HUANG CHENGKAI

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EDUCATION

University of New South Wales, Sydney *Sep 2021 - Present*
Ph.D. Candidate of Computer Science and Engineering
Department of Computer Science and Engineering

Harbin Institute of Technology, Shenzhen *Sep 2019 - Jul 2021*
Master of Computer Science and Technology
Department of Computer Science and Technology

Harbin Engineering University, Harbin *Aug 2015 - Jun 2019*
Bachelor of Computer Science and Technology
Department of Computer Science and Technology

RESEARCH INTERESTS

- **Recommender System:** Sequential recommendation, Language Models as Recommender Systems
- **Foundation Models:** FM4RecSys, Retrieval-Augmentation Generation for LLMs
- **Multi-modal Learning:** Cross-modal/ Multi-modal retrieval and Recall

PROFESSIONAL EXPERIENCE

Kwai (Kuaishou), Algorithm Intern *Jun 2024 - Oct 2024*

AI retrieval/Multi-modal retrieval department:

- Large-scale Product Recognition and Product Recall;
- E-commerce Multi-modal Retrieval;
- Composed Similar Product Retrieval.

UNSW Sydney, Ph.D. Candidate, Supervisor: Lina Yao *Sep 2021 - Present*

In charge of research on the temporal dynamics of user intention within sequential recommendation. Published at TheWebConf 2023, SIGIR 2023.
- Proposed the framework that enhances sequential recommendation accuracy by modeling complex user preference dynamics through a dual-transformer module and contrastive learning. (SIGIR 2023)
- Proposed the SDIL framework with a TPP module to enhance recommendation systems by incorporating both positive and negative user feedback over time. (TheWebConf 2023)
- Ongoing research: Working with Tong Yu on research focused on foundation models and their applications in information retrieval and recommender systems.

Pengcheng Lab, Artificial Intelligence Department Intern, Mentor: Deng Qing *Dec 2019 - Dec 2020*

Engaged in the Peng Cheng Cloud Brain Platform project. Engaged in the development and maintenance of Chinese open source platform iHub.
- Engaged in promoting the platform by using different social media.
- Collecting a wide range of high-quality open resources from Github and other platforms under the author's authorization and open resource agreement.
- Translating non-Chinese repositories into Chinese and adding Chinese introduction.
- Testing the iHub platform, submitting bugs and helping fix the bugs. (Official website)

Harbin Institute of Technology, Shenzhen, Mentor: Dr. Qi Shuhan *Sep 2019 - Apr 2021*

Brand Social Sense Project:
- Crawled data from instagram and built a brand social media dataset: BRAND-INS dataset.
- Built a brand tracking and promoting platform: Brand Social Sense.
- Used the multi-modal deep learning models to track the brand related posts and events.
- Used a novel brand content discovery method to promote brand posts.

NUS Summer Workshop, Mentor: Dr. LEK Hsiang Hui *Jun 2019 - Jul 2019*

• Predictive Analytics Course: Predictive analytics uses an assortment of statistical techniques to predict future events or behaviors based on collected data. This workshop introduces major techniques such as regression, classification, clustering among others for doing predictive analytics.
• Built a NBA players predictive system: Collect NCAA and NBA players' data from multiple data sources, clean and reconcile inconsistent data for standardized processing.
• Visualize demographic data with d3js and designed different models to predict the future development of players. Present findings to the mentor and the team. (Demo website)

Teaching Assistant

Advanced language programming design; Web information retrieval; Principle and application of database.

PUBLICATION

• **Chengkai Huang**, Shoujin Wang, Xianzhi Wang and Lina Yao, *Dual Contrastive Transformer for Hierarchical Preference Modeling in Sequential Recommendation.* The ACM SIGIR Conference on Research and Development in Information Retrieval(**SIGIR** 2023, CORE A*).

• **Chengkai Huang**, Shoujin Wang, Xianzhi Wang and Lina Yao, *Modeling Temporal Positive and Negative Excitation for Sequential Recommendation.* The ACM Web Conference(**TheWebConf** 2023, CORE A*).

• **Chengkai Huang**, Xuan Luo, Jiajia Zhang, Qing Liao, Xuan Wang, Zoe L. Jiang, and Shuhan Qi. *Exploring Instance Similarity: An Instance Correlation Based Hashing Method for Multi-label Cross-model Retrieval.* Information Processing & Management(**IPM** 2020, CORE A).

