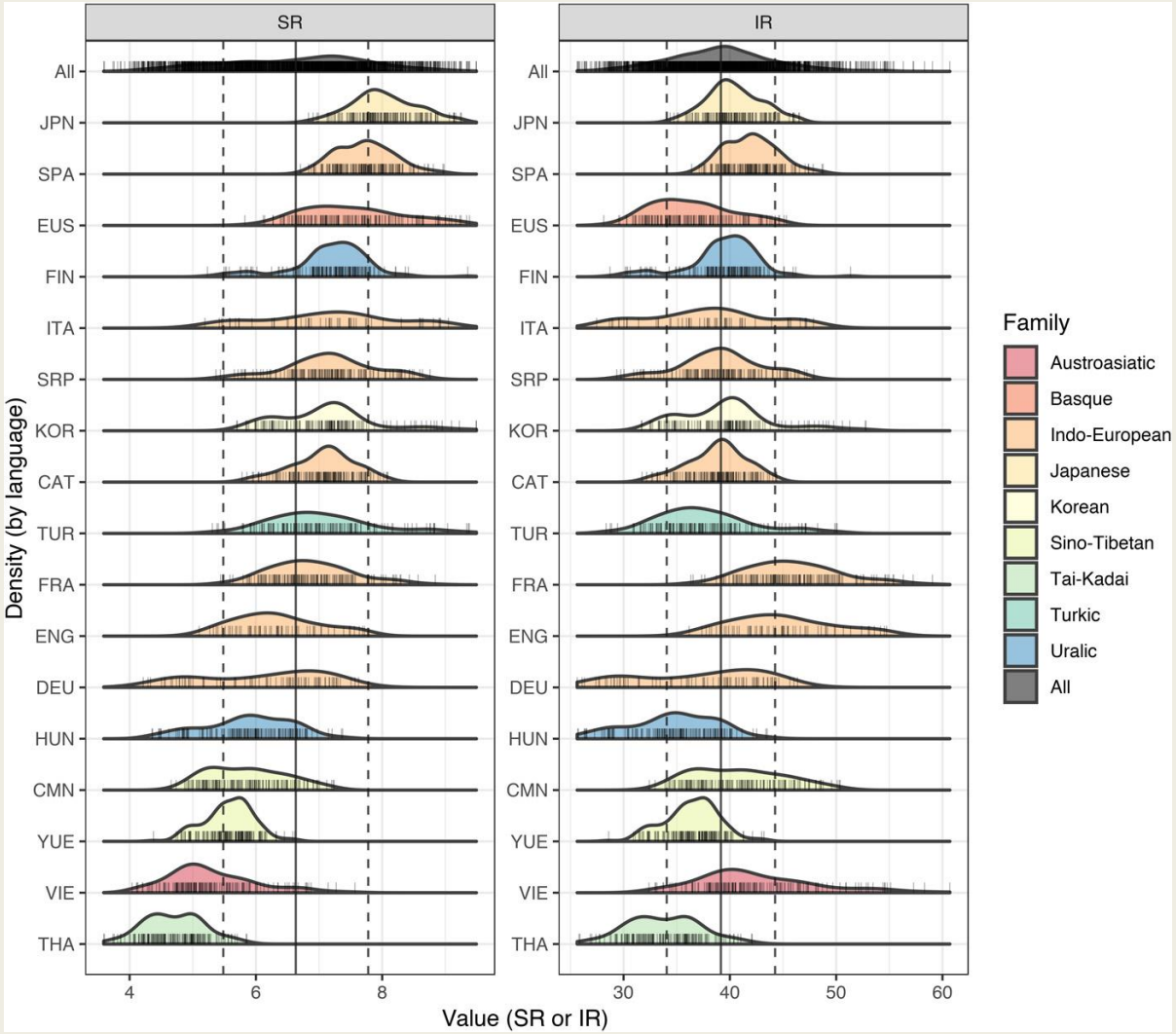
A handful of criminal prosecutions have stalled because DNA tests cannot distinguish between suspects who are twins. Then scientists decided to create one.



Examples of applications



Different languages, similar encoding efficiency: Comparable information rates across the human communicative niche

