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

### Examples of applications

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Probability</th>
<th>Predicted</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Picture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1948</td>
<td>Hamlet</td>
<td>0.01</td>
<td>Johnny Belinda</td>
<td>0.97</td>
</tr>
<tr>
<td>2004</td>
<td>Million Dollar Baby</td>
<td>0.01</td>
<td>The Aviator</td>
<td>0.97</td>
</tr>
<tr>
<td>1981</td>
<td>Chariots of Fire</td>
<td>0.01</td>
<td>Reds</td>
<td>0.88</td>
</tr>
<tr>
<td>Best Director</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Steven Soderbergh</td>
<td>0.01</td>
<td>Ang Lee</td>
<td>0.95</td>
</tr>
<tr>
<td>1968</td>
<td>Carol Reed</td>
<td>0.02</td>
<td>Anthony Harvey</td>
<td>0.97</td>
</tr>
<tr>
<td>1972</td>
<td>Bob Fosse</td>
<td>0.03</td>
<td>Francis Ford Coppola</td>
<td>0.96</td>
</tr>
<tr>
<td>Best Actor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Denzel Washington</td>
<td>0.00</td>
<td>Russell Crowe</td>
<td>0.99</td>
</tr>
<tr>
<td>1968</td>
<td>Cliff Robertson</td>
<td>0.00</td>
<td>Peter O’Toole</td>
<td>0.88</td>
</tr>
<tr>
<td>1974</td>
<td>Art Carney</td>
<td>0.02</td>
<td>Jack Nicholson</td>
<td>0.87</td>
</tr>
<tr>
<td>Best Actress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>Nicole Kidman</td>
<td>0.07</td>
<td>Renée Zellweger</td>
<td>0.90</td>
</tr>
<tr>
<td>1985</td>
<td>Geraldine Page</td>
<td>0.07</td>
<td>Whoopi Goldberg</td>
<td>0.70</td>
</tr>
<tr>
<td>1950</td>
<td>Judy Holliday</td>
<td>0.09</td>
<td>Gloria Swanson</td>
<td>0.76</td>
</tr>
</tbody>
</table>
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.
Different languages, similar encoding efficiency: Comparable information rates across the human communicative niche.
Examples of applications

Focus article

Computer vision, archaeological classification and China's terracotta warriors
A public data set of spatio-temporal match events in soccer competitions.
Aliens may not exist – but that’s 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.
The run-up to the global financial crisis:
A longer historical view of financial liberalization, capital inflows, and asset bubbles
Some days are more equal than others?
China, covid-19, 2020, new confirmed cases, by day

**Hubei province**

- New party leadership in Hubei and Wuhan: 12,500
- Guidelines rescinded: 7,500
- New diagnostic guidelines issued: 15,000

**All provinces, excluding Hubei**

- Zhejiang province announces 335 new clinics and backup hospital
- Xi Jinping speech to the politburo: 120
- Shandong provincial justice department chief removed: 0

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
  
Major in DECISION ANALYTICS

addresses decisions for modern human...

a desire to make sense of “big data”
### Netflix movie-rating challenge

**Examples of applications**

**Movie-rental company**

<table>
<thead>
<tr>
<th>Dirty Dancing</th>
<th>Meet the Parents</th>
<th>The Sixth Sense</th>
<th>Catch Me If You Can</th>
<th>The Royal Tenenbaums</th>
<th>Con Air</th>
<th>Big Fish</th>
<th>The Matrix</th>
<th>A Few Good Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer 2</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Customer 3</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Customer 4</td>
<td></td>
<td></td>
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<tr>
<td>Customer 5</td>
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<tr>
<td>Customer 6</td>
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<tr>
<td>Customer 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer 8</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

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

- 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: https://webapp.science.hku.hk/sr4/servlet/enquiry?frmid=MenuP
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
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. Eric LI
<internship-job@saas.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*
Contact Persons

■ Co-ordinators & Course Selection Advisers
  – Dr. Ke ZHU (Statistics)
  – Dr. Yuan CAO (Decision Analytics)

■ Credit Transfer
  – Dr. Chen WANG

■ Tel: 3917 2466

■ Email: ug_enquiry@saas.hku.hk