



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



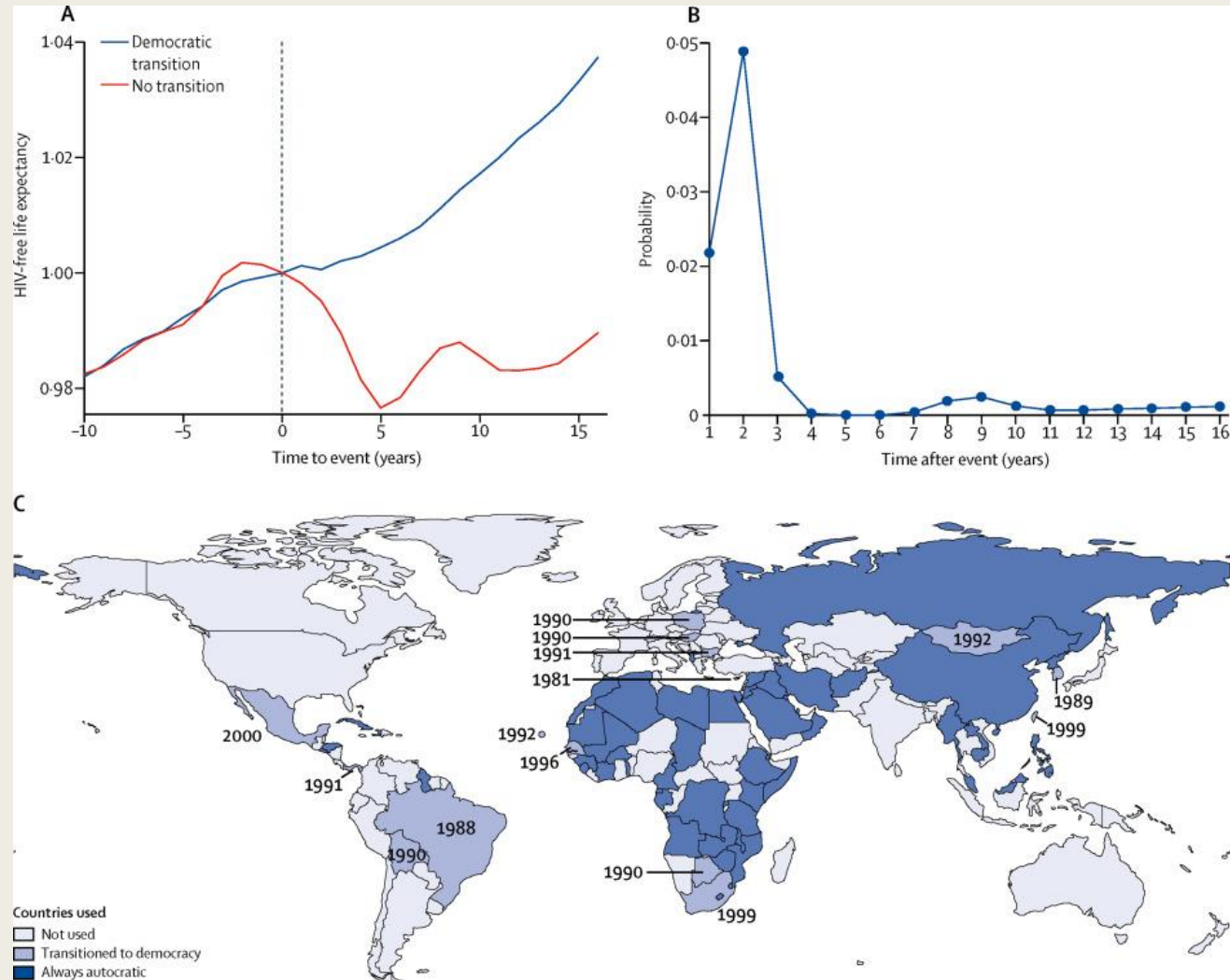
**STATISTICAL
REASONING**



EXAMPLES OF APPLICATIONS

THE LANCET

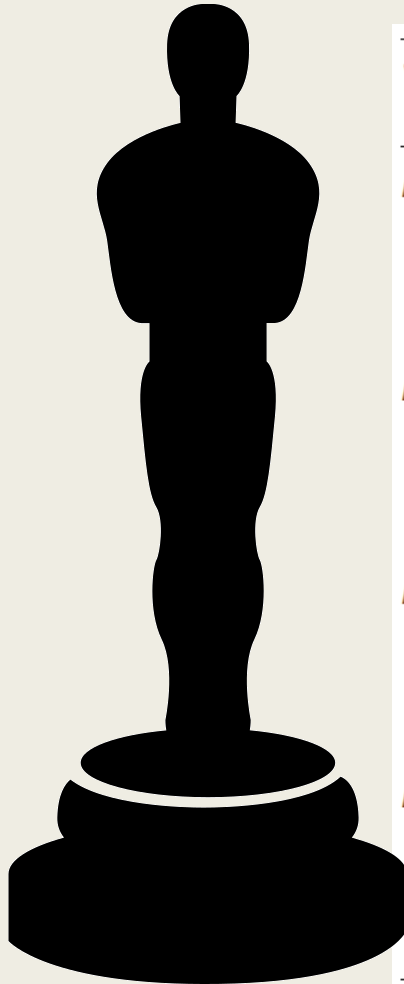
The relationships between democratic experience, adult health, and cause-specific mortality in 170 countries between 1980 and 2016: an observational analysis