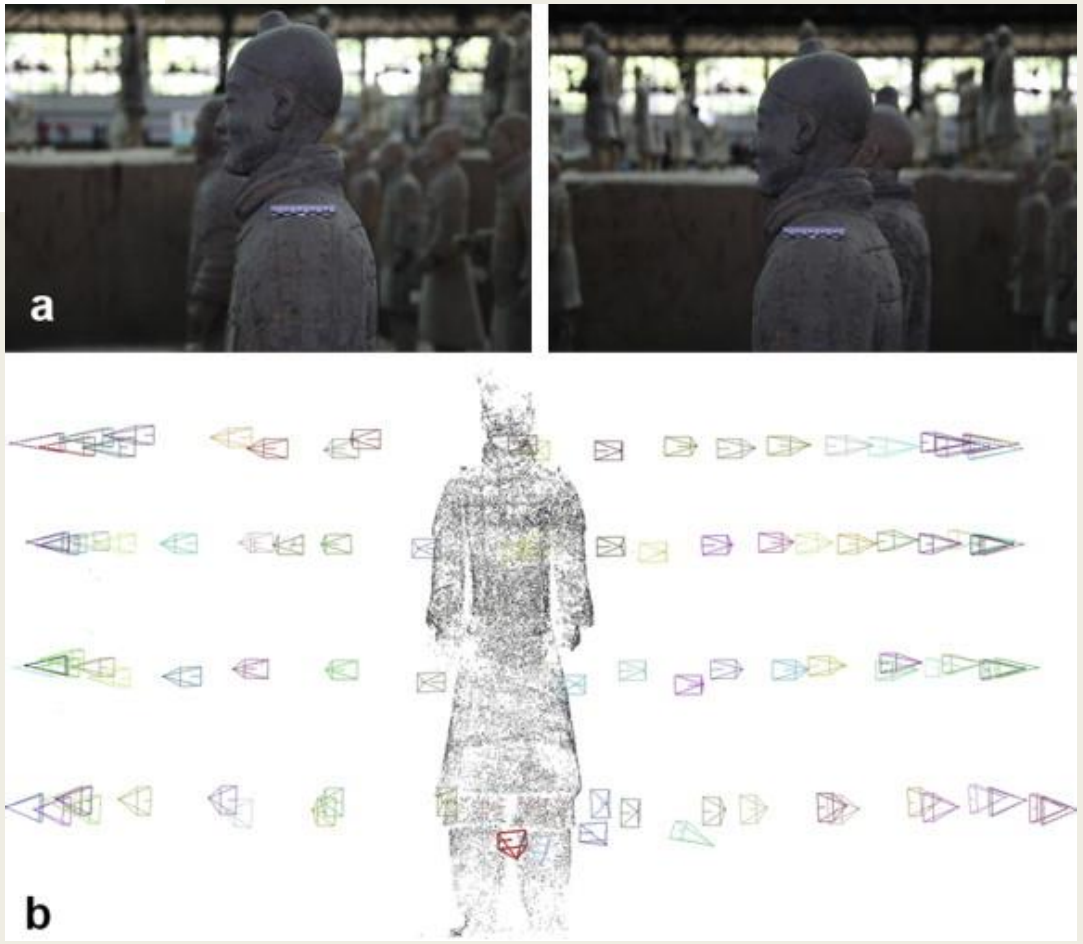


Examples of applications

Journal of Archaeological Science
Volume 49, September 2014, Pages 249-254

Focus article

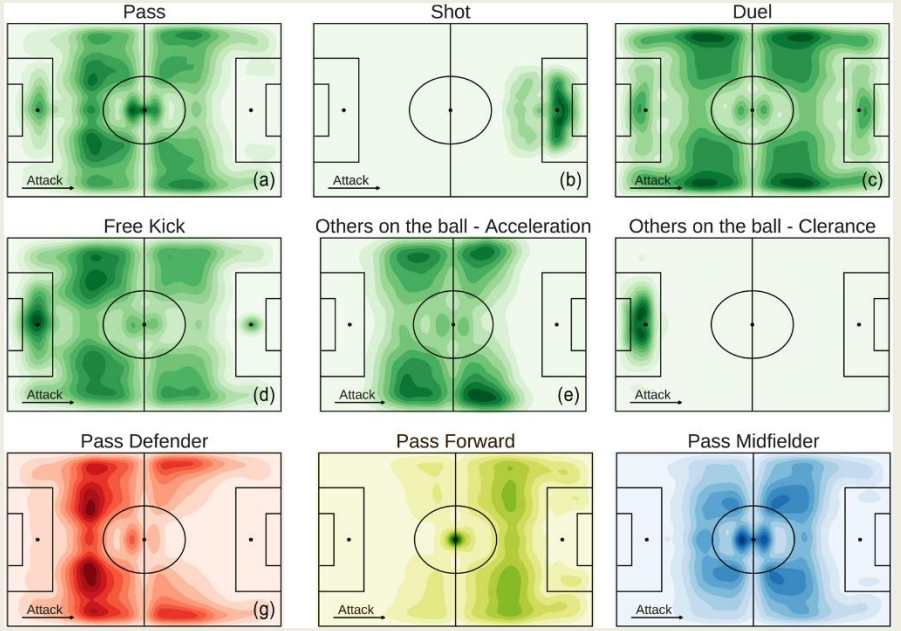
Computer vision, archaeological classification and China's terracotta warriors

