

Junru Jin

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EDUCATION

- **Shandong University** Jinan, China
 - *Bachelor of Software Engineering - Artificial Intelligence* *September 2019 - June 2023*
 - **GPA:** 91.81 (Rank 1/20 in Class, Rank 2/300 in Department)

RESEARCH EXPERIENCE

- **Undergraduate Researcher** 2021.03 - 2022.12
 - *Research Center of Software and Data Engineering, SDU, Leyi Wei*
 - Focused on how to apply deep learning methods into biological problem from computation perspective.
 - Try to do interpretable prediction on DNA methylation issue
 - Apply Meta-learning to accelerate peptide property prediction
 - Use graph model and unsupervised learning to study molecular representation

PUBLICATIONS

- **Junru Jin**, Yingying Yu, Ruheng Wang, Xin Zeng, Chao Pang, Yi Jiang, Zhongshen Li, Yutong Dai, Ran Su, Quan Zou, Kenta Nakai and Leyi Wei. DNA-ABF: multi-scale deep biological language learning model for the interpretable prediction of DNA methylations (**Genome Biology**). 2022.
- **Junru Jin**, Yingying Yu, Leyi Wei. Mouse4mC-BGRU: deep learning for predicting DNA N4-methylcytosine sites in mouse genome (**Methods**). 2022.
- Ruheng Wang, **Junru Jin**, Quan Zou, K Nakai, Leyi Wei. PepBCL: Predicting protein-peptide binding residues via interpretable deep learning (**Bioinformatics**). 2022.
- Yingying Yu, Wenjia He, **Junru Jin**, Guobao Xiao, Lizhen Cui, Rao Zeng, Leyi Wei. iDNA-ABT: advanced deep learning model for detecting DNA methylation with adaptive features and transductive information maximization (**Bioinformatics**). 2021.
- Wenjia He, Yi Jiang, **Junru Jin**, Zhongshen Li, Jiaojiao Zhao, Balachandran Manavalan, Ran Su, Xin Gao, Leyi Wei. Accelerating bioactive peptide discovery via mutual information-based meta-learning (**Briefings in Bioinformatics**). 2021.
- Xin Zhang, Lesong Wei, Xiucui Ye, Kai Zhang, Saisai Teng, Zhongshen Li, **Junru Jin**, Min JaeKim, Tetsuya Sakurai, Lizhen Cui, Balachandran Manavalan, Leyi Wei. SiameseCPP: A Sequence-based Siamese Network to Predict Cell-Penetrating Peptides by Contrastive Learning (**Briefings in Bioinformatics**). 2022.
- Ruheng Wang, Yi Jiang, **Junru Jin**, Chenglin Yin, Haoqing Yu, Fengsheng Wang, Jiuxin Feng, Ran Su, Kenta Nakai, Quan Zou, Leyi Wei. DeepBIO: a deep learning-based web service to predict and annotate the functions for biological sequences (**bioRxiv**). 2022.
- Yi Jiang, Ruheng Wang, Jiuxin Feng, **Junru Jin**, Sirui Liang, Zhongshen Li, Yingying Yu, Anjun Ma, Ran Su, Quan Zou, Qin Ma, Leyi Wei. PHAT: interpretable prediction of peptide secondary structures using hypergraph multi-head attention network and transfer learning (**bioRxiv**). 2022.
- Yu Wang, Chao Pang, Yuzhe Wang, Yi Jiang, **Junru Jin**, Sirui Liang, Quan Zou, Leyi Wei. MechRetro is a chemical mechanism driven graph learning framework for interpretable retrosynthesis prediction and pathway planning (**arXiv**). 2022.

PROJECT EXPERIENCE

- **iDNA-ABF - A DNA methylation predictor (published in Genome Biology)** 2021.07 - 2022.08
 - Benchmarking comparisons show that our iDNA-ABF outperforms state-of-the-art methods for different methylation predictions.
 - iDNA-ABF shows the power of deep language learning in capturing both sequential and functional semantics information from background genomes.
 - By integrating the interpretable analysis mechanism, we well explain what the model learns, helping us build the mapping from the discovery of important sequential determinants to the in-depth analysis of their biological functions.
- **EasyTrans - Automatic video summarization APP** 2021.03 - 2021.05
 - Provincial special price of 17th Challenge Cup extracurricular academic works competition.
 - Construct the EasyTrans AI framework, according to the need of the hierarchical summaries. Text Segmentation is used to divide the whole long Text into hierarchical paragraphs, and then Seq2Seq+Attention is used to obtain summary short sentences as titles for each paragraph.

- **An opening world framework intergrating OOD detection and continuous learning** 2022.07 - 2022.08
 - Best project award for the valuable and innovative work in Text Classification project in 2022 Nanjing University NLP Summer Camp.
 - Use out of distribution detection and continuous learning to solve the binary classification in open world setting.
- **CoraL - A cancer-specific ncPEPs predictor** 2022.04 -
 - CoraL: Interpretable Supervised Contrastive Meta-learning Framework to Enhance Cancer ncPEPs Prediction.
 - Discover the relationship between different cancer types from a computation perspective, which can not only verify some wet experiment results but also provide insightful suggestions to relevant biology problems.

HONORS AND AWARDS

- National Scholarship of Shandong University September, 2021
- 2020 SDU School of Software Scholarship September, 2020
- 2021 SDU School of Software Scholarship September, 2021
- 2022 SDU School of Software Scholarship September, 2022
- 2020 SDU School of Software Specialty Scholarship September, 2020
- 2021 SDU School of Software Specialty Scholarship September, 2021
- 2022 SDU School of Software Specialty Scholarship September, 2022
- The 3th Jinan Scholarship November, 2022
- Outstanding Student in Innovation and Entrepreneurship Activities in Shandong University May, 2022
- Excellent team for social practice of college school student volunteers in Shandong Province September, 2021
- The 17th Challenge Cup extracurricular academic works competition provincial special price July, 2021
- The 4th Blooming Cup 5G application solicitation competition on intelligent life second prize September, 2021
- The 7th CCB Cup Internet Plus innovation and entrepreneurship competition provincial third prize October, 2021
- The 15th National Software innovation Competition excellence price May, 2022
- 6th place in the university group of the 9th Qingdao chess championship May, 2020
- 37th place in the second track of 2021 global AI innovation competition April, 2021

COMMUNITY INVOLVEMENT

- **Sharing-Ideas, Leader** 2022.05 -
 - Sharing-Ideas is a student organization which aimed to build an online sharing platform for knowledge and practice resources.
 - As the leader of Sharing-Ideas, organize sharing activities involving academic research, software engineering projects, and management operations.
 - Win "Excellent Social Practice Team" in Shandong Province.
- **Online-Student, Leader in Web department** 2020.04 -2021.5
 - Online student is a student organization which aimed to bring convenience to college students and organize outdoor activities.
 - As the leader of Web department, build a mini-program aimed to offer help on daily life use of college students.
 - Win "Excellent Social Practice Team" in Shandong Province.