

XIAO WANG

✉ wang3702@purdue.edu · in Xiao Wang · GitHub · Website · Google Scholar

EDUCATION

Purdue University, West Lafayette, U.S. Aug, 2018 – Present

Ph.D. in Computer Science GPA: **3.91/4.0**

Area: Computational Biology, Machine Learning, Self-Supervised Learning

Xi'an JiaoTong University, Xi'an, China Aug, 2014 – June, 2018

B.S. in Computer Science GPA: 90.57/100; Rank: **1/170**

Area: Intelligent Transportation, Machine Learning

Graduated with highest honors, Top 10 Outstanding Students (10/4000+)

RESEARCH INTERESTS

Computational Biology

- 1) Macromolecular structure modeling and evaluation from experimental data (eg., Cryo-EM).
- 2) Macromolecular structure prediction and evaluation from sequence (gene) information.
- 3) Function of macromolecule prediction via sequence and structure information.

Machine Learning

- 1) Development of *novel, efficient* and *general* self-supervised learning (SSL) algorithms (eg., adversarial SSL, asymmetrical SSL).
- 2) Applications of self-supervised learning to biology, medicine, health.

HONORS AND AWARDS

<i>NSF MolSSI Graduate Fellowship</i> (10 across U.S, \$80,000)	2022
<i>Chiang Chen Overseas Fellowship</i> (10 across China, \$50,000)	2018
<i>HIWIN Outstanding Student Scholarship</i> (Top 0.3% , \$10,000 CNY)	2018
<i>Top 10 Outstanding Undergraduate of Xi'an Jiaotong University</i>	2017
<i>National Scholarship</i> (Top 1%, \$8,000 CNY)	2016

EXPERIENCE

Kihara Bioinformatics Lab, West Lafayette, U.S Aug, 2018 – Present

Research Assistant Advisor: Prof. Daisuke Kihara

Deep learning for 3D protein structure modeling and function prediction.

- 1) DOVE: Apply 3D CNN to evaluate the quality of protein docking models.
- 2) Emap2sec+: Apply 3D ResNet to detect protein and DNA structures in Cryo-EM maps of intermediate resolution.
- 3) GNN_DOVE : Apply Graph neural network to evaluate protein docking models.
- 4) DeepMainmast: Build a graph based on deep-learning based structure prediction in Cryo-EM maps and then trace the main chain of protein from the graph.
- 5) DAQ: Utilize deep learning to evaluate the deposited structures and yield promising information for experimental scientists to revise their structures.
- 6) CryoREAD: A computational tool using deep learning to automatically build full DNA/RNA atomic structure from cryo-EM map.

Facebook AI Research, Menlo Park, U.S May, 2021 – Aug, 2021

Research Intern Advisor: Dr. Xinlei Chen, Haoqi Fan

Self-supervised learning for Image Classification without labels

- Proposed novel asymmetrical self-supervised learning methods Asym_Siam
- Extend asymmetric design to several existing methods and verified its generalization

- Investigated the BatchNorm (BN) importance in self-supervised learning with asymmetric design.
- Achieved state-of-the-art performance of self-supervised ResNet-50 on ImageNet with less computation.

JD AI Research, Mountain View, U.S

May, 2020 – Dec, 2020

Research Intern Advisor: Dr. Jingen Liu

Temporal contrastive learning for video event segmentation

- Proposed self-supervised learning framework CoSeg for event segmentation in videos
- Integrated Transformer and contrastive learning to detect event boundary
- Achieved state-of-the-art performance on video segmentation dataset with much higher Mean-Of-Frames (MOF) and Intersection-Over-Union (IOU).
- Proposed our own evaluation metrics F1@5% that is more general for event segmentation

Futurewei AI Lab, Bellevue, U.S

May, 2019 – August, 2019

Computer Vision Research Intern Mentor: Dr. Lin Chen, Supervisor: Prof. Guojun Qi, Prof. Jiebo Luo

Pre-task representation learning for self-supervised and semi-supervised learning.

- 1) EnAET: Proposed novel idea based on Auto-Encoding Transformation, which achieved SOTA performance on semi- and fully- supervised benchmarks.
- 2) CLSA: Introduced stronger augmentation to contrastive learning as an auxiliary task, which greatly boosted the performance.
- 3) AdCo: Adversarial contrastive learning methods by building an adversarial trainable memory bank.
- 4) CaCo: Cooperative and Adversarial contrastive learning method by building a trainable memory bank with cooperative positive and adversarial negative training.
- 5) AdPE: a MIM based self-supervised learning method with adversarial embeddings.