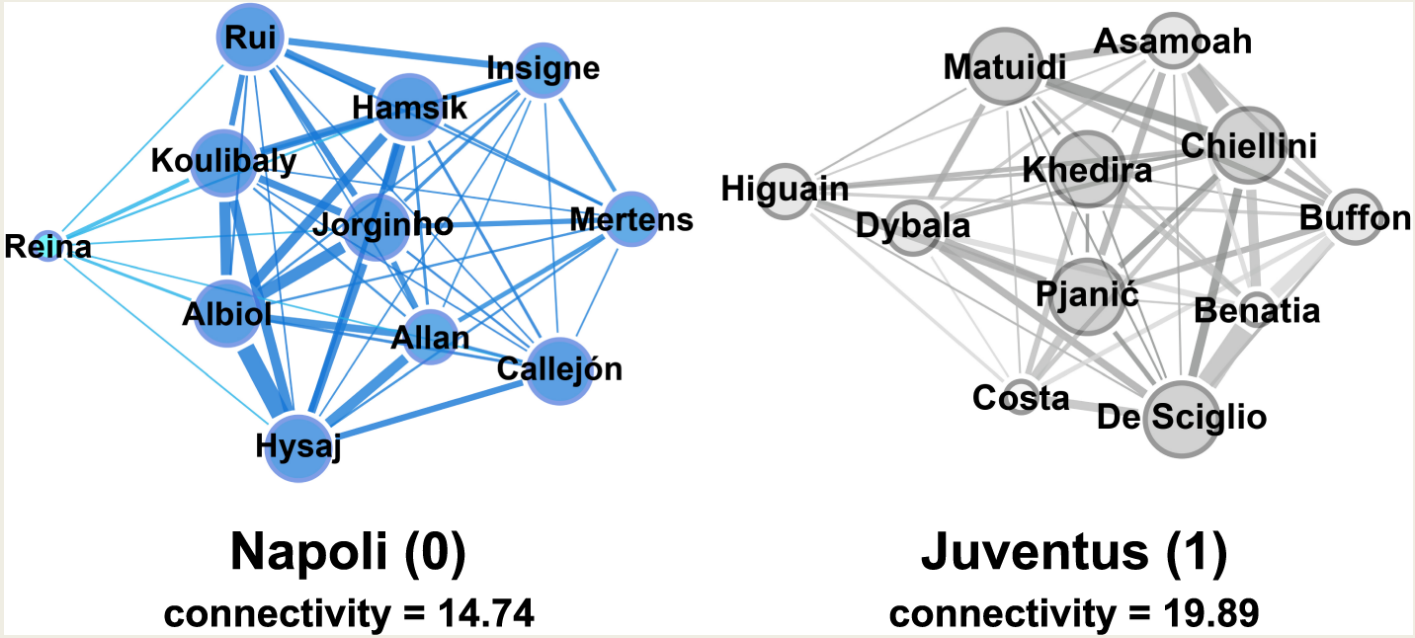


Examples of applications

SCIENTIFIC DATA

A public data set of spatio-temporal match events in soccer competitions



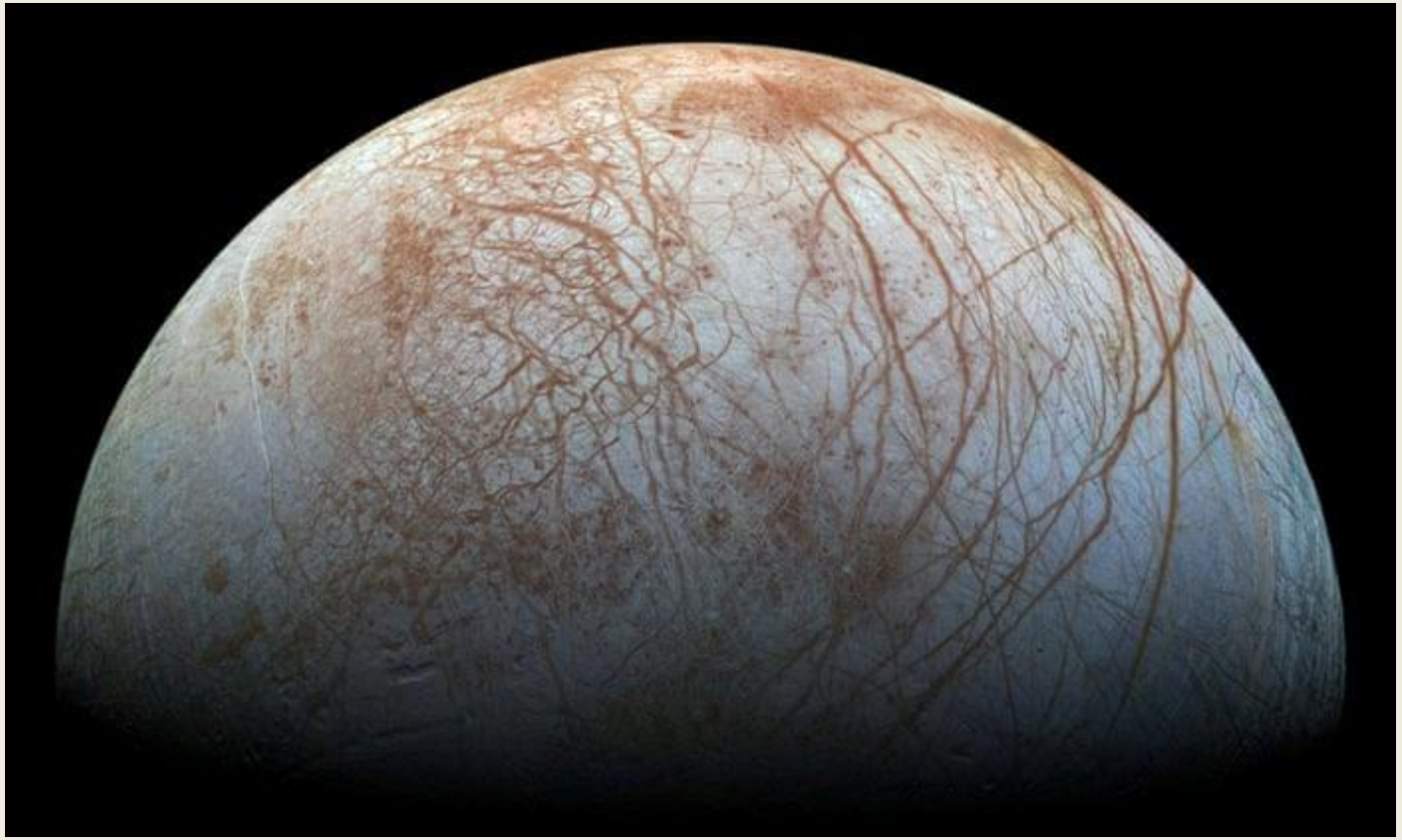


Examples of applications

The Guardian

Aliens may not exi good news for our survival

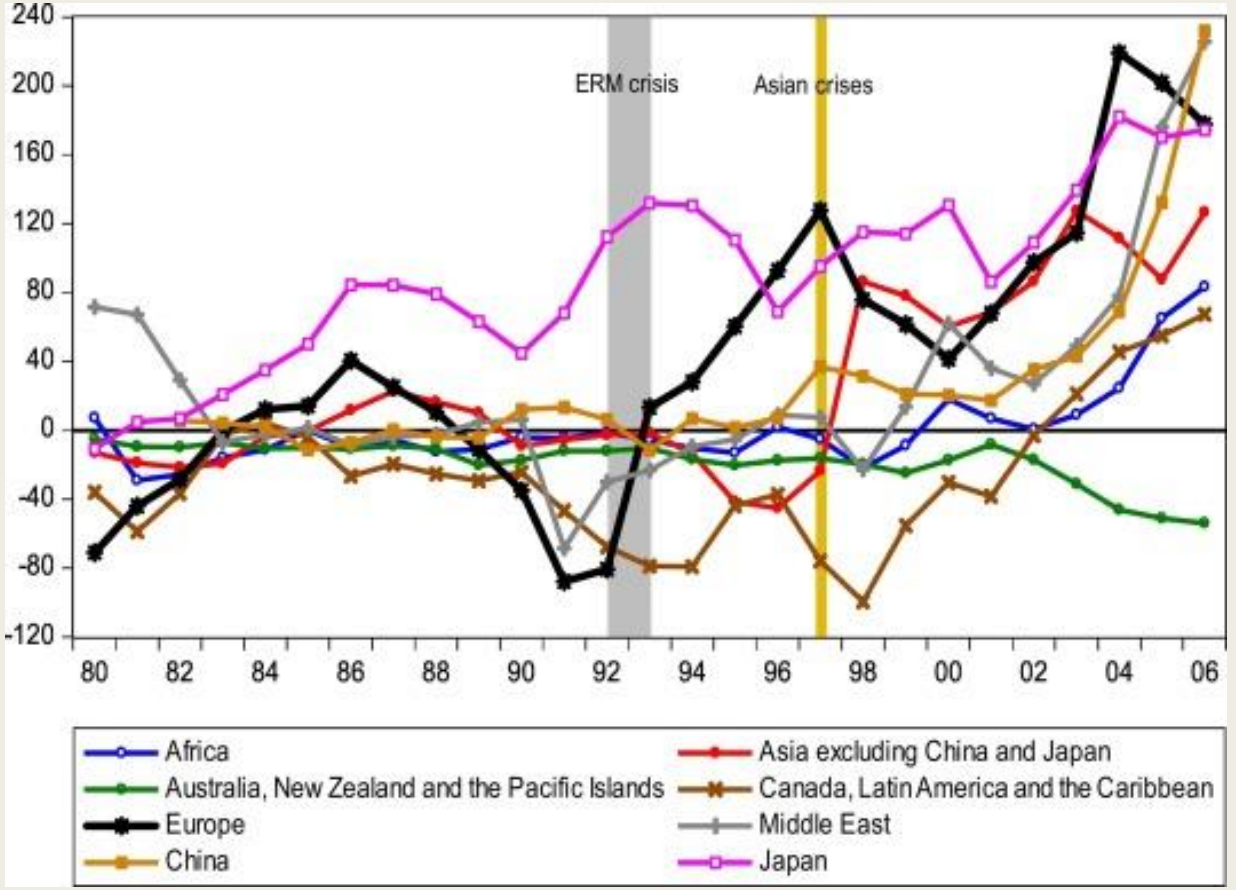
A new study suggests that we could well be on our own in the universe. Yet loneliness might have its advantages



Examples of applications

International Review of Financial Analysis
Volume 69, May 2020, 101377

The run-up to the global financial crisis:
A longer historical view of financial liberalization, capital inflows, and asset bubbles

