Yuhui Hong

Website: josiehong.github.io
Email: yuhhong@iu.edu
GitHub: github.com/JosieHong
0000-0002-5647-9714

Education

Indiana University Bloomington — Bloomington, IN, US
Ph.D. Candidate in Computer Science — Sep. 2020 –Jun. 2025 (expect)

- My research interests focus on deep learning and its applications in cheminformatics and bioinformatics. I am passionate about molecular representation learning, structural bioinformatics, and tackling intricate tasks related to analytical chemistry. It is my honor to be guided by Prof. Haixu Tang during my research journey.

Xidian University — Xi'an, Shaanxi, China
B.E. in Computer Science and Technology — Sep. 2015–Jul. 2019

- Thesis: "Point Detection of Traffic Objects in Road Scene Based on Convolutional Neural Network"

Research Experience

Indiana University Bloomington — Bloomington, IN, US
Research Assistant — Sep. 2020 –Now

- Prediction of tandem mass spectra from 3D molecular conformations.
- Prediction of chiral stationary phases for chromatographic enantioseparation from 3D molecular conformations.
- Chemical formula identification from molecular tandem mass spectra through deep learning methods.

The First Affiliated Hospital of Nanchang University — Nanchang, Jiangxi, China
Research Intern — May 2021 –Jul. 2021

- Major Histocompatibility Complex (MHC) binding prediction based on deep learning methods.

Xi'an Jiaotong University — Xi'an, Shaanxi, China
Research Assistant — Sep. 2019 –Jul. 2020

- Object tracking and segmentation in traffic images and videos.

Publications

1. **Hong, Y.**, Welch, C. J., Piras, P., & Tang, H. (2024). Enhanced Structure-Based Prediction of Chiral Stationary Phases for Chromatographic Enantioseparation from 3D Molecular Conformations. Analytical Chemistry. [link] [codes]
2. **Hong, Y.**, Li, S., Welch, C. J., Tichy, S., Ye, Y., & Tang, H. (2023). 3DMolMS: Prediction of Tandem Mass Spectra from Three Dimensional Molecular Conformations. Bioinformatics, btad354. [link] [codes]
3. Zhang, Y., Hu, Z., Wang, X., **Hong, Y.**, Nan, Y., Wang, X., Cheng, J. and Xing, L., 2024, August. Navigating the Privacy Compliance Maze: Understanding Risks with Privacy-Configurable Mobile SDKs. In 33rd USENIX Security Symposium (USENIX Security 24). USENIX Association. [link]
4. Monshizadeh, M.*, **Hong, Y.***, & Ye, Y. (2024). Multitask Knowledge-primed Neural Network for Predicting Missing Metadata and Host Phenotype based on Human Microbiome. bioRxiv, 2024-02. (* Equal contribution as co-first authors)
5. Li, Y., **Hong, Y.**, Song, Y., Zhu, C., Zhang, Y., & Wang, R. (2022). SiamPolar: Semi-supervised realtime video object segmentation with polar representation. Neurocomputing, 467, 491-503. [link] [codes]
6. Li, Y., Zhu, C., Liu, Y., **Hong, Y.**, & Wang, J. (2021). Geometric and semantic analysis of road image sequences for traffic scene construction. Neurocomputing, 465, 336-349. [link] [codes]

Conference Presentations

1. Poster in ASMS 2024, "Predicting compositional fragments of compounds from their tandem mass spectra using deep neural networks" [poster]
2. Talk in ASMS 2023, "A Machine Learning Model for Chemical Formula Prediction Using Tandem Mass Spectra of Compounds" [slides]
3. Poster in ASMS 2022, "Prediction of Molecular Tandem Mass Spectra Using 3-Dimensional Conformers" [poster]

Teaching

- **Instructor** at Indiana University Bloomington — Fall 2024
  Machine Learning Bioinformatics (INFO I529)
- **Guest Lecture** at Indiana University Bloomington — Fall 2024
  Big Data Analytics (CSCI D351)

Professional Services

- Reviewer: IEEE/ACM Transactions on Computational Biology and Bioinformatics, BMC Genomics, BMC Bioinformatics, Pharmaceutical Research, Beilstein Journal of Organic Chemistry, Chemical Physics Letters
- Sub-reviewer: ISMB 2023, RECOMB 2023, RECOMB 2022

Skills

- **Programming:** Python, R, Racket, C/C++, Java
- **Deep Learning:** PyTorch, TensorFlow, Keras
- **Tools/Techs:** LaTeX, Git, SQL

Languages

- **English:** Proficient
- **Chinese:** Mother tongue, native speaker

Scholarships and Awards

- **Special Academic Scholarship of Xi'an Jiao Tong University** — 2019
  (Top 20% in the students)
  Academic Administration of Xi'an Jiao Tong University
- **First-class Scholarship for New Students of Xi'an Jiao Tong University** — 2019
  (Top 40% in the recommended for exam-free graduate students)
  Academic Administration of Xi'an Jiao Tong University
- **Second-class Scholarship of Xidian University** — 2018
  (Top 10% in the students)
  Academic Administration of Xidian University
- **Meritorious Winner of MCM (Mathematical Contest In Modeling)** — 2018
  (Top 10% in the 8085 teams)
  COMAP(the Consortium for Mathematics and Its Application)
- **Third-class Scholarship of Xidian University** — 2017
  (Top 15% in the students)
  Academic Administration of Xidian University