Artificial Intelligence:
Systems and Technologies
(JS4468 / AISTN)
Agenda

1. Introduction of our Department
2. Introduction of AIST Programme
3. Admission Requirements
4. Curriculum Structure
5. FAQ
Department of Computer Science and Engineering
Let’s take a look at our Department

https://www.youtube.com/watch?v=yREmhIlWI80
A Long History

• The first computer science department in HK
• Offering **AIST, CDAS, CENG** and **CSCI** programmes
• A strong alumni network

![Timeline with key events]

- **1968**: CS department established
- **1973**: Offered courses
- **1978**: CS minor
- **1983**: CS major
- **1991**: CSCI accredited
- **2019**: CENG
- **2022**: CDAS

**AIST – First AI prog in HK**
Our Undergraduate Programmes

Department of Computer Science and Engineering (CSE)

- Artificial Intelligence: Systems and Technologies (AIST)
- Computer Science and Engineering (BCSE) (Foundation 1st year)
- Computational Data Science (CDAS) (Joint Programme with Department of Statistics)

- Computer Engineering (CENG)
- Computer Science (CSCI)
Excellent Teaching and Research Team

- 2021 Kyoto Prize Laureate and Turing Award Recipient
  Prof. Andrew Yao

- 7 ACM Fellows
  Prof. Benjamin Wah, Prof. John Lui, etc.

- 13 IEEE Fellows
  Prof. Irwin King, Prof. Evangeline Young, Prof. Yufei Tao, etc.

- 2022 IEEE CEDA Ernest S. Kuh Early Career Award
  Prof. Bei Yu

- Hong Kong Academy of Engineering Sciences Fellows 2021
  Prof. Michael Lyu

- InnoStars Award 2021
  Prof. Jiaya Jia

- Forbes 30 Under 30 Asia (Healthcare & Science Category) – Class of 2022
  Prof. Yu Li

- Distinguished Fellow of the Hong Kong Computer Society 2022
  Prof. Jimmy Lee
US News and World Report: Best Universities in Artificial Intelligence 2022-2023
#1 in Hong Kong
#3 Globally

US News and World Report: Best Universities in Computer Science 2022-2023
#1 in Hong Kong
#10 Globally
Strong Alumni Network

**IT Industry**
- Microsoft
- Google
- Apple
- IBM
- NOKIA
- amazon.com
- facebook

**Education**
- CityU
- National University of Singapore
- Carnegie Mellon University
- Georgia Tech

**Banking**
- HSBC
- citibank
- Morgan Stanley
- Deutsche Bank
- Goldman Sachs
The special thing about AIST programme is the learning experience which has been eye-opening. I can get to build a **solid foundation** on not only the **problem-solving mindset**, but also **fundamental knowledge** such as calculus and statistics. Although some may find them difficult, they are valuable tools that will help distinguish me from the non-engineering counterparts.
Sharing from our AIST Alumni

Long Him CHIU, AIST 2023 Graduate

Thanks to the invaluable connections and knowledge I have gained at CUHK, I have been able to apply my academic expertise in AIST to successfully launch and operate my own startup with some CSE friends I met in the programme. This university has played a pivotal role in shaping my career path and created opportunities for personal growth. With support from CUHK, we have been able to transform our aspirations into reality. I will be forever grateful for the transformative experience and lifelong connections I have gained during my time at CUHK.
Recent Achievements in Intl’/Local Competitions

**Championship in**
Robocon Hong Kong Contest 2022

**Hong Kong Computer Society**
**Student Sponsorship 2022**

**First Prize** in the Cloud Track of the
Huawei ICT Competition
Industrial Visits

• Visit to companies to learn latest development in industry
Work-Study Scheme

- One-year placement and internship for students to gain practical experience in a real working environment

Example of Previous Opportunities in CSE

- Google
- Microsoft
- HP
- HSBC
- 恒生銀行 HANG SENG BANK
- Sun Hung Kai Properties
- ASM Pacific Technology
- HKSTP
- FUJITSU
What’s More?

• Chances to **create your own project and innovation** with support and advice from CSE teachers

• **Exchange opportunities** to world-class universities

• **High competitiveness** in job market with **90%** of CSE graduates employed within one month of graduation

• CSE teachers usually have the **highest teaching evaluation scores**
Artificial Intelligence: Systems & Technologies (AIST) Programme
‘With the omnipresence and power of AI clearly in sight and within our reach, how should humans co-exist and manage this new “being” as a benevolent partner? This is particularly relevant to Hong Kong as it is actively striving for the advancement of Innovation and Technology.’

