Taixi CHEN

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https://taixi-chen.github.io/Taixi.github.io/

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 under the supervision of Prof. Cheung Yiu-Ming (IEEE Fellow, AAAS Fellow, IET Fellow, BCS Fellow). 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.

Does weak semi-supervised learning rPPG remotely estimate heart rate better? 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 under the smartphone environment.
- Proposing an effective end-to-end network structure containing an efficient temporal shift module and temporal mask to fast and robustly understand video.
- Set up a novel loss function combining weak-supervised learning loss and self-learning loss. We not only use valuable signal ground truth to make weak supervision but also use the self-contained information to further constrain it.

Parameter adaptive Multi-classifier analyzing complex dataset with noise Apr 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; **Taixi CHEN**; 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; **Taixi CHEN**; "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 a 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 user needs to register their account before joining any events to become a volunteer.
- Implemented a neat and powerful UI for volunteers to use based on 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, and update their new events, which can only be operated for admins
- Constructed the user side for registering any events and accounts management as well. The back-end and front-end are 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 student helper for assisting high school students to learn generative AI knowledge. Specifically, teaching them how to use the stable diffusion model to generate images.
- **Peer Mentor**: Peer Mentor recruited by HKBU to help freshmen acquaint themselves with their university academic life. Moreover, delivering a speech about academic learning to almost 200 students, providing valuable insights for them.
- **Volunteer leader**: Serving for helping a group of 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.