**HUANG Tin Yeh (Heaven)**

Division of Industrial and Systems Engineering, Faculty of Engineering,

The Hong Kong Polytechnic University, Hong Kong SAR, China

Phone: +852 94498934 / +86 19896555044  
Mails:[tin-yeh.huang@connect.polyu.hk](mailto:tin-yeh.huang@connect.polyu.hk)/ [huangtianye@mails.x-institute.edu.cn](mailto:huangtianye@mails.x-institute.edu.cn)

**Education**

**The Hong Kong Polytechnic University**, HKSAR, China *Sept. 2024 – Aug. 2028*  
**B.Eng. Scheme in Product and Industrial Engineering**

* Major Courses (Current): Engineering Design, Programming, Engineering Economics, Advanced Mathematics, Fundamental of Physics

**Tsinghua Tsien Excellence in Engineering Program (TEEP) & X-institute**, Shenzhen *Sept. 2024 – Aug. 2028***Jointed Training Student (Bachelor's to Master’s Degree)**

* Major Course (Current): Enhanced Student Research Training (ESRT)

**Hong Kong Community College,** CPCE, PolyU, HKSAR, China *Sept. 2023 – Aug. 2024*  
**Associate in Statistics and Data Science**

* Major Courses: Statistics, Calculus and Linear Algebra(A), Programming(A+), Data Science(A-), Applied Information Technology(A-), Economics

**Pui Kiu College**, HKSAR, China *Sept.2018 – Aug. 2023*

**Research Experience**

**My Research Interest:**

* Artificial Intelligence and Machine Learning
* Spatial and Ecological Data Science
* Multi-Agent Systems
* Digital Twin in Ecosystems and Urban Systems (Computational World)
* Operations Research and Optimization, Technology Ethics and Social Impact

**Project:**

***Pre-print:***

* Huang, T. -Y., Wang, X.\*, Wang, Y. (2024). crypto-ncRNA: Encryption algorithm *Sept. 2024 – Now*  
  based on non-coding RNA (ncRNA) ***(JCR Q1; Ready to Submit)*** [[Github link]](https://github.com/JLU-WangXu/crypto-ncRNA)
  + Designed an encryption system leveraging non-coding RNA (ncRNA) characteristics for enhanced security
  + Demonstrated the theoretical advantages of RNA sequences, including physical unclonability, high randomness, adaptability, and intrinsic unpredictability, in cryptographic applications.
  + Integrated dynamic key generation, gene sequence transcription, and redundancy protection mechanisms
  + Achieved 100% pass rate in NIST SP 800-22 tests, ensuring randomness and robustness.
  + Optimized encryption speed, nearing AES algorithm performance.

***Keys:*** *Bio-inspired encryption, Non-coding RNA (ncRNA), Advanced cryptographic system*

***Current:***

* **Huang, T. Y.**, Wang, Y. \*The Application of Multi-modal BERT Model *Oct. 2024 – Now*  
  in Extraction and Analysis of Global Heat Wave Disaster Adaptability Factors [[CAS Website (No. 2 in xlsx]](https://igsnrr.cas.cn/yjsjy/tzgg/202411/t20241111_7437767.html)

***(Project of Innovative Practice Training Program for College Students, Chinese Academic of Sciences, Advisor:*** [***Prof. Yong Ge***](https://ieeexplore.ieee.org/author/37556663500)***)***

***Keys:*** *Climate Change; Climate Risk Management; Multimodal Artificial Intelligence; Intelligent Decision Support System*

* **Huang, T. Y.**, Wang, Y. \*Multi-stage Production Process Decision-making and *Oct. 2024 – Now*Cost Optimization Based on Sampling Inspection
* **Huang, T. Y.**\* Artificial intelligence digital clone technology to alleviate the problem *Nov. 2024 – Now*  
  of family companionship for the elderly **(*X-Institute Enhanced Student Research Training (ESRT) Project, Advisor:*** [***Prof. Tang Min***](http://english.counsellor.gov.cn/character.htm?page=tm)**)**