Institute of Automation, Chinese Academy of Sciences, Beijing, China June, 2016 – June, 2018

Machine Learning Intern Mentor: Dr. Yilun Lin, Supervisor: Prof. Li-Li, Prof. Fei-Yue Wang

Deep learning for car-following trajectory prediction and traffic simulation.

- Proposed GRU-based car-following model, which greatly improved performance on NGSIM dataset.
- Built the traffic flow simulation platform with our car-following model and reproduced the classical traffic congestion pattern.
- Proposed a novel way based on DQN(A2C) and ARS to adjust GAN's hyper-parameters.
- Tests are carried on MNIST, CIFAR and CelebA but without stable and extraordinary performance.
- Codes available in ARS GAN.

PUBLICATIONS

* denotes equal contribution.

Computational Biology

Published

- 1 **Xiao Wang**, Genki Terashi, & Daisuke Kihara. "Cryo-READ: DNA/RNA dE novo Atomic structure modeling in cryo-EM maps with deep learning". *Nature Methods*. (2023).[GitHub][Colab][Server]
- 2 Genki Terashi*, **Xiao Wang***, Sai Raghavendra Maddhuri Venkata Subramaniya, John J. G. Tesmer Daisuke Kihara. "Residue-Wise Local Quality Estimation for Protein Models from Cryo-EM Maps." *Nature Methods*. (2022). [Paper][GitHub] [Colab][Server]
- 3 Genki Terashi, **Xiao Wang**, Devashish Prasad, Tsukasa Nakamura & Daisuke Kihara. "Integrated Protocol of Protein Structure Modeling for cryo-EM with Deep Learning and Structure Prediction". *Nature Methods*. (2023). [GitHub][Colab][CodeOcean] [Server]
- 4 Tsukasa Nakamura, **Xiao Wang**, Genki Terashi, & Daisuke Kihara. "DAQ-Score Database: Assessment of Map-Model Compatibility for Protein Structure Models from Cryo-EM Maps". *Nature Methods*. (2023).[Web]
- 5 **Xiao Wang**, Eman Alnabati, Tunde W Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi & Daisuke Kihara. "Emap2sec+: Structure Detection in Intermediate Resolution Cryo-EM Maps Using Deep Learning". *Nature Communications*. (2021). [Paper] [GitHub][Colab] [CodeOcean] [Server]

- 6 Genki Terashi, **Xiao Wang** & Daisuke Kihara. “Protein Model Refinement for Cryo-EM Maps Using DAQ score”. *Acta Crystallographica Section D: Structural Biology*. (2022). [Paper] [GitHub][Colab]
- 7 **Xiao Wang**, Sean T, Flannery, Daisuke Kihara. “Protein Docking Model Evaluation by Graph Neural Networks”. *Frontiers in Molecular Biosciences (FMOLB)*. (2021). [Paper] [GitHub] [Recognized as representative deep-Learning-based method to directly tackle key bottleneck of structure quality assessment by CAPRI community in ”Lensink, Marc F., et al. ”Prediction of protein assemblies, the next frontier: The CASP14 CAPRI experiment.” Proteins: Structure, Function, and Bioinformatics 89.12 \(2021\): 1800-1823.”.](#)
- 8 **Xiao Wang**, Genki Terashi, Charles W. Christoffer, Mengmeng Zhu, and Daisuke Kihara, “Protein Docking Model Evaluation by 3D Deep Convolutional Neural Networks”. *Bioinformatics* 36: 2113-2118 (2020). [Paper] [GitHub][Server]
- 9 **Xiao Wang***, Mizu Kittaka*, Yilin He, Yiwei Zhang, Yasuyoshi Ueki, and Daisuke Kihara. “OC_Finder: A deep learning-based software for osteoclast segmentation, counting, and classification”. *Frontiers in Bioinformatics*. (2021). [Paper] [GitHub] [Colab]

Self-Supervised Learning

Pre-print

- 1 **Xiao Wang**, Ying Wang, Ziwei Xuan, Guo-Jun Qi. “AdPE: Adversarial Positional Embeddings For MIM Pretraining of Transformers”. *IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE T-PAMI)*. (Under Review). [Paper] [GitHub]