- Prof. Rocky S. TUAN, Vice-Chancellor and President of CUHK

AI is transforming the way we live!!!

Many disciplines are changing

A – Automotive
B – Bioscience
C – Creative Services
D – Data
E – Education
F – Finance
G – Gaming (note: G may also mean Government)
H – Healthcare
I – Internet of Things

AI in Automobile

Computer vision enables

• Road line detection
• Traffic sign recognition
• Vehicle / pedestrian detection
• ...

Reference: KITTI dataset
http://www.cvlibs.net/datasets/kitti/eval_object.php?obj_benchmark=3d
AI in Bioscience

Prof. P.-A. Heng

Prof. Dou Qi

Reference:
https://cutt.ly/xEYdPYC (2019年5月10日明報大學道專題)
AI in Creative Services

AI removes & auto-fills word balloon in manga

References:
https://hk.on.cc/hk/bkn/cnt/aeanews/20200208/bkn-20200208180001681-0208_00912_001.html
http://www.cse.cuhk.edu.hk/~ttwong/papers/mangainpaint/mangainpaint.html
AI in Data

AI can help find insights in data, e.g., social media data, and relate different kinds of data.

Can we predict a series of key phrases for a social media post with both texts and images?

Reference:
https://www.cse.cuhk.edu.hk/lyu/students/phd
AI in Finance

How Machine Learning and AI are Transforming Finance Industry

By Xinbao Financial News on August 22, 2020

September 22, 2021 1:38 PM UTC, FinanceFeeds Editorial Team

Thanks to the wealth of data that are increasingly available to banks and the general public, sophisticated algorithms are enabling improved processes in many areas of finance.

A subfield of artificial intelligence (AI), machine learning (ML) enables systems to learn and improve independently without the need for explicit programming or human involvement. But ML only works when it has access to enormous volumes of data, allowing

References:
http://startupbeat.hkej.com/?p=91478
http://startupbeat.hkej.com/?p=91478

【金融科技】本港虛銀：AI及數據應用成發展關鍵 港具地理優勢

文章日期：2020年1月14日 14:16

本港8家虛擬銀行昨傍晚開業，當中多家虛銀高層今日出席亞洲金融論壇分享行業的發展看法。平安雲商銀銀行行政總裁湯羅鴻銘表示，人工智能（AI）已推動銀行業的整體發展，例如Chatbox（聊天機器人）、識音機器人等。未來虛銀將致力加强有關應用，又指香港具有鄰近內地的地理優勢，有利於兩地的人才交流與人才引入。

銀行業在人工智能應用上面對困難，包括相關人才不足及監管環境不斷轉變等因素（資料圖片）

金融科技為近年發展大趨勢，金管局旗下金融學院的香港貨幣及金融研究中心今日發表研究報告，80%受訪銀行表示，計劃在未來5年內增加對人工智能的風險管理和提升客戶體驗為最大原因。
AI in Gaming

Some games start to use AI:
• To bring non-player characters (NPC) to life
• To adapt to each player’s gameplay
• To create stronger AI players, e.g., E-sport in Starcraft II (not only chess games)
• To create a more dynamic virtual world

References:
https://www.nature.com/articles/d41586-019-03630-0
https://www.nature.com/articles/d41586-019-03298-6
AI in Healthcare

- Radiology
- Imaging
- Disease Diagnosis
- Telehealth
- Electronic Health Records
- Drug Interactions
- Creation of New Drugs

Reference: https://inews.hket.com/article/2572760/


Prof. Dou Qi
Growing Demand and Opportunities

• Many industries are now looking for the use and advancement of **AI to boost up the work efficiency**
  » Opportunities for you to **innovate and change the world**!

