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EDUCATION

Indiana University Bloomington Ph.D. in Computer Science	Bloomington, IN, US Sep. 2020 –Jul. 2025
Xidian University B.S. in Computer Science and Technology	Xi'an, Shaanxi, China Sep. 2015–Jul. 2019

RESEARCH EXPERIENCE

University of Washington Postdoc Associate Advisor: Prof. William Stafford Noble Area: Computational biology, Deep Learning, Proteomics mass spectrometry	Seattle, WA, US Aug. 2025 –Present
Indiana University Bloomington Research Assistant Advisor: Prof. Haixu Tang Area: Computational biology, Deep Learning, Small molecular mass spectrometry	Bloomington, IN, US Aug. 2021 –Jul. 2025
The First Affiliated Hospital of Nanchang University Research Intern Advisor: Prof. Sujun Li Area: MHC (Major Histocompatibility Complex) binding prediction	Nanchang, Jiangxi, China May 2021 –Jul. 2021
Xi'an Jiaotong University Research Assistant Advisor: Prof. Yaochen Li Area: Object tracking and segmentation in traffic scene	Xi'an, Shaanxi, China Sep. 2019 –Jul. 2020

TEACHING EXPERIENCE

Instructor DSCI-D590, Topics in Data Science	Indiana University Bloomington Spring 2025
Instructor INFO-I529, Machine Learning Bioinformatics	Indiana University Bloomington Fall 2024
Assistant Instructor DSCI-D351, Big Data Analytics Instructor: Prof. Haixu Tang	Indiana University Bloomington Aug.-Sep. 2024

SCHOLARSHIPS AND AWARDS

• Luddy Outstanding Research Award Indiana University Bloomington	2025
• Special Academic Scholarship (Top 20%) Xi'an Jiao Tong University	2019
• Second-tier Scholarship (Top 10%) Xidian University	2018

PUBLICATIONS

The deep learning models, 3DMolMS for retention time and collision-cross section [9] and 3DMolCSP for enantioselectivity [5], have been evaluated on internal data and positively considered for application by biotech, pharmaceutical and agricultural leaders, including Merck, AbbVie and Corteva.

BOOKS & PATENTS

- 1 Qingyang Xiao, Kaiyuan Liu, **Yuhui Hong** & Haixu Tang (2024). "Neural Networks for Chemists." *American Chemical Society*, DOI:10.1021/acsinfocus.7e8012. [Primer]
- 2 Haixu Tang, **Yuhui Hong**, & Sujun Li. "Method of predicting ms/ms spectra and properties of chemical compounds." US Patent No. WO2023239720A1, June 6, 2023.

PEER-REVIEWED ARTICLES

- 3 **Yuhui Hong**, Yuzhen Ye & Haixu Tang (2025). "Machine Learning in Small-Molecule Mass Spectrometry." *Annual Review of Analytical Chemistry*, 18. [Paper]
- 4 Ludwig Lautenbacher, Kevin L. Yang, Tobias Kockmann, Christian Panse, Wassim Gabriel, Dulguun Bold, Elias Kahl, Matthew Chambers, Brendan X. MacLean, Kai Li, Fengchao Yu, Brian C. Searle, Wilburn, Damien, Mohammad Reza Zare Shahneh, **Yuhui Hong**, Haixu Tang, Mingxun Wang, Ralf Gabriels, Robbin Bouwmeester, Robbe Devreese, Tobias K. Schmidt, Alexey I. Nesvizhskii, & Mathias Wilhelm (2024). "Koina: Democratizing machine learning for proteomics research." *accepted by Nature Communications*. [Website] [Code]
- 5 **Yuhui Hong**, Christopher J Welch, Patrick Piras, & Haixu Tang (2024). "Enhanced Structure-Based Prediction of Chiral Stationary Phases for Chromatographic Enantioseparation from 3D Molecular Conformations." *Analytical Chemistry*, 96(6), 2351-2359. [Paper] [Code]
- 6 **Yuhui Hong***, Mahsa Monshizadeh*, & Yuzhen Ye (2024). "Multitask Knowledge-primed Neural Network for Predicting Missing Metadata and Host Phenotype based on Human Microbiome." *Bioinformatics Advances*, vbae203. [Paper] [Code]
- 7 Yifan Zhang, **Yuhui Hong**, & Luyi Xing (2024). "Resurfacing Vulnerabilities: An Empirical Study on the Reemergence of Previously Patched Security Issues in App-in-App Ecosystems." In *Proceedings of the ACM Workshop on Secure and Trustworthy Superapps*, pp. 23-26. 2024.
- 8 Yifan Zhang, Zhaojie Hu, Xueqiang Wang, **Yuhui Hong**, Yuhong Nan, XiaoFeng Wang, Jiatao Cheng & Luyi Xing (2024). "Navigating the Privacy Compliance Maze: Understanding Risks with Privacy-Configurable Mobile SDKs." In *33rd USENIX Security Symposium*, pp. 6543-6560. [Paper]
- 9 **Yuhui Hong**, Sujun Li, Christopher J Welch, Shane Tichy, Yuzhen Ye, & Haixu Tang (2023). "3DMolMS: Prediction of Tandem Mass Spectra from Three Dimensional Molecular Conformations." *Bioinformatics*, btad354. [Paper] [Code] [PyPI package] [Service on Konia]
- 10 Yaochen Li, **Yuhui Hong**, Yonghong Song, Chao Zhu, Ying Zhang, & Ruihao Wang (2022). "SiamPolar: Semi-supervised Realtime Video Object Segmentation with Polar Representation." *Neurocomputing*, 467, 491-503. [Paper] [Code]
- 11 Yaochen Li, Chao Zhu, Yuehu Liu, **Yuhui Hong**, & Jianji Wang (2021). "Geometric and Semantic Analysis of Road Image Sequences for Traffic Scene Construction." *Neurocomputing*, 465, 336-349. [Paper] [Code]