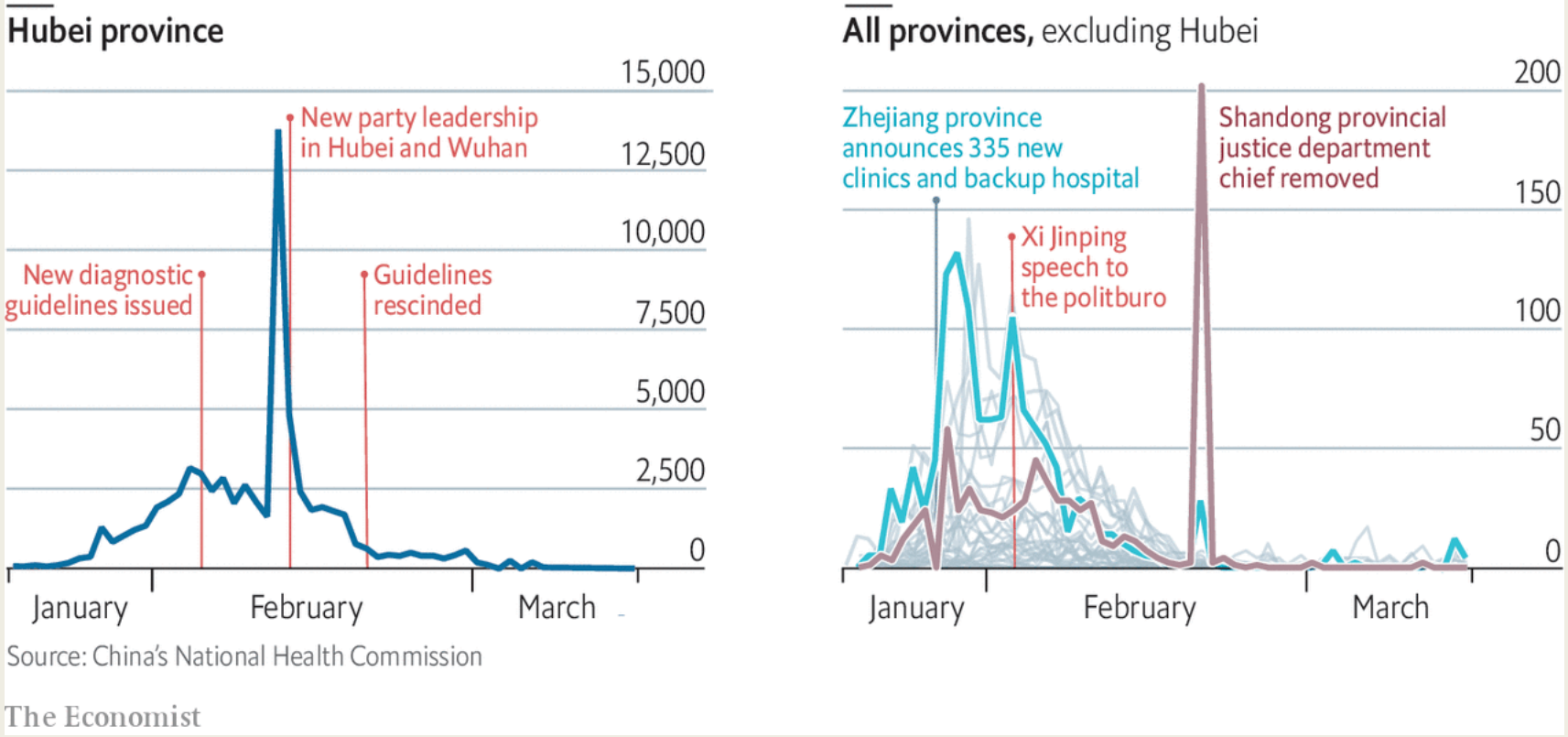


Examples of applications

The Economist

Some days are more equal than others?

China, covid-19, 2020, new confirmed cases, by day



Source: China's National Health Commission

The Economist

Mathematical background adequate?

- Students must have level 2 or above in
  - HKDSE Extended Module 1 or 2 of Mathematics or equivalent

- Otherwise, strongly advised to take

  MATH1011 University Mathematics I

  in Semester 1.

What do we need from your Mathematics?

- Set notation and theory
- Functions (*incl.* limits, continuity)
- Sequences, series
- Basic calculus (*incl.* partial differentiation, double integration)
- Vectors, matrices (basic operations)

Major in Risk Management *vs* Major in Statistics

- **Risk Management** –

  courses focus primarily on business-related topics: e.g.

  investment, insurance, finance, banking, etc.

- **Statistics** –

  courses cover wide range of topics with emphasis on

  "METHODS", their applications, and underlying theory.

- Students **CANNOT** double major or major/minor in

  Statistics & Risk Management

- For detailed curriculum structure, please refer to

https://webapp.science.hku.hk/sr4/servlet/enquiry?frmid=MenuP

Major in DECISION ANALYTICS

DECISION ANALYTICS

addresses decisions for modern human …

a desire to make sense of "big data"