• Many other possible occupations
  » AI Specialist
  » Data Scientist
  » Software Developer
  » Computer Engineer
  » R&D for AI
  » ...
Growing Demand and Opportunities

Due to the pandemic:

- workers going remote
- companies turning to e-commerce to survive,
- organizations needing to be more digitally agile

- Engineering is the fastest-growing field in the world
- 24 of 28 countries listed data engineer among its fastest-growing careers

Linkedin: The Fastest-Growing Jobs Around the World in 2023
(https://www.linkedin.com/business/talent/blog/talent-acquisition/fastest-growing-jobs-2023)
Growing Demand and Opportunities

- Hong Kong’s start-up ecosystem is thriving. In 2022, the number of start-ups in Hong Kong grew by 6% to 3,985, employing nearly 15,000 people.
- Biotechnology, artificial intelligence, smart city and financial technologies were identified as the four key areas for Hong Kong’s innovation and technology industry.
- Hong Kong’s innovation and technology sector together with that of Shenzhen and Guangzhou – the Shenzhen-Hong Kong-Guangzhou science and technology cluster – ranks as the world’s second performing according to the Global Innovation Index 2023.

Industry Data

<table>
<thead>
<tr>
<th>Global Rankings</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Innovation Index</td>
<td>11/131</td>
<td>14/132</td>
<td>14/132</td>
<td>17/132</td>
</tr>
<tr>
<td>IMD Digital Competitiveness</td>
<td>5/63</td>
<td>2/64</td>
<td>9/63</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: Global Innovation Index Reports; IMD World Competitiveness Centre

Reference: https://research.hktdc.com/en/article/MzEzOTIwMDIy
Programme Objective

• Equip students with the **capabilities of building AI systems** that can analyze and infer knowledge from massive information

• Backed by **rigorous foundations** like data structures, statistics, machine learning and distributed computing

• Emphasize solid trainings on
  » **Mathematical analysis** and reasoning on massive data
  » **Large-scale system design and implementation** for processing massive data
Special Features

• 1st Bachelor of Engineering programme in AI in Hong Kong

• 4 specialized streams
  » Biomedical Intelligence
  » Intelligent Multimedia Processing
  » Large-scale Artificial Intelligence
    – Theory and Systems
  » Intelligent Manufacturing and Robotics
Mission

- **Enable students to develop cutting-edge AI solutions** that are of practical interest to academics, industry, and society

- **Nurture local talents in AI related applications** to meet today’s tremendous need of well-trained talents in AI and related specializations
中大計算機科學與工程學系
科技知識培養人才　推動香港人工智能發展

人工智能（AI）發展一日千里，本年政府更大力推動有關AI科技的項目，可見此已成為现今科技的大趨勢，社會對相關人才亦相當渴求。因此，香港中文大學（中大）開辦了「人工智能：系統與科技」工程學士課程，教授學生基礎知識、創新及可靠的AI解決方案，以及與道德和社會相關的AI問題等，培養學生應該各種有關AI挑戰的專才，以應付社會對AI人才的需求。

中大計算機科學與工程學系主任金國慶教授表示，香港是金融中心及智慧城市，今年香港貿易發展局更在生物科技、AI、金融科技、智慧城市等四大領域推行了發展，所以，可見AI對香港而言，是非常重要的科技發展。加上近年AI在不同層面上的應用不斷增加，社會對AI人才的需求殷切，很多相關的工作與政府或大型企業都有密切關係，它的前景非常廣闊。

因此，為配合社會需要，中大在兩年前開辦了「人工智能：系統與科技」工程學士課程，以培養學生掌握人工智能的知識，從而培育更多AI方面的人才。雖然其他大學亦有開辦類似的課程，但金國慶教授指出，中大這個課程非常獨特，有別於其他大學開辦的課程，這課程的全部科目，例如：數學、工程，還有電腦編程等，基本專業知識都集中在工程學院內學習，非常重視有志成為科學家及工程師等的人士。

課程除了培養學生具備設計和操作人工智能系統和技術的能力，藉著數學、基礎科學、數據結構、統計學、分佈式計算等基礎，從大量信息中分析、推理及推斷知識。培養學生掌握當今人工智能和相關產業領域的十大基礎

學生因應興趣 選讀四大專科範疇

在「智能生物醫學」範疇，學生可在生物醫學上學習應用AI技術，例如探索生物心臟跳動、攝脈搏等方式各式各樣的醫學工作；而「智能多媒體處理」範疇，則讓學生能運用AI在影視、音樂及其他多媒體上進行智能處理，例如將某個人的相片或錄音轉換成另一個人，或者透過AI換裝、文獻，甚至對文章作出分析等。