Predicting Oscar winners

significance

december2007

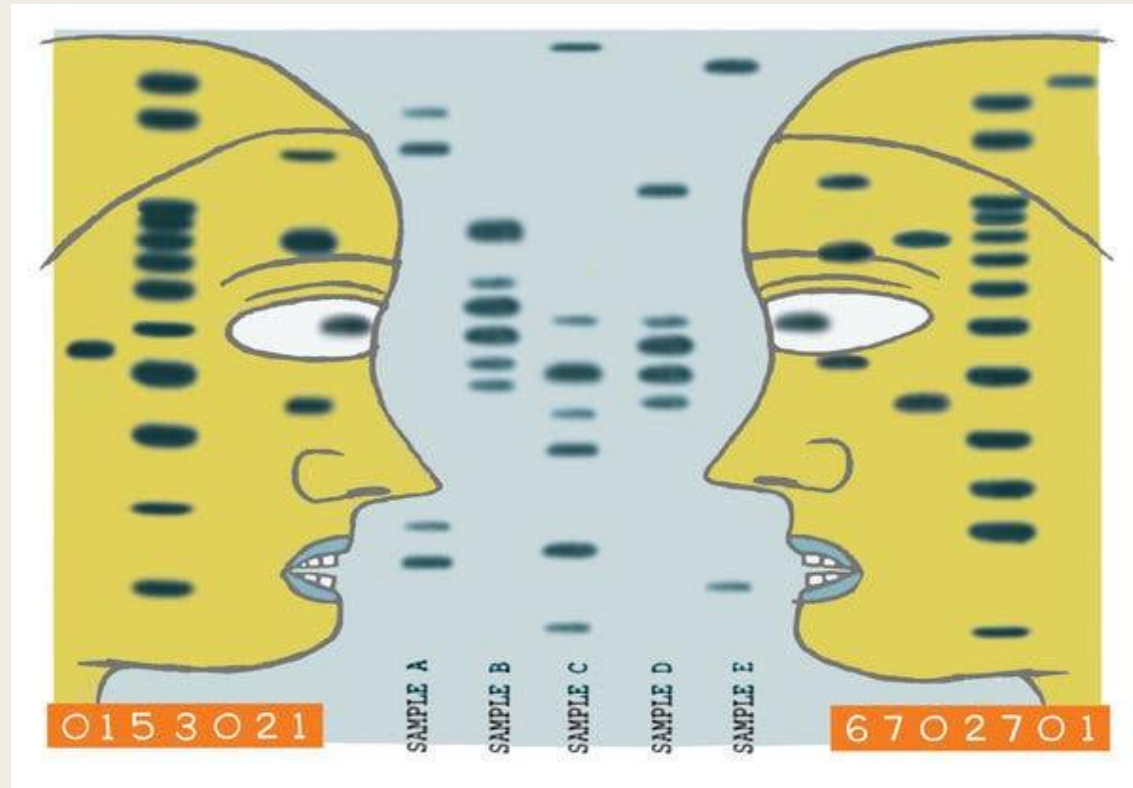


<i>Year</i>	<i>Winner</i>	<i>Probability</i>	<i>Predicted</i>	<i>Probability</i>
<i>Best Picture</i>				
1948	<i>Hamlet</i>	0.01	<i>Johnny Belinda</i>	0.97
2004	<i>Million Dollar Baby</i>	0.01	<i>The Aviator</i>	0.97
1981	<i>Chariots of Fire</i>	0.01	<i>Reds</i>	0.88
<i>Best Director</i>				
2000	Steven 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
<i>Best Actor</i>				
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
<i>Best Actress</i>				
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

The New York Times

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

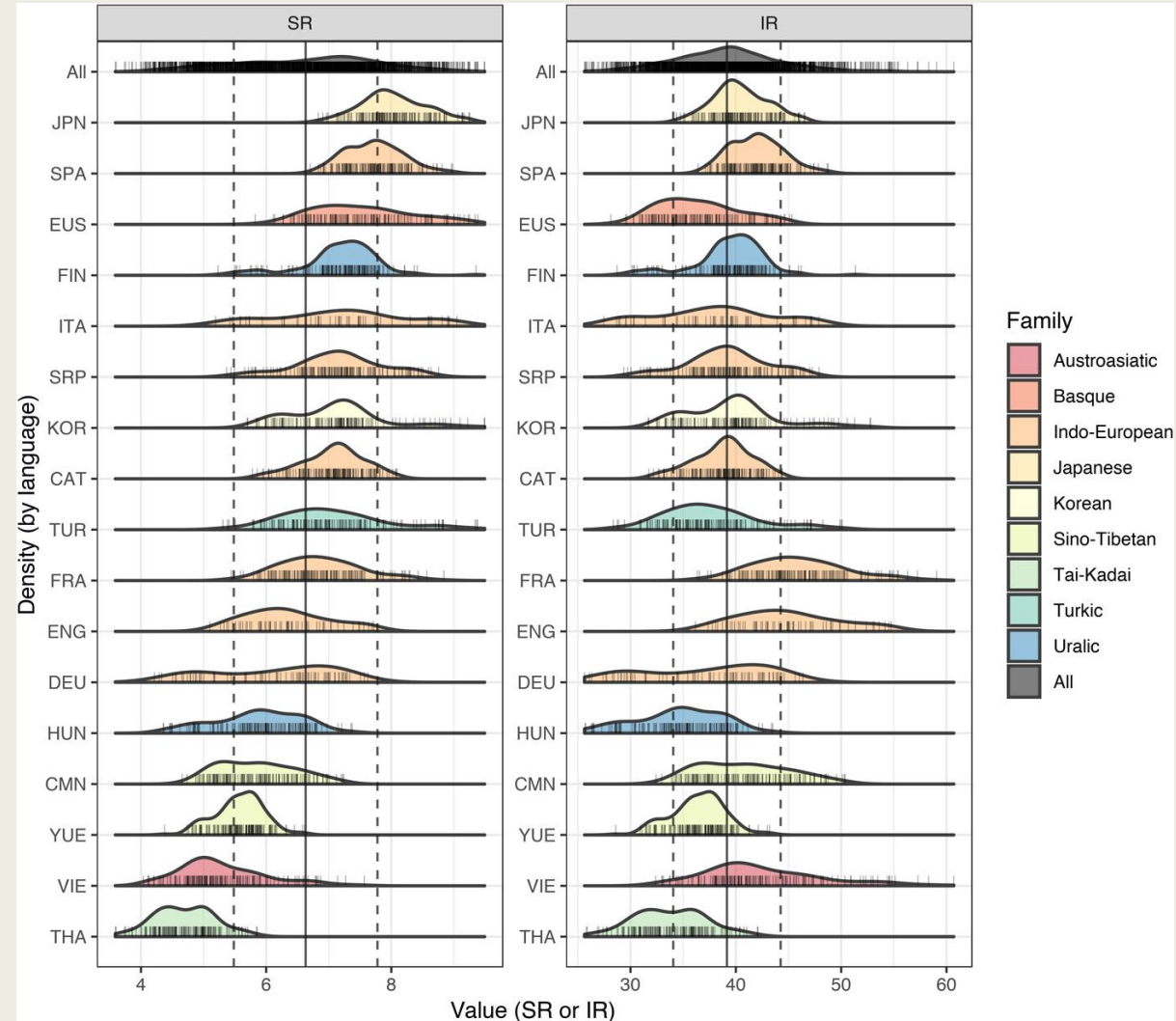
A handful of criminal prosecutions have stalled because DNA tests cannot distinguish between suspects who are twins. Then scientists decided to create one.



