Xieheng Wang

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Research interests

Statistical methods & applications to big data, Biomedical data science, Statistical genetics, Dimension reduction, Causal Inference

Education

Tsinghua University   **Beijing, China**

B.Eng. in Measurement, Control Technology and Instruments   *GPA: 3.69/4.00*
Sept. 2019 – Jul. 2023

Minor in Statistics   *GPA: 3.92/4.00*
Mar. 2021 – Jul. 2023

University of Minnesota, Twin Cities   **MN, USA**
Ph.D. in Statistics   *GPA: 3.90/4.00*
Aug. 2023 – Present

Research experience

Causal Inference between Multi-Omics traits and Alzheimer's Disease

Mentor: Wei Pan (University of Minnesota)   *Aug. 2023 – Present*
• Applied 2ScML (2-stage constraint maximum likelihood) to OmicsPred pre-trained models and AD GWAS data(such as IGAP and EADB) to identity (putative) causal relationships between multi-omiccs traits and Alzheimer's Disease.

Relationships and Shared Genetic Influences between T2D Biomarkers and Human Brain Health
Mentor: Bingxin Zhao (University of Pennsylvania)   *Apr. 2022 – Dec. 2022*
• Explored the association between Type 2 diabetes and human brain from individual level (polygenic risk score analysis) and summary level (LD Score Regression and Local Analysis of [co]Variant Association).

Pure Noise Enables Privacy-preserving Federated Learning with Non-iid Data
Mentor: Huaiyu Dai (North Carolina State University)   *July 2022 – Aug. 2022*
• Applied OPeN (Oversampling with Pure Noise Image) in the framework of federated learning to enhance performance and privacy.

Feature-based Classification on MQTT Data
Mentor: Jingyi Zhang (Tsinghua University)   *Oct. 2021 – Jun. 2023*

- Applied POTD (principal optimal transport direction) on MQTT-IoT-IDS2020 dataset to extract fearures distinguishing different attacks. *One working paper now available in [arxiv](#).*
- Proposed a new ensemble method of multiclass classification based on SDR subspace using POTD.

Design and Construction of Vision-based Quadrotor Navigation Control System

Mentor: Kaichun Zhao (Tsinghua University)   *Sept. 2020 – Dec. 2021*
- Applied some visual SLAM methods like SuperPoint on real image data obtained by drone in the environment of smoke.

Publications

J. Liu*, Y. Tang*, H. Zhao, **X. Wang**, F. Li, and J. Zhang, "CPS Attack Detection under Limited Local Information in Cyber Security: A Multi-node Multi-class Classification Ensemble Approach", *ACM Transactions on Sensor Networks (TOSN)*, 2022, arXiv: 2209.00170 [cs.CR].

Teaching experience

Teaching assistant, Tsinghua University

Spring 2022

The Martial Geomorphology and The Directional Sport (Orienteering)
- Help place the control points for maps before class and recycle them after class.

Honors and scholarships

Sports Excellence Scholarship, Tsinghua University	*2022*
Academic Excellence Scholarship, Tsinghua University	*2021*
Sports Excellence Scholarship, Tsinghua University	*2021*
Academic Excellence Scholarship, Tsinghua Univerisity	*2020*
Sports Excellence Scholarship, Tsinghua University	*2020*

Skills

Programming
R, Python, PyTorch, MATLAB, C/C++
Tools
LaTeX, Linux, SPSS, Git, OCAD
Languages
English (TOEFL:102, CET-6:630), Mandarin (native)

Leadership&Activities

Vice president of Tsinghua University Student Orienteering Association

Sept. 2022 - Jun. 2023

Member of Tsinghua Orienteering Team   *Oct. 2019 - Jun. 2023*