「大規模人工智能—理論與系統」範疇主要教授學生AI理論與系統上的學問，由於現在AI技術發展愈來愈普及，人們很多時需要AI提供更快及更精確的工作，例如5年內才應用到大數據，當時使用了更強大的CPU/GPU及電腦處理，不用擔心某個AI技術，解決這個問題；最後是「智能製造與機器人學」範疇，AI系統結合機器人，希望可以製造的機器人不只能動，還能看、聽、說，以及與人交談，多年來，科學家的期望是製造出模仿人類的機器人，雖然要達到這個目標仍有距離，但我們已經完成很多東西，例如使用Google進行訊息處理等，這些都能提高工作效率和減少出錯。

另外，學生不只在工程、理論及系統上學習AI相關的知識，本課程亦會提供一些相關社會科學的內容，讓學生了解人工智能發展有機會對社會造成甚麼影響，科學家會幫助同學思考，利用AI製作出的產品能為人類及社會帶來甚麼好處。金教授舉例，學生製作智能飛機機人好嗎？製作者能夠製造出比機器人，做出僞裝的機器人？如果有人利用AI多媒體技術，將某人的臉轉換成別人的樣子，再借來東西等？科員教授提醒AI知識的學生，從人的角度看事情，增強他們的觀念思考，令教授AI更人性化，讓學生運用AI在社會中發揮正面作用。

行業前景向好　工作職位眾多

除了校內科目，課程於2021至22年更推出實習學習計劃，讓學生能夠透過期內十二個月的實習獲得實際工作經驗。參與計劃的學生有機會到企業或國際機構實習，部門常在有學生於眾信銀行、思科系統公司、百度、阿里巴巴、香港金融管理局等公司及機構獲得實習機會，從專業人士的指導下，學生獲得廣泛的實踐技能，並在實際環境中，尤其是在AI領域中獲得大量的實踐的工作經驗。在實習過程中，學生可以將課堂知識應用於工作環境，學習人際關係技巧，更有助畢業後，成為AI專業技術專家的準備。

金教授表示，現今本地及全球就業市場上的AI專業人才供應仍有一定缺口。根據創新科技局的資料，香港政府在創新科技方面的政策包括重新工業化、擴展職業訓練局的影響，以及在香港及深圳建立創新科技園，都預計將會提高高端技術知識和技能的人才，創造60,000個工作機會。

另外，根據LinkedIn 2020年新興工作報告，人工智能專家在美國15個新興工作中都名列前茅，在實際中增長率達44%。基於這些原因，香港中文大學在技術和AI工博的科技、科學家、生物醫學工程、信息和計量科技人才、製造和機器人工程，以及為互聯網公司提供的人工智能多媒體處理，他熱誠地表示，接受課程的學生前景是光明、積極及令人興奮的！
中文大學首創人工智能課程 為未來創科五萬職位提供人才

人工智能無疑是近年非常熱門的新科技潮流，其應用範圍之廣，甚至可以取代真人的工作，影響就業市場。不過也有意見認爲人工智能的普及會為求職市場增加需求，在香港新增達五萬個職位。香港中文大學就看準這個機會，開辦人工智能課程培育相關人才。
Admission Requirements
# AIST Admission Requirements for JUPAS

<table>
<thead>
<tr>
<th>HKDSE Subject</th>
<th>Minimum Level</th>
<th>Subject Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HKDSE Core Subjects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Language</td>
<td>4</td>
<td>1.25</td>
</tr>
<tr>
<td>Chinese Language</td>
<td>3</td>
<td>1.25</td>
</tr>
<tr>
<td>Mathematics (Compulsory Part)</td>
<td>5^</td>
<td>1.75</td>
</tr>
<tr>
<td>Citizenship and Social Development</td>
<td>A (Attained)</td>
<td>-</td>
</tr>
<tr>
<td><strong>HKDSE Elective Subjects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any two subjects</td>
<td>3</td>
<td>#</td>
</tr>
</tbody>
</table>

^ Applicants with level 4 in Mathematics (Compulsory Part) and good results in other HKDSE subjects will be exceptionally considered on a case-by-case basis.

# The AIST programme accepts any subject as elective, with subject weighting of 1.75 for Mathematics M1/M2; 1.5 for Biology, Chemistry, Physics, and ICT; and 1 for any other subjects.