Netflix movie-rating challenge

Movie-rental company

17,770 movies

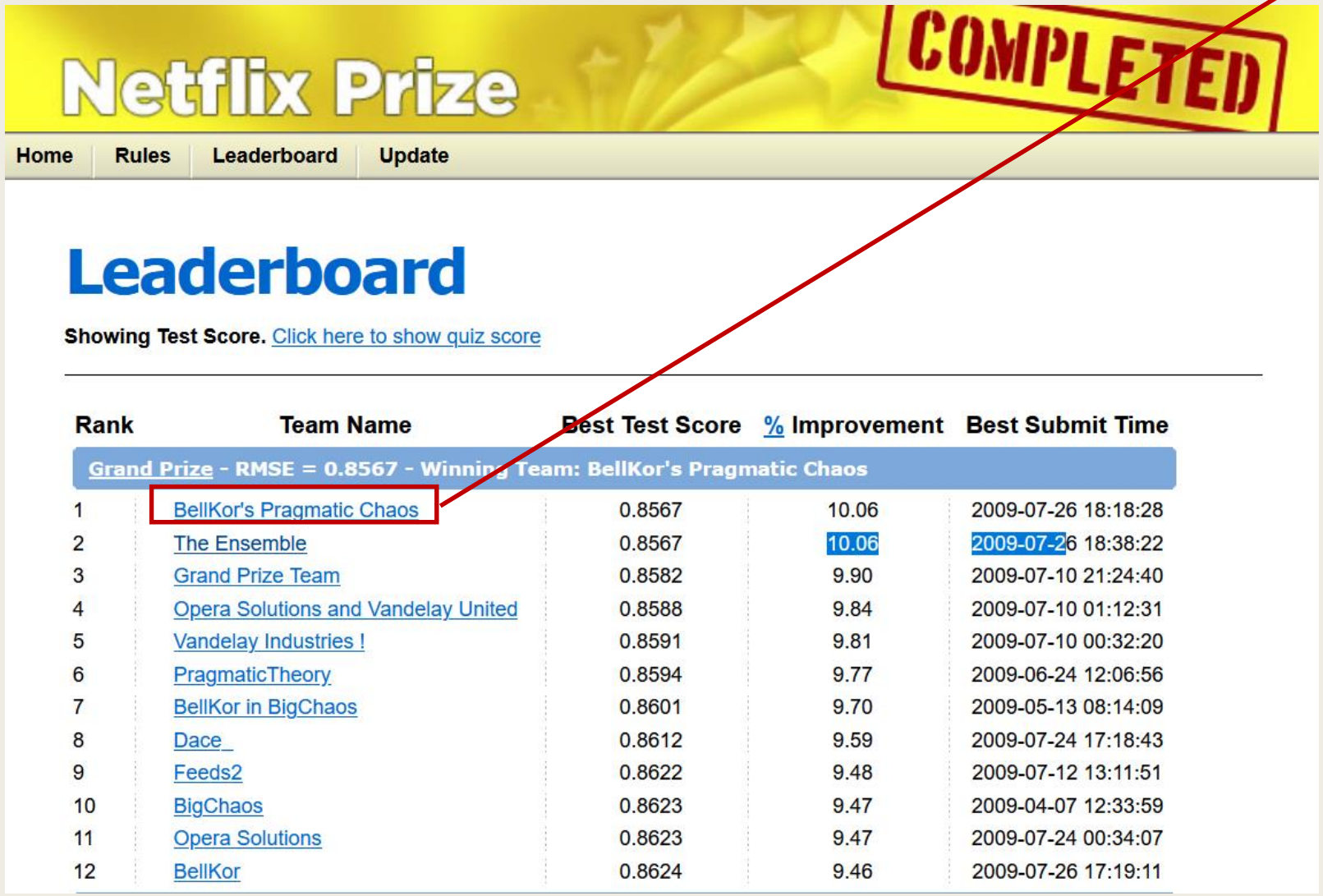
480,189 customers

	Dirty Dancing	Meet the Parents	Top Gun	The Sixth Sense	Catch Me If You	The Royal Tenen	Con Air	Big Fish	The Matrix	A Few Good Men
Customer 1					4					
Customer 2			3				3			3
Customer 3		2		4					2	
Customer 4	3									
Customer 5	5	5			4					
Customer 6						2	4			
Customer 7			5					3		
Customer 8						2				3
Cu										
Cu										

How to predict missing ratings of customers?

Examples of applications

… involved many statistical techniques, of which most important is SVD (Singular Value Decomposition)



Background adequate?

- For Mathematics, students must have level 2 or above in

  HKDSE Extended Module 1 or 2 of Mathematics

  or equivalent

  Otherwise, strongly advised to take

  MATH1011 University Mathematics I

  in Semester 1.

- What do we need from your mathematics

  Set notation and theory; Functions; Sequences, series; Basic calculus; Vectors, matrices.

- For computer science, to enroll in COMP2119, students must also take

  COMP2113 Programming Technologies and Tools

Major in Decision Analytics
vs Major in Statistics / Risk Management

- 8 introductory level courses (1 more than STAT/RM)
  - *COMP1117 Computer programming*
  - *COMP2119 Introduction to data structures & algorithms*

  (instead of STAT1600 Statistics: ideas and concepts)
- 5 Advanced level core courses:

  one common to all 3 majors: *STAT3600 Linear statistical analysis*
- Heavier emphasis on

  COMPUTER SCIENCE + MATHEMATICS
- Students **CANNOT** double major in **Decision Analytics** and

  Statistics, Risk Management, Computing & Data Analytics, Computer Science
- Students **CANNOT** major in **Decision Analytics** and minor in

  Statistics, Computer Science
- The detailed curriculum structure can be found at Faculty website.