EXAMPLES OF APPLICATIONS



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



EXAMPLES OF APPLICATIONS



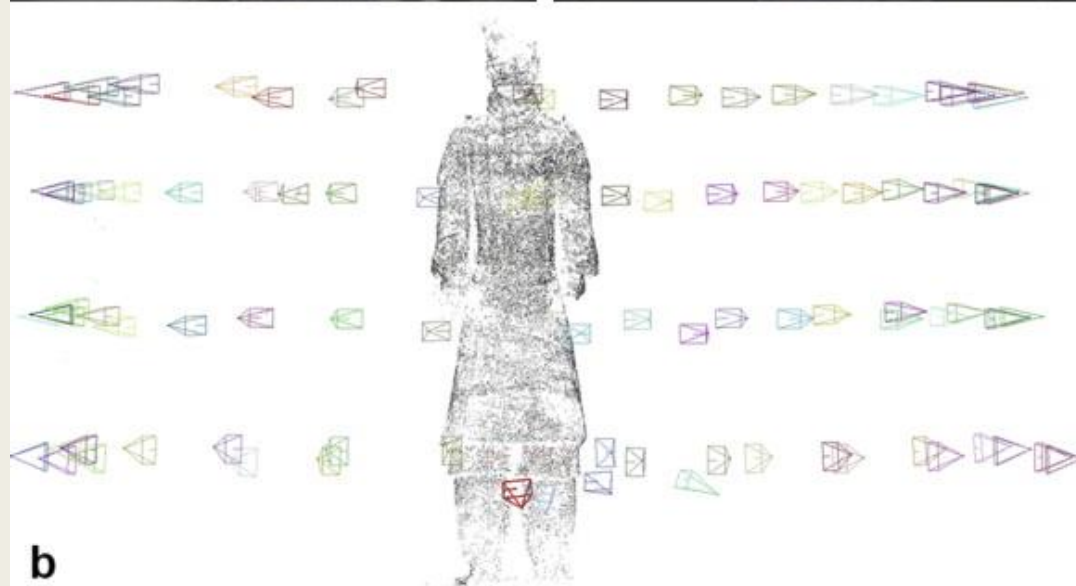
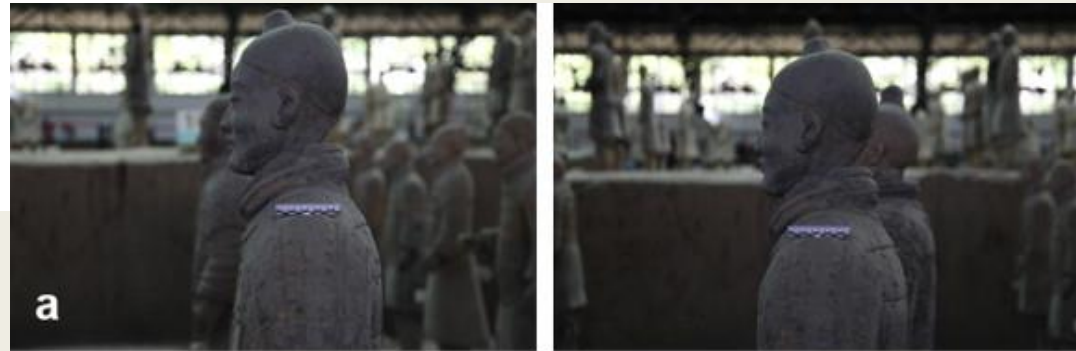
Journal of Archaeological Science