Selection is based on the Best 5 HKDSE subjects with subject weighting applied. Bonus points will be awarded to the 6th and 7th subjects, if any.
## AIST Admission Grades (2023 Entry)

<table>
<thead>
<tr>
<th>Percentile</th>
<th>CHI</th>
<th>ENG</th>
<th>MATHS</th>
<th>LS</th>
<th>M1/M2</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Elective</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Elective</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Elective</th>
<th>2023 Programme Weighted Total^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Quartile</td>
<td>4</td>
<td>4</td>
<td>5**</td>
<td>4</td>
<td>5**</td>
<td>5**</td>
<td>5*</td>
<td>5*</td>
<td>58</td>
</tr>
<tr>
<td>Median</td>
<td>3</td>
<td>4</td>
<td>5**</td>
<td>3</td>
<td>5*</td>
<td>5*</td>
<td>5</td>
<td>5</td>
<td>54.125</td>
</tr>
<tr>
<td>Lower Quartile</td>
<td>3</td>
<td>4</td>
<td>5**</td>
<td>4</td>
<td>5*</td>
<td>5*</td>
<td>5</td>
<td>5</td>
<td>51.375</td>
</tr>
</tbody>
</table>

^ Category A subjects score conversion scale: 5** = 8.5 | 5* = 7 | 5 = 5.5 | 4 = 4 | 3 = 3 | 2 = 2 | 1 = 1;  
Category C subjects score conversion scale: A = 5 | B = 4 | C = 3 | D = 2 | E = 1;  
2023 Subject Weighting: Eng (x 1.25); Chi (x 1.25); Math (x 1.75); M1 or M2 (x 1.75); Bio, Chem, Comb. Sci, ICT, Phy (x 1.5).

- AIST was one of the **15 CUHK programmes** that admitted top students with a **score of 33 or above** in their best five HKDSE subjects in 2023 entry.
AIST Admission Requirements for Non-JUPAS & International Applicants

- Applicants seeking admission on the strength of qualifications other than HKDSE examination results (e.g., IB, GCE-AL, overseas qualifications) can apply through Non-JUPAS channels.

- Will be considered on the basis of their education background and academic achievements.

- Will be expected to demonstrate outstanding abilities in English, mathematics and science subjects.

Check out details on the website of CUHK’s Office of Admissions and Financial Aid:
Non-JUPAS Applications: http://admission.cuhk.edu.hk/non-jupas-yr-1/requirements.html
International Applications: http://admission.cuhk.edu.hk/international/requirements.html
Curriculum Structure
Curriculum – Overview

1. Faculty Package
2. Major Foundation
3. Major Core
4. Final Year Project

Major Core

Major Electives

University Common Core (Languages, GE, PE) (39 Units)

Free Electives (9 Units)

123 units
# University Core Requirements

<table>
<thead>
<tr>
<th>University Core Courses</th>
<th>Units Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language</strong></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>8</td>
</tr>
<tr>
<td>Chinese</td>
<td>5</td>
</tr>
<tr>
<td><strong>General Education</strong></td>
<td></td>
</tr>
<tr>
<td>University Foundation</td>
<td>6</td>
</tr>
<tr>
<td>University GE</td>
<td>7</td>
</tr>
<tr>
<td>(At least 2 units in each Area A, C &amp; D)</td>
<td></td>
</tr>
<tr>
<td>College GE</td>
<td>6</td>
</tr>
<tr>
<td><strong>Special Courses</strong></td>
<td></td>
</tr>
<tr>
<td>Understanding China (UGCP1001)</td>
<td>1</td>
</tr>
<tr>
<td><em>(online course - complete before graduation in any one term, including summer term)</em></td>
<td></td>
</tr>
<tr>
<td>Hong Kong in the Wider Constitutional Order (UGCP1002)</td>
<td>1</td>
</tr>
<tr>
<td><em>(online course - complete before graduation in any one term, including summer term)</em></td>
<td></td>
</tr>
<tr>
<td>Digital Literacy and Computational Thinking (ENGG1003 or ENGG1004)</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total of units required</strong></td>
<td>39</td>
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</tbody>
</table>
Curriculum – Major Requirements

- Faculty Package
- Major Foundation / Core
- Major Practicum
- Major Foundation / Core
- Major Electives
- Major Electives
- Final Year Project