• Zhiqiang Liu, Yuhong Li, **Chengkai Huang**, KunTing Luo, Yanxia Liu, *Boosting Fine-tuning via Conditional Online Knowledge Transfer.* Neural Networks(**NN** 2024, CORE A).

• Guanglin Zhou, **Chengkai Huang**, Xiaocong Chen, Xiwei Xu, Chen Wang, Liming Zhu and Lina Yao, *Contrastive Counterfactual Learning for Causality-aware Interpretable Recommender Systems.* The ACM Conference on Information and Knowledge Management(**CIKM** 2023, CORE A).

• Zhiqiang Liu, Yanxia Liu, **Chengkai Huang**, *Semi-Online Knowledge Distillation.* British Machine Vision Conference (**BMVC** 2021, CORE A).

WORKING PAPERS

• **Chengkai Huang**, Hongtao Huang, Xiaojun Chang, Wen Hu and Lina Yao, *Dual Conditional Diffusion Models in Sequential Recommendation.* [**under review**].

• **Chengkai Huang**, Tong Yu, Kaige Xie, Shuai Zhang, Lina Yao and Julian McAuley, *Foundation Models for Recommender Systems: A Survey and New Perspectives.* [**under review**].

• Yuhang Yao, Jianyi Zhang, Junda Wu, **Chengkai Huang**, Yu Xia, Tong Yu, Ruiyi Zhang, Sungchul Kim, Ryan Rossi, Ang Li, Lina Yao, Julian McAuley, Yiran Chen and Carlee Joe-Wong, *Federated Large Language Models: Current Progress and Future Directions.* [**under review**].

• **Chengkai Huang**, Rui Wang, Kaige Xie, Tong Yu and Lina Yao, *Learn When (not) to Trust Language Models: A Privacy-Centric Adaptive Model-Aware Approach.* [**under review**].

• **Chengkai Huang**, Yu Xia, Rui Wang, Kaige Xie, Tong Yu, Julian McAuley, Lina Yao, *Embedding-Informed Adaptive Retrieval-Augmented Generation via Assessing the Intrinsic Knowledge of Large Language Models.* [**under review**].

• **Chengkai Huang**, Shoujin Wang, Lina Yao and Lianyong Qi, *Multi-faceted Preference Intensity Modelling for Sequential Recommendation.* [**under review**].

• Le Pan, Yuanjiang Cao, **Chengkai Huang**, Lina Yao and Wenjie Zhang, *Counterfactual Inference for Eliminating Sentiment Bias in Recommender Systems.* [**under review**].

ACADEMIC SERVICE

PC member & Reviewer & Sub-reviewer:

• Journals: ACM Transactions on Information Systems(**TOIS**); IEEE Transactions on Knowledge and Data Engineering(**TKDE**); ACM Transactions on Spatial Algorithms and Systems(**TSAS**); IEEE Transactions on Artificial Intelligence(**TAI**); ACM Transactions on Intelligent Systems and Technology(**TIST**); ACM Transactions on Recommender Systems(**TORS**); Tsinghua Science and Technology (**TST**).

• Conferences: COLING-25, TheWebConf-25, RecSys-24, CIKM-24, SIGIR-24, TheWebConf-24, CIKM-23, KDD-23, ICLR-23, NeurIPS-23, CIKM-22, IJCAI-20.

SKILL

- Software: Python(Deep Learning Framework: Pytorch, Tensorflow), SQL, C++, Java, Matlab, Git
- Languages: Mandarin, English
- Hobbies: Basketball, Jogging and Pop music

REWARDS

RICOH Scholarship *Aug 2020*
Harbin Institute of Technology-RICOH Joint Laboratory

CAAI National Youth Artificial Intelligence Innovation Competition *Dec 2019*
The Second Class Prize

Harbin Engineering University *Jun 2019*
Outstanding Graduate
The First Prize Scholarship for Academic Excellence, 2016-2019

Bo Chuang Cup International IOT Design Competition *Jun 2018*
Special Award

Artificial Intelligence Future Challenge Cup *Sep 2018*
Winning Award

Mathematical Modeling of the Three Northeastern Provinces League *June 2018*
Major Award