Volume 49, September 2014, Pages 249-254



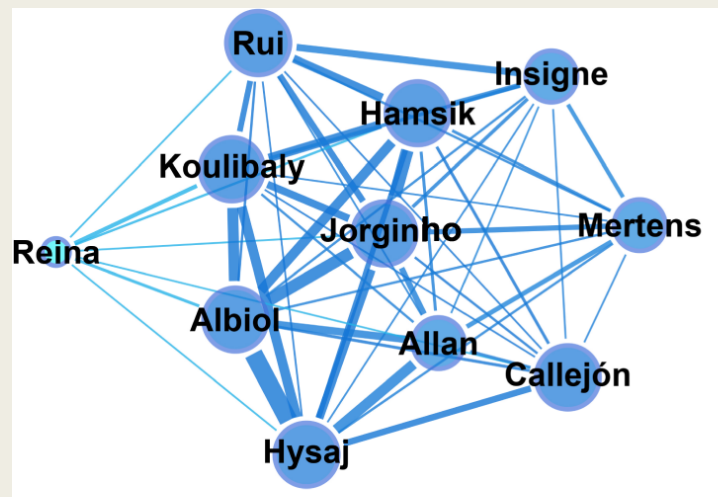
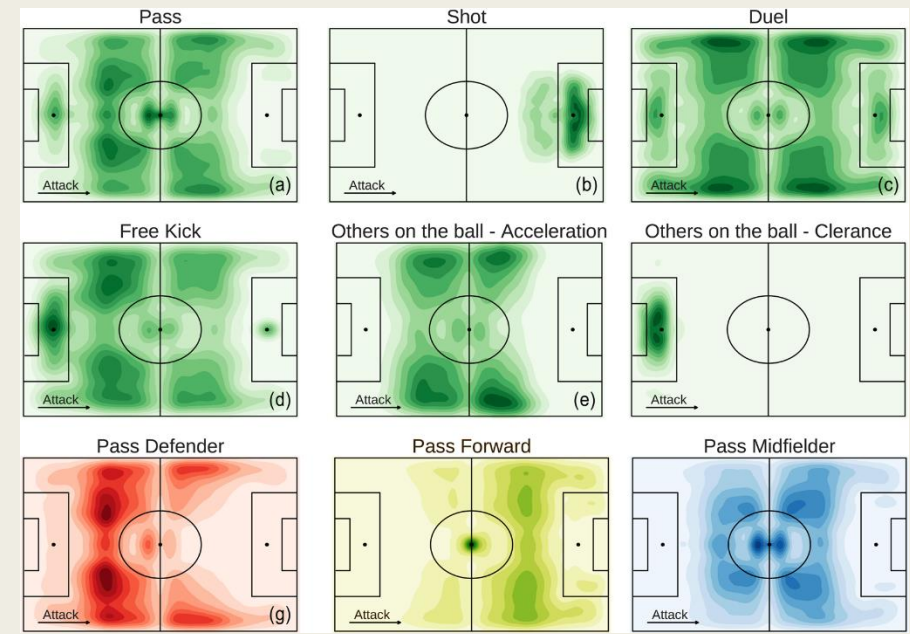
Focus article

Computer vision, archaeological classification and China's terracotta warriors

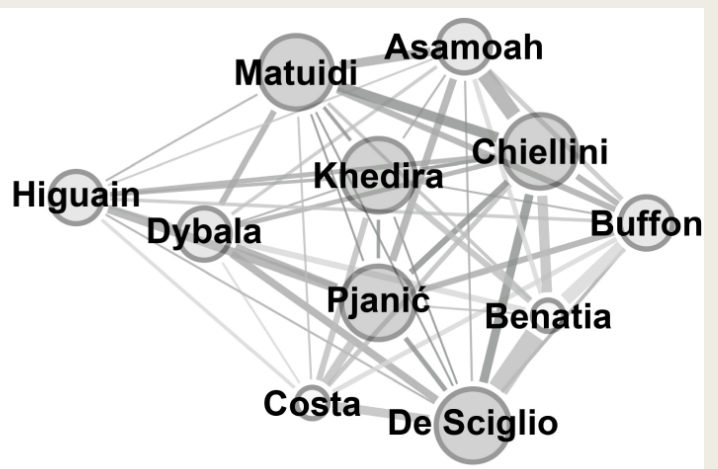


EXAMPLES OF APPLICATIONS

SCIENTIFIC DATA 110110
0111101
1101110
01110101
 A public data set of spatio-temporal match events in soccer competitions