75 units
## Major Requirements

<table>
<thead>
<tr>
<th>Major Requirements</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Package</td>
<td>9</td>
</tr>
<tr>
<td>Foundation Courses</td>
<td>16</td>
</tr>
<tr>
<td>Major Required Courses</td>
<td>22</td>
</tr>
<tr>
<td>Research Components</td>
<td>6</td>
</tr>
<tr>
<td>Stream Requirements</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total of units required</strong></td>
<td><strong>75</strong></td>
</tr>
</tbody>
</table>
Major Electives

Final Year Project

Major Core

Major Electives

Major Foundation / Core

Major Practicum

Faculty Package (9 units)

» Programming (ENGG1110)
» Linear Algebra (ENGG1120)
» Multivariable Calculus (ENGG1130)
Curriculum – Major Foundation

1. Faculty Package
2. Major Foundation / Core
3. Major Core
4. Final Year Project

Major Electives

Major Foundation / Core (10 units)
- Calculus for Engineers (MATH1510)
- Physics (PHYS1003/1110)
- Intro to AI & ML (AIST1000)
- Intro to Computing Using Python (AIST1110)
Curriculum – Major Foundation

Major Foundation / Core (13 units)

- Discrete Maths (ENGG2440)
- Probability (ENGG2760)
- Statistics (ENGG2780)
- Data Structures (CSCI2100)
- Intro to Computer Systems (AIST3020)
Curriculum – Major Practicum

Major Practicum (3 units)

- Technology, Society and Engineering Practice (AIST2601)
- Engineering Practicum (AIST2602)
Curriculum – Major Core

Major Core (12 units)

- Numerical Optimization (AIST3030)
- Design and Analysis of Algorithms (CSCI3160)
- Fundamentals of Artificial Intelligence (CSCI3230)
- Fundamentals of Machine Learning (CSCI3320)
Curriculum – Major Electives

Major Electives (22 units)

Streams
1. Biomedical Intelligence
2. Intelligent Multimedia Processing
3. Large-scale Artificial Intelligence – Theory and Systems
4. Intelligent Manufacturing and Robotics

Non-Stream
5. General Artificial Intelligence: Systems and Technologies
Stream 1: Biomedical Intelligence

- Study how to build **intelligent biomedicine** and healthcare applications

- Two emerging markets:
  - **Personalized genomics** and **precision medicine** (e.g., disease prevention, prediction, early diagnosis and treatment)
  - **Clinical record systems** (e.g., electronic medical records and pharmacy prescription information and insurance records)

Research on medical image analysis by Prof. P.-A. Heng
Stream 2: Intelligent Multimedia Processing

- Study how to bridge AI and human brain functions and design models, algorithms, and systems for multimedia processing with high performance and high accuracy.

- Areas: digital image processing, face recognition, computer animation, human-computer interactions, speech and audio processing, computational linguistics
Stream 3: Large-scale AI – Theory and Systems

- Study the **advanced techniques** of realizing large-scale artificial intelligence from both theory and system perspectives
  - **Theory**: machine learning theory, statistical inference, online algorithms, *etc.*
  - **Systems**: high performance computing, distributed storage, **big data management**, *etc.*
Stream 4: Intelligent Manufacturing & Robotics

- Study **how to integrate manufacturing and robotics with AI** for different aspects of human activities.
- Focus on the topics of **mechanics**, sensing and control, design & manufacturing, **human-robot interactions**, etc.
Many other practical and interesting courses in AI:

» Machine Learning
» Deep Learning
» Large Scale Distributed Computing
» Intelligent Embedded Systems
» Knowledge Representation/Inference
» Human-Computer Interactions
» Natural Language Processing
» Big Data Analytics

... ...
Final Year Project (6 units)

- Pick an interesting topic
- Interdisciplinary nature
- Apply the knowledge learnt in the previous courses
- Many open topics. Your creativity and discussion with the supervisor
- Complete a project under the supervision of an advisor
FYP (AI + Bioinformatics)

- Apply machine learning to predict RNA-protein interaction

RNA-binding protein (RBP)

RNA folds to a specific structure to fit into the protein binding site

Sample from current CE/CS students (FYP KY1804)
FYP (AI + Multimedia)

• Design a neural network that learns to produce a tiling
FYP (AI + Computer Vision)

• Chinese Medicinal Herb Recognizer

Sample from current CE/CS students (FYP MHW1804)
FYP (AI + 3D Vision)

- Design the best neural network for 3D car detection

Sample from FYP CWF2002 (The UG student co-authored “research papers” in AAAI 2021 & CVPR 2021)
FAQ Content:
Q: Will there be any interview?
Q: How many students will be admitted?
Q: Will there be any exchange opportunity?
Q: Will there be any scholarship or financial aid?
Q: What are the differences between AIST and CSCI?
Q: What are the career prospects of AIST graduates?
Q: Can I transfer to CENG / CSCI or other majors in Year 2?
Q: Can I declare CENG / CSCI as second major or minor?
Q: I am still struggling to choose between AIST / CENG / CSCI. What can I do?
Q: Will there be any interview?
Interview Arrangements for JUPAS Applicants

• Interviews will be arranged in **mid/late June every year**.

