# Taixi CHEN

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## Education

**Hong Kong Baptist University**                                      Sep 2021 – Jun 2025 (Expected)

*Bachelor of Science in Computer Science (**cGPA:** 3.34 / 4.00)*                                      *Hong Kong*

- **Last two year GPA (Year 2 and Year 3):** 3.53/4.0
- **Major GPA (all computer courses):** 3.51/4.0
- **The major concentration GPA (Computer Science Technology courses):** 4.0/4.0
- **The second semester GPA of year 3 (Last semester):** 4.0/4.0
- **Remarks1:** All computer science technology concentration courses are A (4.0/4.0), including:
    * COMP3005 Design and Analysis of Algorithms (Java)
    * COMP4107 Software Design, Development and Testing (Kotlin)
    * COMP4057 Distributed and Cloud Computing (Java)
- **Remarks2:** All data mining, Artificial Intelligence and machine learning courses are A (4.0/4.0), including:
    * COMP3057 Introduction to Artificial Intelligence and Machine Learning (Python)
    * COMP3115 Exploratory Data Analysis and Visualization (Python)
    * COMP4027 Data Mining and Knowledge Discovery (Python)
- **Remarks3:** All algorithm courses are A (4.0/4.0), including:
    * COMP3005 Design and Analysis of Algorithms
    * COMP2015 Data Structures and Algorithms

## Research Experience

**Centric-based Asymmetric Adversarial Distance Metric for Categorical Data Clustering**      Jun 2024 – Aug 2024

*Research assistant | First author*                                      *Hong Kong Baptist University*

- Exploring a novel distance metric for categorical data clustering analysis with Prof. Cheung Yiu-Ming (IEEE Fellow, AAAS Fellow, IET Fellow, AAIA Fellow) 's supervision. The categorical data contains different data types and our motivation is to find a better distance metric for the categorical data clustering analysis, which is an unsupervised representation learning.
- Proposing an effective centric-based distance metric framework, a unified frame for ordinal and nominal data. It further overcomes the instability caused by the uncertainty of the attribute. Especially, it can provide more guidance information for ordinal data.
- Creating a novel asymmetric adversarial mechanism for intra-attribute which considers the asymmetric adversarial distance for reasonable measurement based on their importance and can maximize the benefits of the designed distance metric.
- Experiments show our algorithm's superiority in various categorical data, such as medical diagnosis data.

**RFMamba-rPPG: Robust and Fast Mamba Model for Remote Physiological Measurement**      Jun 2024 - May 2025

*Final year research paper*                                      *Hong Kong Baptist University*

- Focus on rPPG algorithm refinement for heart rate estimation under the supervision of Prof. Cheung Yiu-Ming. Towards robust and fast rPPG algorithm within the complex environment.
- Proposing a novel Mamba model block for fast and accurate video understanding with an efficient temporal aggregation module which includes the aggregation module and video understanding TSM module for reducing the temporal redundancy.
- Set up an effective Frame stem for image enhancement. We are adding the difference of the adjacent frames and using the DANet to utilize both channel and space attention to reduce the space redundancy and channel redundancy.

**Parameter adaptive Multi-classifier analyzing complex dataset with noise**                                      Aug 2024

*Personal research report*                                      *Hong Kong Baptist University*

- During the Data Mining and Knowledge Discovery class, proposed a Multi-classifier to analyze the dataset with noise, which contains two parts including unsupervised pre-classification and supervised further processing module.

- The main contribution is enhancing the DBSCAN in the unsupervised pre-classification process, which does not need to choose parameters previously and also partially addresses the different density cluster issues.

**Hong Kong Baptist University**                                    July 2023 – August 2023
*Research assistant*                                                                              *Hong Kong*
- Research with Prof. Cheung Yiu-Ming on clustering algorithm problems and hopes to make a refinement. Implemented experiments and read myriads of papers on various clustering methods aiming to find a path to improve their drawbacks. Especially the clustering data in high dimension and streaming.

**HeBei University**                                                             Jan 2022 - Aug 2022
*Research assistant*                                                                                   *He bei*
- Researched at He Bei University with Prof. Li Kai and helped his team find some practical and valuable literature about deep learning and image denoising. Gained numerous Deep Learning knowledge and cultivated the code ability about deep neural networks.

## Publications

[1] JIANG Yanbo;XU Ningwei;CHEN Taixi;QIN Anchen;HUANG Dazhuang. "Intelligent classification of land use based on BP neural network and stormwater simulation". In: *Journal of Hebei University(Natural Science Edition)* 44 (Sept. 2024), pp. 208–215.

[2] LI Kai;ZHANG Hui;CUI Lijuan;PENG Jinjia;CHEN Taixi. "Image denoising based on deep residual network with dual-domain information". In: *Journal of Hebei University(Natural Science Edition)* 43 (2023), pp. 216–224.

[3] Taixi CHEN; Yiu-ming Cheung; Yiqun Zhang. "Centric-based Asymmetric Adversarial Distance Metric for Categorical Data Clustering". Submitted to AAAI, under review. 2024.

## Projects

**A mobile App for non-profit organization volunteer system** | *Kotlin*
- Designed and deployed an Android app for non-profit organization volunteer system. It can provide a platform for volunteers to see the event page and choose to join it or not. Specifically, every users need to register their account before join any events to become a volunteer.
- Implemented a neat and powerful UI for volunteers to use based on the Kotlin.

**Non-profit organization volunteer system website** | *JavaScipt, EJS, HTML, CSS*
- Implemented a complete volunteer system including the management side and user side. For the management side, the admins can add, delete, update their new events, which can only be operated for admins
- Constructed the user side for register any events and accounts management as well. The back-end and front-end is established by myself and the rendering as well

**War of The Three Kingdoms (WTK) - Standard** | *Kotlin*
- Developed a game which is similar to the War of The Three Kingdoms (WTK) - Standard.
- Built the basic logic of game over and begin and also design a distance calculation method for different users/players to have a good simulation as the real game. Developing the cards with functions and player's strategy as well.

## Technical Skills

**Languages**: English (Fluent, TOEFL: 94),Chinese Mandarin (Native), Cantonese (Limited Working Proficiency)
**Code Languages**: Java, Kotiln, Python, HTML, JavaScript
**Technologies**: PyTorch, Node.js, Vue.js, Django, Express.js, Bootstrap, Android development

## Achievements

- Concentration Award in CST

- President honor roll (attached with grade record)

- Dean list (attached with grade record)

## Social Engagements

**Student Helper**: AI HK activity's volunteer for helping high school students to learn generative AI knowledge.
**Peer Mentor**: Peer Mentor recruited by HKBU to help freshmen acquaint themselves with their university academic life.
**Volunteer leader**: Serving for helping freshmen to assimilate into university life and organize many activities for them.
**Volunteer**: Participating in Welfare activity for Chinese New Year in Hong Kong. With Prof. Liu Zhipeng (BBS, JP), a member of the Legislative Council of Hong Kong, I participated as a volunteer in a welfare activity. Created Spring couplets for the neighborhoods in a district of Hong Kong.