Napoli (0)
 connectivity = 14.74



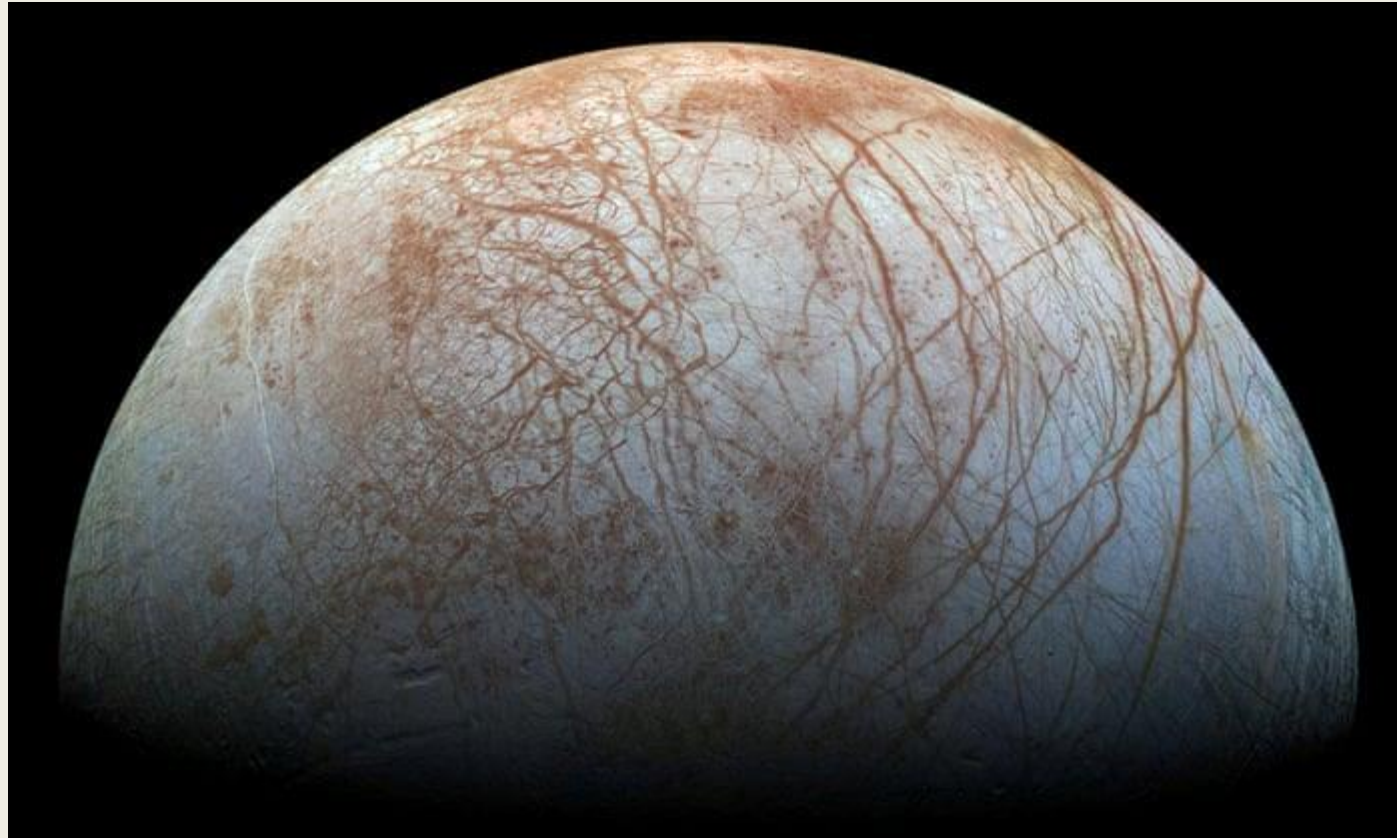
Juventus (1)
 connectivity = 19.89

EXAMPLES OF APPLICATIONS

**The
Guardian**

Aliens may not exist **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



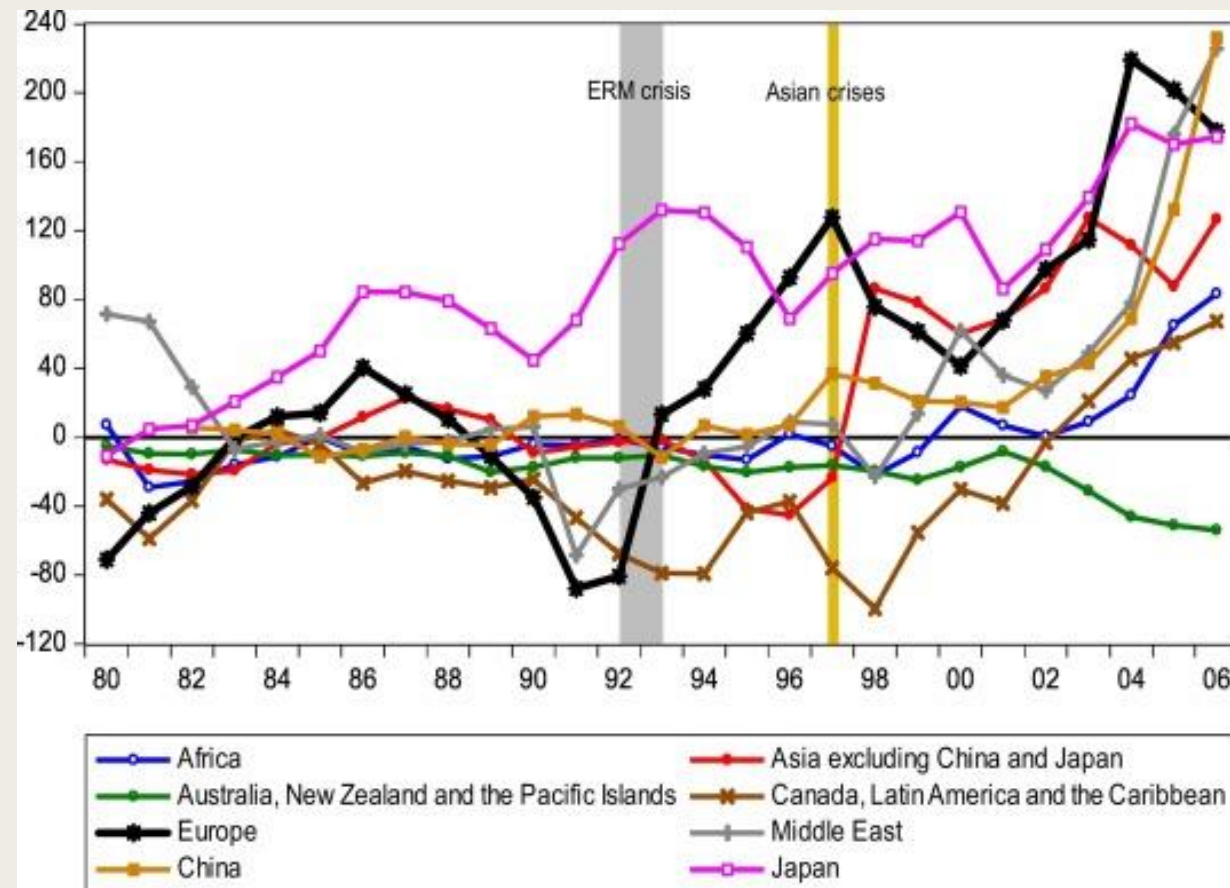
International Review of Financial Analysis

Volume 69, May 2020, 101377



The run-up to the global financial crisis:

