Impact the world with the limitless power of AI
AI History

1950
TURING TEST
Computer scientist Alan Turing proposes a test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence.

1955
A.I. BORN
Turing’s term “artificial intelligence” is coined by computer scientist John McCarthy to describe “the science and engineering of making intelligent machines.”

1961
UNIMATE
First industrial robot, Unimate, goes to work at GM replacing humans on the assembly line.

1964
ELIZA
Pioneering chatbot developed by Joseph Weizenbaum at MIT holds conversations with humans.

1966
SHARKEY
The first electronic person” from Stanford, Shatney, a general-purpose mobile robot that reasons about its own actions.

AI. WINTER
Many false starts and dead-ends leave A.I. out in the cold.

1997
DEEP BLUE
Deep Blue, a chess-playing computer from IBM defeats world chess champion Garry Kasparov.

1998
KISMET
 Cynthia Breazeal at MIT introduces Kismet, an emotionally intelligent robot. It detects and responds to people’s feelings.

1999
AIBO
Sony launches first consumer robot pet dog AIBO (eMōdii) with skills and personality that develop over time.

2002
ROOMEA
First mass-produced autonomous robotic vacuum cleaner from iRobot learns to navigate and clean homes.

2011
SIRI
Apple introduces Siri, an intelligent virtual assistant with a voice interface, into the iPhone 4S.

2011
WATSON
IBM’s question answering computer Watson wins first place on popular $1M prize television quiz show Jeopardy!

2014
EUGENE
Eugene Goostman, a chatbot passes the Turing Test with a third of judges believing Eugene is human.

2014
ALEXA
Amazon launches Alexa, an intelligent virtual assistant with a voice interface that completes shopping tasks.

2016
TAY
Microsoft launches Tay, a chatbot that goes rogue on social media making inflammatory and offensive racist comments.

2017
ALPHA GO
Google A.I. AlphaGo beats world champion Lee Se-Ji in the ancient board game of Go, notable for its zero number (0/3) of possible positions.
Bachelor of Arts and Sciences (Applied AI)

New option for elite students
Formal training to elite students who wish to join the AI profession

Interdisciplinary training
Provides a wide range of courses in mathematics, statistics, computer science, geography, psychology, and urban studies

Interdisciplinary programme co-offered by:

- SHKU Science
- THE UNIVERSITY OF HONG KONG faculty of architecture
- Faculty of Social Sciences, The University of Hong Kong
- Faculty of Engineering, THE UNIVERSITY OF HONG KONG
- Department of Statistics & Actuarial Science
- DEPARTMENT OF MATHEMATICS, The University of Hong Kong
About HKU

2022 QS World University Rankings

#22 World  #5 Asia  #1 HK  HKU

#47 World  #6 Asia  #1 HK  Statistics & OR

#56 World  #12 Asia  #3 HK  Mathematics

#39 World  #9 Asia  #3 HK  Computer Science

#14 World  #4 Asia  #1 HK  Architecture

#10 World  #2 Asia  #1 HK  Geography

#33 World  #3 Asia  #1 HK  Psychology

Big data optimization
Scientific computation
Risk management
Game theory
Financial and actuarial applications
Operational research
High-dimensional data analysis

Statistical learning
Time series forecasting
Speech/NLP/Text analytics
DNA profiling, forensic statistics

Machine/Deep learning
Transportation
Computer vision
Robotics
Information security
GIS
Neuropsychology
Bachelor of Arts and Sciences (Applied AI)

- Highlights **diverse AI applications** with a philosophical and ethical dimension
  - develops intellectual capacity for meeting new challenges

- Nurtures to **transfer interdisciplinary scientific knowledge** into integrated applications and technological innovations

- Emphasizes **problem-based learning**

- Delivers **both fundamental and practical knowledge** to fit into different career settings
Bachelor of Arts and Sciences (Applied AI)

AI Applications

- AI in Business and Finance
- AI in Medicine
- AI in Smart City
- AI in Neurocognitive Science

AI Technology
AI Technology

- Computer Vision
- Natural Language Processing
- High-performance Computing
- Robotics
HKU statisticians develop online diagnostic system for screening COVID-19 with AI technologies based on chest CT dataset

02 Jun 2020
AI in Business and Finance

- Automatic trading
- Robot advisors
- Financial data analytics

Final year projects directed by researchers from the Artificial Intelligence Research Group of the Faculty of Business and Economics, e.g.
Prediction of Stock Returns from Social Media Using Deep Learning
AI in Smart City

Students may work with researchers from the Institute of Transport Studies of HKU
AI in Neurocognitive Science

Understanding your brain

Cognition
- Memory
- Perception

Behaviour
- Brian disorder
- Parkinson's disease
- Alzheimer's disease

Students may work with researchers from Department of Psychology and Faculty of Education.
Curriculum Structure & Course Selection
General Structure

Forty 6-credit courses spanning over 4 years of full-time study

(240 Credits)

