

# Yihan (Hank) Tang

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<https://hank-tang.github.io>

## PROFESSIONAL SUMMARY

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I am an enthusiast in AI for Healthcare. In my previous research experience, I have applied Deep Learning, Knowledge Graph, Natural Language Processing, and multimodal learning to build clinical predictive models for Electronic Health Records and genomic data. I am proficient in Python, PyTorch, and R.

## EDUCATION

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**The University of Hong Kong, Hong Kong SAR** Expected May 2026  
BASc in Applied Artificial Intelligence, GPA: 3.80  
*Relevant Coursework:* Artificial Intelligence, Python, C++, Shell, Linear Algebra, Multivariate Calculus, Linear Statistical Analysis, Data Visualization

**University of Illinois Urbana-Champaign, Champaign, IL** Jan 2025 – May 2025  
Exchange studies. Computer Science, GPA: 4.0

**Stanford University, Palo Alto, CA** June 2023 - August 2023  
International Honors Program (IHP), Stanford 2023 Summer Quarter  
Concentration in Computer Science

## RESEARCH EXPERIENCE

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**Research Intern** April 2024 - Present  
**Winter Lab, Feinberg School of Medicine, Northwestern University**

Advisor: Dr. Deborah Winter

- Computational Genomics Research – Macrophage Transcriptomic Analysis
  - Integrated bulk-RNA data from 24 internal datasets spanning multiple studies to investigate macrophage gene expression across diverse conditions.
  - Conducted large-scale gene co-expression and network analysis involving over 20,000 genes, enabling the identification of key regulatory modules and immune-related pathways.
  - Applied normalization, and batch correction techniques to ensure cross-study comparability and robust downstream analysis.
  - Leveraged tools such as Cytoscape, and igraph to construct, visualize, and interpret gene regulatory networks.

Advisor: Dr. Lequan Yu

- CTPD: Cross-Modal Temporal Pattern Discovery for Enhanced Multimodal Electronic Health Records Analysis
  - Efficiently extract meaningful cross-modal temporal patterns across different time scales from multimodal Electronic Health Records (EHR) input.
  - Introduce novel loss functions for better cross-modal alignment to retain core information of each modality.
  - Implement 16 baseline models including temporal, language, and multimodal models on 2 clinical tasks and compare their performance with CTPD.
- Hierarchical ICD Code Pretraining with Internal and External Knowledge Bases
  - As first author, working on incorporating a clinical-domain knowledge base and an external knowledge base (LLM) to pretrain International Classification of Diseases (ICD) codes in a structured, hierarchical manner.
  - Projected to be the first work that pretrains ICD codes with multiple knowledge bases to achieve better representation of medical concepts.
  - Implement a pipeline that transforms raw medical data (MIMIC-III and MIMIC-IV) into organized and generalized token representation.
  - Replicate several related works, including TransformEHR and KG-FIT.

## PUBLICATIONS

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- Fuying Wang, Feng Wu, **Yihan Tang**, et al. CTPD: Cross-Modal Temporal Pattern Discovery for Enhanced Multimodal Electronic Health Records Analysis. *Findings of the Association for Computational Linguistics: ACL 2025*.  
<https://doi.org/10.48550/arXiv.2411.00696>
  - Contribution: contributed to experiment; implemented baseline models; primary manuscript writing
- **Yihan Tang**, Fuying Wang, et al. Hierarchical ICD Code Pretraining with Internal and External Knowledge Bases. (Co-author; expect to be submitted in April 2025)
  - Contribution: Methodology; Data collection and analysis; Teamwork coordination

## PRESENTATIONS

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| Summer Research Fellowship Poster Presentation   | 2024 |
| <ul style="list-style-type: none"><li>• Title: Semantic EHR Transformer: Using transformer-based generative model with a semantic-enhanced ICD-coding system to improve clinical disease prediction.</li></ul> |      |

## SCHOLARSHIP AND FELLOWSHIP

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| C.V. Starr Scholarship, The Starr Foundation  | 2025 |
| Recipient of Summer Research Fellowship (SRF), The University of Hong Kong            | 2024 |
| HKU Worldwide Undergraduate Student Exchange Scholarship, The University of Hong Kong | 2022 |

## HONORS AND RECOGNITIONS

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Dean's Honors List, Faculty of Science, The University of Hong Kong (top 1%)	2024
Student Representative, Shun Hing College, The University of Hong Kong	2024
Student Peer Advisor, Faculty of Science, The University of Hong Kong	2024