***Others:***

* **Computer Vision Project** under the supervision of Professor [Qing Li](https://www.polyu.edu.hk/comp/people/academic-staff/prof-li-qing/) (Head of the Department of Computing, Hong Kong Polytechnic University) and Professor [Xiaoyong Wei](https://www.polyu.edu.hk/comp/people/emeritus-honorary-adjunct-and-visiting/wei-xiaoyong---visiting/) (Head of the Department of Computer Science, Sichuan University)
* Smart Delivery System project (**AIoT Digital Twin** and **Software Reinvention**) under Industrial Centre, PolyU

**Research Study:**

* X-Challenge 2024: Interdisciplinary Cutting-edge Disruptive Innovation *July 2024 – Aug. 2024*  
  Challenge, Tsinghua University TEEP & X-Institute [[Track/Study Discription]](https://www.x-challenge.site/challenge/vLu0wm4j?contest_uuid=bOM8G7yZ&contest_direction_uuid=FYUdFqmX)(Chinese)

*Track 9 – How to cultivate innovative talents and promote social equity on a large scale in the era of artificial intelligence?* [[Official Report of Summit]](https://mp.weixin.qq.com/s/P2KJPN5SzpJjRNz6Qsk57Q)(Chinese)

* + Worked under experts like Dr. Tang Min and Dr. Zuo Xiaolei
  + Proposed solution on cultivating innovative talent with PBL
  + Developed systemic methodologies of social innovation deign
  + Developed the plain of addressing resource misalignment by integrating AI model and data analysis method
  + Represented the research group of Track 9 at X-Fusion Global Innovators Summit 2024

***Keys:*** *Social Innovation; Project-based Learning; Large Language Model; Personalized recommendation*

* X-Idea 2023: X-Institute International Summer School, *July 2023 – Aug. 2023*  
  Tsinghua University TEEP & X-Institute (**The Most Challenging Project Award**) [[Track/Study Discription]](https://mp.weixin.qq.com/s/RBc9QBjdElQIVZ2JeI99lA)(Chinese)  
  *Track 6 – Building Extraterrestrial Ecosystems: From Microbes to Human* 
  + Worked with experts like Prof. Juan Keymer, Dr. Janneke Noorlag, Dr. Jiliang Hu and Dr. Mo Han
  + Modeled ecological interactions using the Lotka-Volterra Model for simulations the chaos and fractals
  + Designed a portable and machine-learning based microbial rapid substance measured system
  + Designed a microbial neural network by exploring the potential neural networks with island biogeography and controllable microbial neurons

***Keys:*** *Microbiology; Population Dynamic; Ecology; Machine Learning*

**Achievements**

* ISE Entry Scholarship for Non-JUPAS Admissions, **Scholarship** in PolyU (2024.10)
* The Most Academic Award, **Research Award** in X-Institute (2023.07)
* Azure AI Fundamentals, **Certification** of Microsoft (2021.12)
* The Hong Kong Polytechnic University Mathematics Gifted Programme, **Advanced Level** Certification by Department of Applied Mathematics, PolyU (2021.12)

**Working Experience**

**PolyVentures Student Assistants**, Knowledge Transfer and Entrepreneurship Office, *Oct. 2024 – Oct. 2025*  
PolyU, HKSAR, China

**Student Assistant**, Division of Science, Engineering and Health Studies, CPCE, PolyU, *Mar. 2024 – Apr. 2025*  
HKSAR, China

**Trainee**, Department of Accounting and Information Technology, *Dec. 2023 – Jan. 2024*  
Royal Plaza Hotel, HKSAR, China

**Volunteer Experience**

**Student Representative** of 45498-PIE, PolyU *Sept.2024 – Aug. 2025*

**Master of Ceremonies**, Luncheon celebrating the 75th National Day of the *Oct 2024*  
People's Republic of China and the 27th anniversary of Hong Kong reunification, HKFTU

**Student Ambassador**, CPCE, PolyU *Oct. 2023 – Oct. 2024*

**Student Representative** of 8C112-SDS, HKCC, PolyU *Sept.2023 – Aug. 2024*

**Skills & Interests**

* Language Skills: Cantonese (Native), Mandarin (Native), English (Proficient)
* Proficient in Python, C/C++, MATLAB, MySQL, SAS, R, MS Office, Colab
* Enjoy: Misics, Cycling, Mathematics, Programming, Philosophy, History, Humanities, Chinese Literature