BACHELOR OF SCIENCE

Major in *Statistics*
Major in *Decision Analytics*

your attention please…

Reminder

- plan ahead
- watch out for pre-requisites of individual courses
- courses **CANNOT** be double-counted to fulfill different majors/minors

(exception for double major in Science:

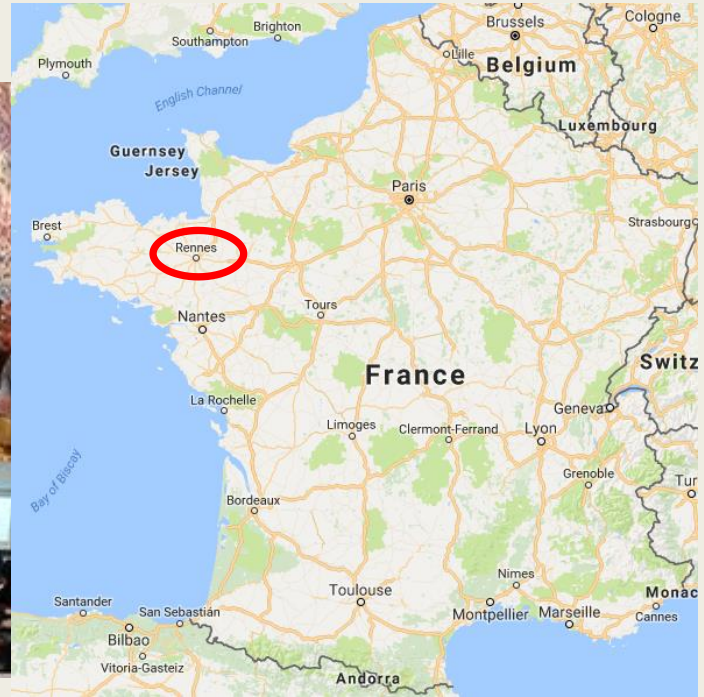
SCNC1111 & SCNC1112 & up to 12 credits of compulsory courses

REQUIRED by both Science majors can be double-counted)

- consult course selection advisors if necessary

ENSAI

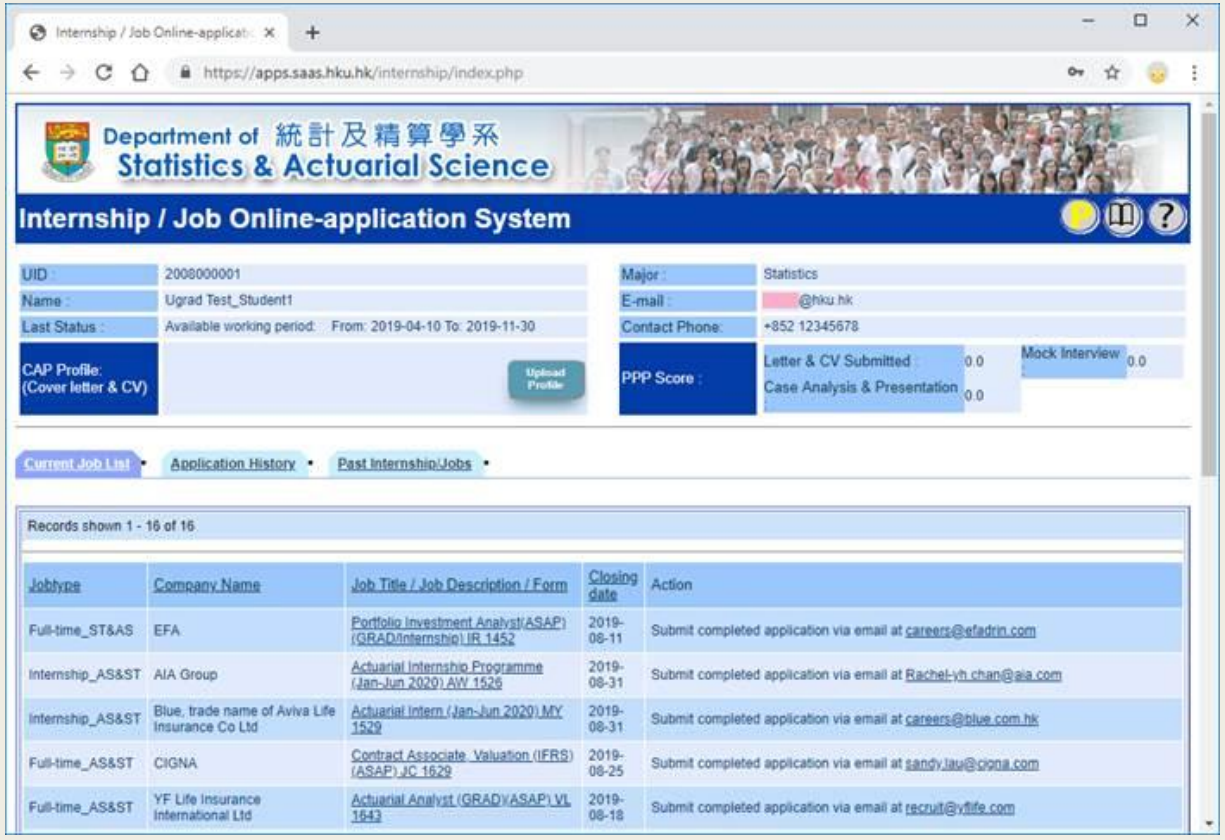
- ☺ Faculty-sponsored 2-week overseas study exchange tour to France
- ☺ National School for Statistics and Data Analysis
  - *Rennes, France*
- ☺ Ecole nationale de la statistique et de l'analyse de l'information (ENSAI in French)