• Not all applicants will be interviewed. We only consider **Band A applications** when shortlisting interviewees.

• Shortlisted applicants will receive an **invitation email by early June** for the details, *e.g.*, date, time, format, etc.

• Stay tuned! **Check your email** regularly for the latest update!
Interview Arrangements for Non-JUPAS & International Students

• Interviews will be conducted in batches from ~Jan. every year.

• You are encouraged to attach adequate supporting documents, e.g., transcripts, predicted grade, certificates, etc., in your application for our holistic review.

• Shortlisted applicants will receive an invitation email for the details, e.g., date, time, format, etc.

• Stay tuned! Check your email regularly for the latest update!
Q: How many students will be admitted to AIST?
Note: There is no fixed quota for international students and Mainland students attempting Gao Kao.
Q: Will there be any exchange opportunity?
Exchange to Overseas Universities

• You are encouraged to join the exchange programme to **broaden your horizon and learn with peers from diverse background**

• List of some overseas universities for the exchange
  » Macquarie University, Australia
  » University of Toronto, Canada
  » Shanghai Jiao Tong University, China
  » Telecom & Management SudParis, France
  » Royal Institute of Technology (KTH), Sweden
  » University of California, Davis, USA
  ...

Q: Will there be any scholarship or financial aid?
Scholarships and Financial Aids

• The Government and the University offer various scholarships and financial aids depending on student’s financial situation, or their outstanding performance in academic or other areas.

• List of some scholarships and financial aids
  » Admission Scholarships
  » Scholarships for Overseas Studies
  » Government or University Financial Aid
  » Summer Subsistence and Travel Loan Scheme
  » Student Residence Bursary Scheme
  ...

Check out more details on the website of CUHK’s Office of Admissions and Financial Aid: [https://admission.cuhk.edu.hk/finance.html](https://admission.cuhk.edu.hk/finance.html)
Q: What are the differences between AIST and CSCI?
AIST vs CSCI?

- AIST and CSCI have related foundation & basic theories

- AIST requires stronger Math foundation since it involves statistics, probability, calculus, linear algebra, etc., which are basis for machine learning and deep learning

- CSCI focuses more on software design and computing solutions, taking care of coding and software architecture
Q: What are the career prospects of AIST graduates?
Career Prospects

• Employers of our graduates include:
  » Google
  » Intel
  » Microsoft
  » IBM
  » Apple
  » Facebook
  » Yahoo
  » Deloitte
  » Hong Kong Government
  » Investment Banking Institutes
  ... ...
Q: Can I transfer to CENG / CSCI or other majors in Year 2?
If you look for CENG / CSCI or other majors instead...

- You may submit application for **change of major** (to CENG / CSCI or other majors), subject to prevailing regulations stipulated by RES and approval by relevant unit(s).

- If you are determined to go for CENG / CCSCI, you may choose **Computer Science and Engineering (JS4412)** as your choice and select CENG / CSCI in Major Allocation when progressing to Year 2.
Q: Can I declare CENG / CSCI as second major or minor?
 Declare Second Major / Minor

• You are **not allowed to declare CENG / CSCI as your second major or minor** if you are a CSE student.

• However, you are encouraged to broaden your horizons and declare second major / minor offered by other departments.
Q: I am still struggling to choose between AIST / CENG / CSCI. What can I do?
If you are still struggling to choose...

• You can go through our website and admission materials for a better understanding before applying, and write to us via email at ug-admiss@cse.cuhk.edu.hk if you have any further queries.

• You can join our outreach activities in the future and chat with our teachers and student ambassadors.
Contact Us

(852) 3943 4269

ug-admiss@cse.cuhk.edu.hk

www.cse.cuhk.edu.hk/
See you in Fall 2024!