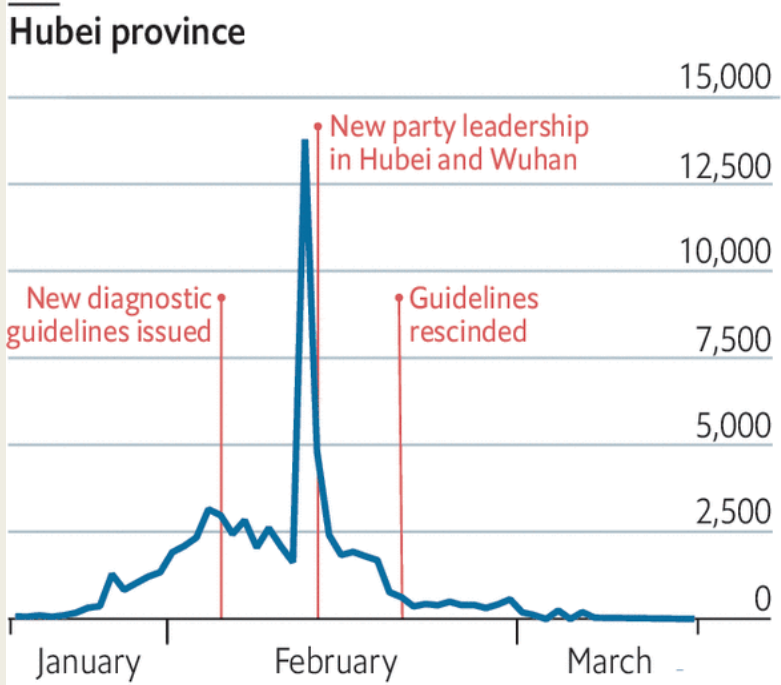
A longer historical view of financial liberalization, capital inflows, and asset bubbles



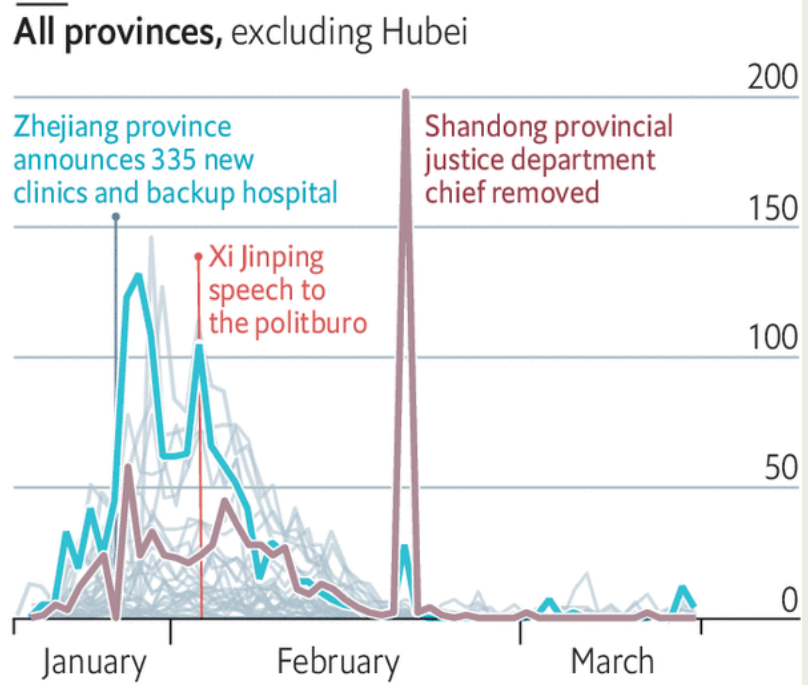
EXAMPLES OF APPLICATIONS

The Economist

Some days are more equal than others? China, covid-19, 2020, new confirmed cases, by day



Source: China's National Health Commission



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>

EXAMPLES OF APPLICATIONS

Netflix movie-rating challenge

Movie-rental company

17,770 movies

Dirty Dancing
Meet the Parents
Top Gun
The Sixth Sense
Catch Me If You Can
The Royal Tenenbaums
Con Air
Big Fish
The Matrix
A Few Good Men