ONGOING ARTICLES

- 11 **Yuhui Hong**, Sujun Li, Yuzhen Ye, & Haixu Tang (2024). "FIDDLE: a deep learning method for chemical formulas prediction from tandem mass spectra." *bioRxiv*, 2024-11. (Under review). [Preprint] [Code] [PyPI package]
- 12 **Yuhui Hong**, & Haixu Tang (2025). "A Task-Specific Transfer Learning Approach to Enhancing Small Molecule Retention Time Prediction with Limited Data." (Under review). [Preprint] [Code]
- 13 **Yuhui Hong***, Mahsa Monshizadeh*, & Yuzhen Ye (2025). "Confounder Free Predictive Models for Microbiome-based Host Phenotype Prediction." (Under review). [Preprint] [Code]

*equal contribution as co-first authors

CONFERENCE PRESENTATIONS

- 1 **Oral Presentation** "A Task-Specific Transfer Learning Approach to Enhancing Small Molecule Retention Time Prediction with Limited Data" [\[Slides\]](#)
73rd Conference on Mass Spectrometry and Allied Topics. Jun. 1 - 5, 2025. Baltimore, MD.
- 2 **Poster presentation.** "Predicting Compositional Fragments of Compounds from Their Tandem Mass Spectra Using Deep Neural Networks" [\[Poster\]](#)
72nd Conference on Mass Spectrometry and Allied Topics. Jun. 2 - 6, 2024. Anaheim, CA.
- 3 **Poster presentation.** "3DMolMS: Prediction of Tandem Mass Spectra from 3D Molecular Conformations"
Turkey Run Analytical Chemistry Conference 2023. Sep. 29 - 30, 2023. Marshall, IN.
- 4 **Oral Presentation** "A Machine Learning Model for Chemical Formula Prediction Using Tandem Mass Spectra of Compounds" [\[Slides\]](#)
71st Conference on Mass Spectrometry and Allied Topics. Jun. 4 - 8, 2023. Houston, TX.
- 5 **Poster Presentation** "Prediction of Molecular Tandem Mass Spectra Using 3-Dimensional Conformers" [\[Poster\]](#)
70th Conference on Mass Spectrometry and Allied Topics. Jun. 5 - 9, 2022. Minneapolis, MN.

PROFESSIONAL SERVICES

- **Reviewer:** (conferences) ACM BCB 2025; (journals) Journal of Chromatography A, BMC Genomics, BMC Bioinformatics, IEEE Transactions on Computational Biology and Bioinformatics, PeerJ Computer Science, Pharmaceutical Research, Beilstein Journal of Organic Chemistry, Chemical Physics Letters
- **Sub-reviewer:** (conferences) ISMB/ECCB 2025, RECOMB 2025, ACM BCB 2024, ISMB/ECCB 2023, RECOMB 2023, RECOMB 2022; (journals) Analytical Chemistry, International Journal of Mass Spectrometry
assisted in reviewing papers under the guidance of Prof. Haixu Tang

PROFESSIONAL AFFILIATIONS

- American Society for Mass Spectrometry (ASMS), Member. 2022 - Present
- NSF Center for Bioanalytic Metrology (CBM), Student. 2022 - 2025

Last updated: September 8, 2025