UNIVERSITY EDUCATION
Language Courses
Common Core Courses
(36 credits)

2nd MAJOR / MINOR(S) / ELECTIVES
(90 credits)

PROGRAMME CORE
Core Courses
Concentration & Electives
Capstone Course
(96 credits)

BASc HORIZONTAL COURSES
(18 credits)

Remarks:
- Programme Core: MUST take
- 1 course = 6 credits
- 1 semester = 30 credits = 5 courses
- Variations are possible (+ - credits)
- Total number of credits cannot exceed 288 credits
Programme Core Courses  
(96 credits)

Core Courses (66 credits)
- APAI1001 Artificial intelligence: foundation, philosophy and ethics
- COMP1117 Computer programming
- COMP2119 Introduction to data structures & algorithms
- COMP2120 Computer organization
- COMP3340 Applied deep learning
- MATH1013 University mathematics II
- MATH2014 Multivariate calculus and linear algebra
- MATH3904 Introduction to optimization
- STAT2601 Probability and statistics I
- STAT2602 Probability and statistics II
- STAT3612 Statistical machine learning

Programme Core Courses (96 credits)

Concentration (24 credits)
(For fulfilling the requirement of a concentration, students should choose at least 18 credits, with at least 6 credits of which should be at advanced level, from the corresponding list.)

AI technology
- COMP3271 Computer graphics
- COMP3356 Robotics
- APAI3010 Image processing and computer vision
- APAI4011 Natural language processing
- APAI4012 High-performance computing
- APAI4099 Special topics of applied AI

AI in smart city
- GEOG2090 Introduction to geographic information systems
- GEOG3202 GIS in environmental studies
- GEOG3420 Transport and society
- URBST1003 Theories and global trends in urban development
- URBST1005 Urban problems, interventions and design thinking
- APAI4099 Special topics of applied AI

AI in business and finance
- COMP3320 Electronic commerce technology
- MATH3901 Operations research I
- MATH3906 Financial calculus
- STAT3613 Marketing analytics
- STAT4601 Time-series analysis
- APAI4099 Special topics of applied AI

AI in neurocognitive science
- PSYC1001 Introduction to psychology
- PSYC2051 Perception
- PSYC2066 Foundations of cognitive science
- APAI4099 Special topics of applied AI

AI in medicine
- STAT3655 Survival analysis
- STAT4610 Bayesian learning
- APAI3021 Modern biostatistics
- APAI4022 Omics data analysis
- APAI4023 Medical image analysis
- APAI4099 Special topics of applied AI

Other elective courses
- COMP3250 Design and analysis of algorithms
- COMP3278 Introduction to database management systems
- MATH3601 Numerical analysis
- MATH3911 Game theory and strategy
- MATH3943 Network models in operations research
- STAT3600 Linear statistical analysis
- STAT3822 Data visualization
- STAT4602 Multivariate data analysis

Capstone Requirement (6 credits)
At least 6 credits selected from the following courses: (If students take the 12-credit “Applied AI project”, they do not need to take a 6-credit elective course.)
- APAI3799 Directed studies in applied AI
- APAI4766 Applied AI internship
- APAI4798 Applied AI project (12-credit)

*The curriculum and course offering are subject to changes. Each course is 6-credit bearing unless otherwise stated.
BASc HORIZONTAL COURSES

(18 credits)

★ DESN9001 Leadership Beyond Borders
★ BASC9001 Foundations of Human Knowledge
★ STAT1005 Foundation of Data Science

- Multidisciplinary training in leadership, design thinking
- Introduction to foundations of human knowledge and data science
- Networking with fellow students from other BASc programmes
### Suggested / Example Structure of BASc(AppliedAI) Curriculum

*(for students admitted in 2022)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>One</td>
<td>Two</td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>Disciplinary Core</td>
<td></td>
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</tr>
<tr>
<td>APAI1001</td>
<td>Artificial Intelligence: Foundation, Philosophy and Ethics</td>
<td>MATH2014</td>
<td>Multivariable Calculus and Linear Algebra</td>
<td>COMP2119</td>
<td>Introduction to Data Structures and Algorithms</td>
</tr>
<tr>
<td>MATH1013</td>
<td>University Mathematics II</td>
<td>COMP2113</td>
<td>Programming Technologies (Pre-requisite of COMP2119)</td>
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<tr>
<td>Other</td>
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<tr>
<td>BASc Core (in purple font) and Disciplinary Elective (in deep blue font)</td>
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<tr>
<td>STAT1005</td>
<td>Essential skills for undergraduates: foundations of data science (admission: 2020 and thereafter)</td>
<td>BASC9001</td>
<td>Foundations of Human Knowledge</td>
<td>DESN9002</td>
<td>Sustainable Leadership (admission: 2020 and thereafter)</td>
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<tr>
<td>AI Technology (List A1)</td>
<td></td>
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</tr>
<tr>
<td>COMP3271</td>
<td>Computer Graphics</td>
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<tr>
<td>COMP3356</td>
<td>Robotics</td>
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<tr>
<td>APAI3010</td>
<td>Image Processing and Computer Vision</td>
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<tr>
<td>APAI4011</td>
<td>Natural Language Processing</td>
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<tr>
<td>APAI4012</td>
<td>High-Performance Computing</td>
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<tr>
<td>APAI4099</td>
<td>Special Topics of Applied AI</td>
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<tr>
<td>AI in Business and Finance (List A2)</td>
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<tr>
<td>COMP3320</td>
<td>Electronic Commerce Technology</td>
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<tr>
<td>MATH3901</td>
<td>Operations Research I</td>
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<tr>
<td>MATH3906</td>
<td>Financial Calculus</td>
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<tr>
<td>STAT3613</td>
<td>Marketing Analytics</td>
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<tr>
<td>STAT4601</td>
<td>Time Series Analysis</td>
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<td></td>
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<tr>
<td>APAI4099</td>
<td>Special Topics of Applied AI</td>
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<tr>
<td>AI in Medicine (List A3)</td>
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</tbody>
</table>