Support from University and Department

- **HKU :** Centre of Development and Resources for Students
  - *NETmatch, NETjobs, JIJIS (Joint Institutions Job Info. System)*
- **Department :** Internship / Job Online Application System

Contact person:
Dr C W KWAN
<cwkwan@hku.hk>

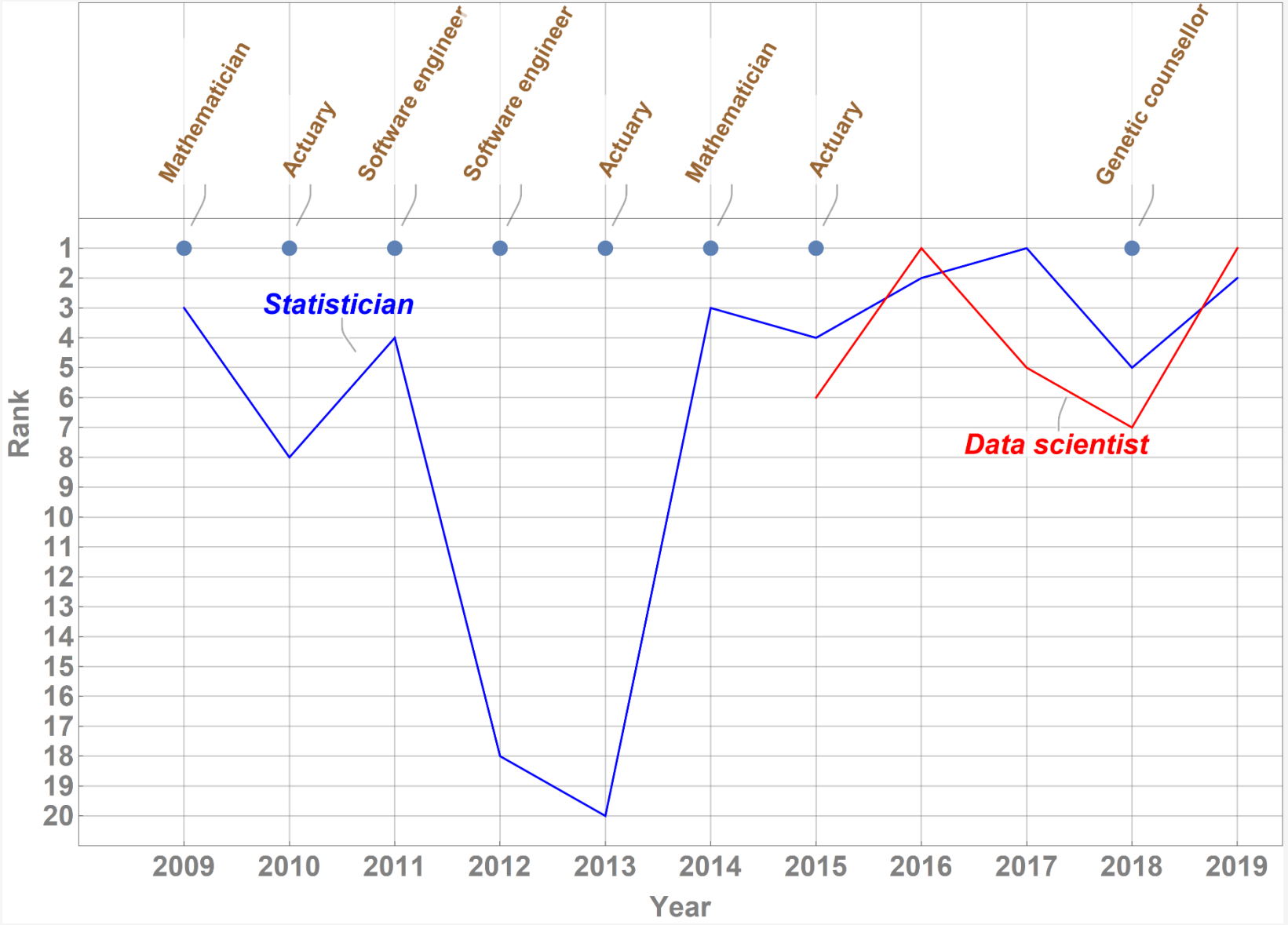


Career Development Training

- **Summer IT course:**
  - *Essential IT skills (certificate course)*
- **Career Advising Programme (CAP) to prepare students for:**
  - *internships and job opportunities*
  - *advancing resume and interview skills*

CAREERCAST

https://www.careercast.com/jobs-rated/2019-jobs-rated-report



Contact Persons

- Co-ordinators
  - *Stephen Lee (Statistics)*
  - *Guodong Li (Decision Analytics)*
- Course Selection Advisors
  - *C W Kwan*
  - *Stephen M S Lee*
  - *K Zhu*
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