Yuanjie Zou

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Education

Imperial College London — Oct 2023 - Oct 2024

MRes in Bioengineering (Distinction) — *London, UK*

- Supervisor: Dr. Pedro Ballester
- Thesis: Self-Supervised Disentangled Omics Representation learning for Robust Drug Response Prediction

Xi'an Jiaotong-Liverpool University — Sep 2019 - Jul 2023

BSc in Applied Mathematics (First Class Honours) — *Suzhou, China*

- Supervisor: Dr. Fangting Zheng

Research Experience

Research Assistant: Metagenomic binning with DNA language model — Oct 2024 – Present

Department of Computer Science, Hong Kong Baptist University — *Hong Kong SAR*

Supervisor: Dr. ZHANG, Eric Lu

- Reviewed foundation model application in DNA and protein
- Improved the completeness of metagenomics binning method by language model (on-going)

MRes Thesis: Omics-informed Precision Oncology — Dec 2023 – Oct 2024

Department of Bioengineering, Imperial College London — *London UK*

Supervisor: Dr. Pedro Ballester

- Developed a methodology using disentanglement learning to pretrain high-quality omics embeddings.
- Designed experiments and analyzed model configuration for improved results.
- Collaborated with interdisciplinary researchers to finalize the manuscript.

Research Assistant: Weakly Supervised Learning — Jul 2022 – Aug 2023

Department of Computing, Xi'an Jiaotong-Liverpool University — *Suzhou, China*

Supervisor: Dr. Haiyang Zhang

- Conducted research on Positive-Unlabelled Learning, especially for tackling selection bias problem.
- Proposed a novel Positive-Unlabelled Learning framework using energy-based model.
- Developed code, contributed to manuscript, and published a paper.

Final Year Project: Topological Molecule Representation for Drug Discovery — Oct 2022 – Jun 2023

Department of Pure Mathematics, Xi'an Jiaotong-Liverpool University — *Suzhou, China*

Supervisor: Dr. Fangting Zheng

- Derived a differential geometry and algebraic topology-based representation for molecules.
- Enhanced molecular docking and affinity prediction using a deep learning network with attention mechanisms.
- Explored pose prediction for drug design using a diffusion model.

Summer Undergraduate Research Fellow — Jun 2022 – Sep 2022

Department of Pure Mathematics, Xi'an Jiaotong-Liverpool University — *Suzhou, China*

Supervisor: Dr. Fangting Zheng

- Investigated GNNs architecture model for analyzing citation network between Computer Science arXiv papers.
- Evaluated methods to mitigate the overfitting of GNNs in large-scale datasets.

Publications

- **Yuanjie Zou**, Hanqin Du, Zerui Li, Chayanit Piyawajanusorn, Qianrong Guo and Ballester Pedro*. *Self-Supervised Disentangled Omics Representation learning for Robust Drug Response Prediction.* (In preparation)

- Haiyang Zhang*, Qiuyi Chen[†], **Yanjie Zou**[†], Jia Wang, Yushan Pan, and Mark Stevenson. *Document Set Expansion with Positive-Unlabeled Learning Using Intractable Density Estimation.* (LREC-COLING 2024)

Extra-curricular

Conference poster presentation: COLING-2024   **May 2024**

HangZhou Global AI Innovation Contest, Track 2   **Feb 2022 – May 2022**
TOP 2%   *part-time*
- Designed span-based NER system to extract nested entity of commodity titles on JD.com.
- Developed a solution with contrastive learning, continual pre-training, etc. to improve performance.

Technical Skills

Programming: Python, R, Linux, Matlab, Java
Python: PyTorch, Transformers (Hugging Face), Scikit-learn, W&B