*(Co-requisite/Pre-requisite of STAT3612)* *(available in both semesters)*
Career prospects

The programme connects the exploding demand of the AI market in diverse areas, such as:

• Science & technology
• Environmental protection
• Medical informatics
• Healthcare
• Business
• Banking & finance
• Urban development
• Neurocognitive science
Career Support and Activities

• Centre of Development and Resources for Students (CEDARS) (www.cedars.hku.hk)
• Departmental Internship/Job Online-application System
• Career Advising Programme (CAP)
  - ☺ Professional Preparation Programme (PPP)
  - ☺ Individual consultation on cover letter, CV and interview skills
  - ☺ Corporate Mentorship Programme (CMP)
  - ☺ Market information workshop
  - ☺ Firm visits and alumni sharing
  - ☺ SAAS Career Fair
Support for internships
Partner with Industrial Leaders
(in year 3 or year 4)
Admissions Requirements
Admissions Requirements – JUPAS applicants

Minimum Programme Entrance Requirements:

<table>
<thead>
<tr>
<th>English Language</th>
<th>Chinese Language</th>
<th>Mathematics</th>
<th>Liberal Studies</th>
<th>Elective subjects</th>
<th>Extended Module 1 or 2 in Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 4*</td>
<td>Level 3</td>
<td>Level 4</td>
<td>Level 2</td>
<td>Level 3 (one subject)</td>
<td>Level 4</td>
</tr>
</tbody>
</table>

*Candidates with level 4 in English Language, if admitted, will be required to take 6 additional credits in Core University English to complete their degree studies.

Selection principle: BEST 5

- English Language \( \times 2 \)
- Mathematics \( \times 2 \)
- M1 or M2 \( \times 2 \)
- The BEST 2 of remaining Category A Subjects

\(^\text{Subject Weighting(s): 1.5 x Biology / Chemistry / Physics / Combined Science / Integrated Science / Information and Communication Technology}\)

2022 JUPAS Admissions Score:
Total score of Best 5 with M1/M2 28 ~ 38

HKDSE 'level to score' conversion

<table>
<thead>
<tr>
<th>Level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>5*</th>
<th>5**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5.5</td>
<td>7</td>
<td>8.5</td>
</tr>
</tbody>
</table>

2023 Admissions Quota 15
<table>
<thead>
<tr>
<th>HKDSE Examination Results in one-sitting (total score in best 5 subjects in Category A or Extended Module 1 or Module 2 of Mathematics)</th>
<th>Scholarship Amount (HK$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score = 42.5</td>
<td>$70,000</td>
</tr>
<tr>
<td>Score ≥ 41</td>
<td>$60,000</td>
</tr>
<tr>
<td>Score ≥ 39</td>
<td>$50,000</td>
</tr>
<tr>
<td>Score ≥ 37</td>
<td>$40,000</td>
</tr>
<tr>
<td>Score ≥ 35</td>
<td>$20,000</td>
</tr>
<tr>
<td>Score &lt; 35 with 5** in at least 2 subjects from Biology/ Chemistry/ Physics/ Combined Science/ Mathematics/ M1/ M2</td>
<td>$10,000</td>
</tr>
</tbody>
</table>
Bachelor of Arts and Sciences (Applied AI)

2022 Admissions Statistics – Non-JUPAS

**GCEAL**
Lowest admissions score
3A*

**IB**
Lowest admissions score
39
Who’s who?

Programme Co-Directors

Dr. Lequan Yu (Statistics, RRS 226)
Prof. Patrick NG (Mathematics, RRS 424)
Prof. Yizhou YU (CS Coordinator)

Course Selection / Internship Advisers

Dr. Kai HAN (RRS 220)
Dr. Adela LAU (RRS 226)
Dr. Zheng QU (RRS 419)

Administration
General Office (RRS, 3rd floor)
Department of Statistics & Actuarial Science