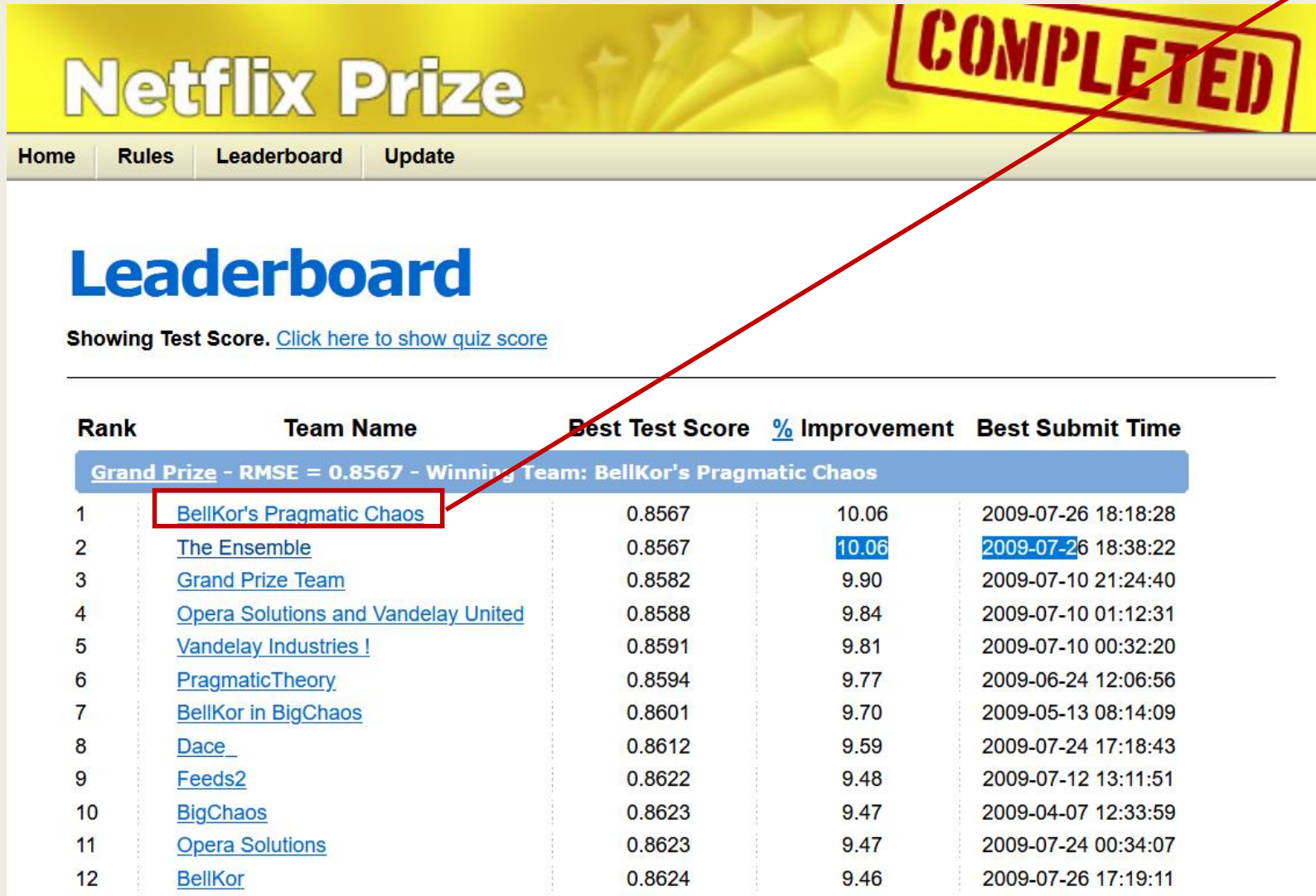
480,189 customers

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

How to predict missing ratings of customers?

EXAMPLES OF APPLICATIONS

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



Netflix Prize

Home Rules Leaderboard Update

Leaderboard

Showing Test Score. [Click here to show quiz score](#)

Rank	Team Name	Best Test Score	% Improvement	Best Submit Time
Grand Prize - RMSE = 0.8567 - Winning Team: BellKor's Pragmatic Chaos				
1	BellKor's Pragmatic Chaos	0.8567	10.06	2009-07-26 18:18:28
2	The Ensemble	0.8567	10.06	2009-07-26 18:38:22
3	Grand Prize Team	0.8582	9.90	2009-07-10 21:24:40
4	Opera Solutions and Vandelay United	0.8588	9.84	2009-07-10 01:12:31
5	Vandelay Industries !	0.8591	9.81	2009-07-10 00:32:20
6	PragmaticTheory	0.8594	9.77	2009-06-24 12:06:56
7	BellKor in BigChaos	0.8601	9.70	2009-05-13 08:14:09
8	Dace_	0.8612	9.59	2009-07-24 17:18:43
9	Feeds2	0.8622	9.48	2009-07-12 13:11:51
10	BigChaos	0.8623	9.47	2009-04-07 12:33:59
11	Opera Solutions	0.8623	9.47	2009-07-24 00:34:07
12	BellKor	0.8624	9.46	2009-07-26 17:19:11

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:

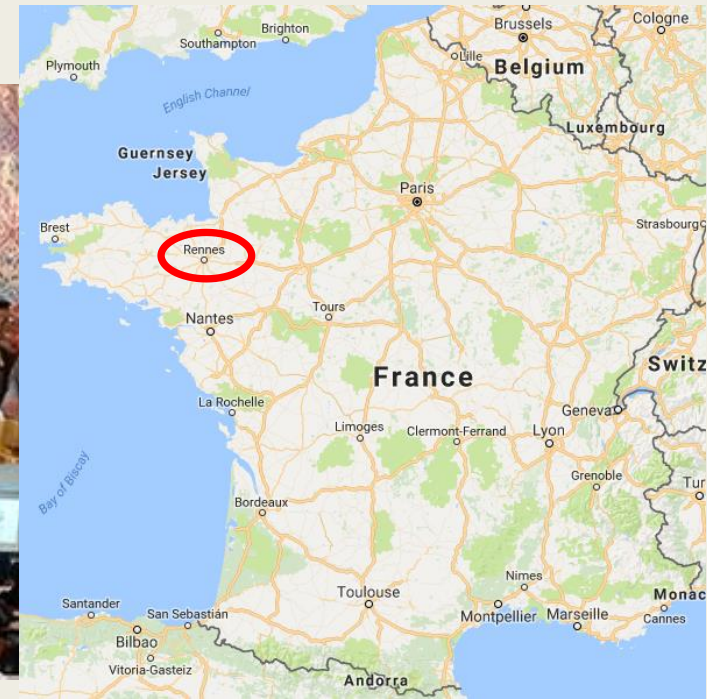
SCNC1111 & SCNC1112 & up to 12 credits of compulsory courses

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, JIIS (Joint Institutions Job Info. System)*
- **Department** : Internship / Job Online Application System

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

The screenshot shows a web browser window with the URL <https://apps.saas.hku.hk/internship/index.php>. The page header includes the Department of Statistics & Actuarial Science logo and a group photo of students. The main content area displays user profile information:

UID	2008000001	Major	Statistics
Name	Ugrad Test_Student1	E-mail	@hku.hk
Last Status	Available working period: From: 2019-04-10 To: 2019-11-30	Contact Phone	+852 12345678
CAP Profile (Cover letter & CV)	<input type="button" value="Upload Profile"/>	PPP Score	Letter & CV Submitted: 0.0 Case Analysis & Presentation: 0.0 Mock Interview: 0.0

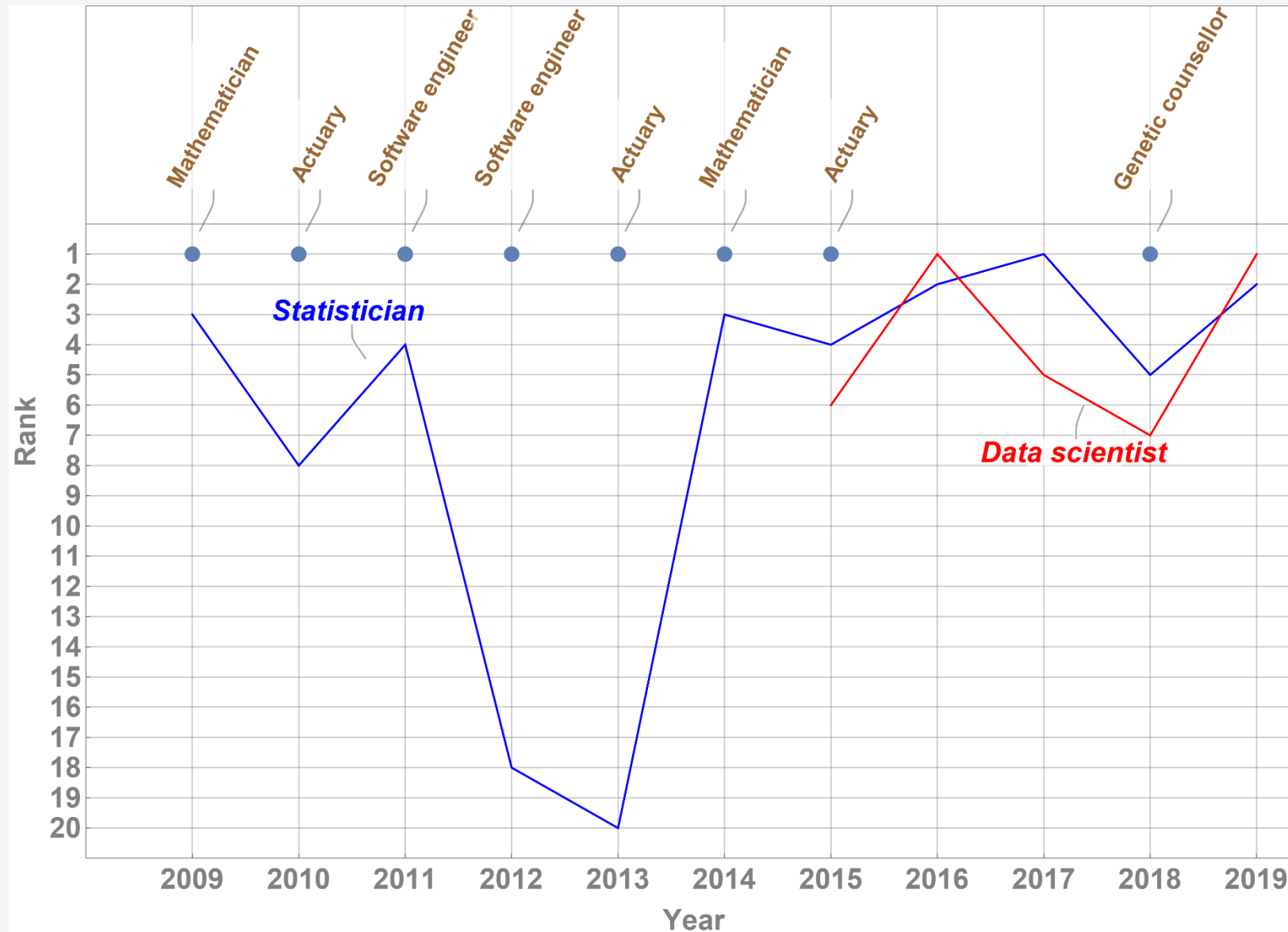
Below the profile information, there are tabs for "Current Job List", "Application History", and "Past Internship/Jobs". The "Current Job List" tab is active, showing a table of job listings:

Jobtype	Company Name	Job Title / Job Description / Form	Closing date	Action
Full-time_ST&AS	EFA	Portfolio Investment Analyst(ASAP)(GRAD/Internship)IR 1452	2019-08-11	Submit completed application via email at careers@efadrin.com
Internship_AS&ST	AIA Group	Actuarial Internship Programme (Jan-Jun 2020)AW 1526	2019-08-31	Submit completed application via email at Rachel-yh.chan@aia.com
Internship_AS&ST	Blue, trade name of Aviva Life Insurance Co Ltd	Actuarial Intern (Jan-Jun 2020)MY 1529	2019-08-31	Submit completed application via email at careers@blue.com.hk
Full-time_AS&ST	CIGNA	Contract Associate - Valuation (IFRS) (ASAP)JC 1629	2019-08-25	Submit completed application via email at sandy.lau@cigna.com
Full-time_AS&ST	YF Life Insurance International Ltd	Actuarial Analyst (GRAD)ASAP\VL 1643	2019-08-18	Submit completed application via email at recruit@yflife.com

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*





Contact Persons

- Co-ordinators
 - *Stephen Lee (Statistics)*
 - *Guodong Li (Decision Analytics)*
- Course Selection Advisors
 - *C W Kwan*
 - *Stephen M S Lee*
 - *K Zhu*
- Tel: 3917 2466
- Email: ug_enquiry@saas.hku.hk