Published

- 1 **Xiao Wang**, Yuhang Huang, Dan Zeng, Guo-Jun Qi. “CaCo: Both Positive and Negative Samples are Directly Learnable via Cooperative-adversarial Contrastive Learning”. *IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE T-PAMI)*. (2022). [Paper] [GitHub]
- 2 **Xiao Wang**, Guo-Jun Qi. “Contrastive Learning with Stronger Augmentations”. *IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE T-PAMI)*. (2022). [Paper] [GitHub]
- 3 **Xiao Wang***, Haoqi Fan*, Yuandong Tian, Daisuke Kihara, Xinlei Chen. “On the Importance of Asymmetry for Siamese Representation Learning”. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2022)*. [Paper] [GitHub] [First asymmetrical self-supervised learning approach.](#)
- 4 Qianjiang Hu*,**Xiao Wang***, Wei Hu, Guo-Jun Qi. AdCo: “Adversarial Contrast for Efficient Learning of Unsupervised Representations from Self-Trained Negative Adversaries”. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2021)*. [Paper] [GitHub]. [Pioneering work in adversarial self-supervised learning.](#)
- 5 **Xiao Wang**, Jingen Liu, Tao Mei, Jiebo Luo. CoSeg: “Cognitively Inspired Unsupervised Generic Event Segmentation”. *IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS)*. (2023). [Paper][GitHub]
- 6 **Xiao Wang**, Daisuke Kihara, Jiebo Luo, Guo-Jun Qi. “Enaet: Self-trained ensemble autoencoding transformations for semi-supervised learning”. *IEEE Transactions on Image Processing (IEEE TIP)*. (2020). [Paper] [GitHub] [Pioneering work in integrating self-supervised learning for semi-supervised learning.](#)
- 7 Guo-Jun Qi, Liheng Zhang, Feng Lin, **Xiao Wang**. “Learning Generalized Transformation Equivariant Representations via Autoencoding Transformations”. *IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE T-PAMI)*. (2020). [Paper] [GitHub]

Intelligent Transportation (before Ph.D.)

- 1 **Xiao Wang**, Rui Jiang, Li Li, Yi-Lun Lin, and Fei-Yue Wang. “Long memory is important: A test study on deep-learning based car-following model”. *Physica A: Statistical Mechanics and its Applications*,514: 786-795, (2019) [Paper]
- 2 **Xiao Wang**, Rui Jiang, Li Li, Yilun Lin, Xinhua Zheng, and Fei-Yue Wang. “Capturing car-following behaviors by deep learning”. *IEEE Transactions on Intelligent Transportation Systems (IEEE T-ITS)*, PP(99):1–11, (2018). [Paper] [Nominated for George N. Saridis Best Transactions Paper Award.](#)

Other Publications

- 1 Hugo Schweke, ,,, **Xiao Wang**, Genki Terashi, Daipayan Sarkar, Charles Christoffer, Tunde Aderinwale, Jacob Verburgt, Daisuke Kihara, ,,, Emmanuel D. Levy Shoshana J. Wodak (56 authors), Discriminating

- physiological from non-physiological interfaces in structures of protein complexes: A community-wide study, *Proteomics*, (2023) [Paper]
- 2 Gagliardi L, Raffo A, Fugacci U, Biasotti S, Rocchia W, Huang H, Amor B, Fang Y, Yuanyuan Zhang, **Xiao Wang**, Charles Christoffer, Daisuke Kihara, Axenopoulos A, Mylonas S, Daras P, SHREC 2022: Protein-ligand binding site recognition, *Computers Graphics*, 107: 20-31 (2022). [Paper] [GitHub]
 - 3 Florent Langenfeld, Tunde Aderinwale, Charles Christoffer, Woong-Hee Shin, Genki Terashi, **Xiao Wang**, Daisuke Kihara, Halim Benhabiles, Karim Hammoudi, Adnane Cabani, Feryal Windal, Mahmoud Melkemi, Ekpo Otu, Reyer Zwiggelaar, David Hunter, Yonghuai Liu, Léa Sirugue, Huu-Nghia H Nguyen, Tuan-Duy H Nguyen, Vinh-Thuyen Nguyen-Truong, Danh Le, Hai-Dang Nguyen, Minh-Triet Tran, Matthieu Montès, Surface-based protein domains retrieval methods from a SHREC2021 challenge., *Journal of molecular graphics modelling*, 111: 108103, (2022). [Paper] [GitHub]
 - 4 Broyles, Bradley K., Andrew T. Gutierrez, Theodore P. Maris, Daniel A. Coil, Thomas M. Wagner, **Xiao Wang**, Daisuke Kihara, Caleb A. Class, and Alexandre M. Erkin. "Activation of gene expression by detergent-like protein domains." *Isience* 24, no. 9 (2021): 103017. [Paper] [GitHub]
 - 5 M.F. Lensink, ..., Charles Christoffer, Genki Terashi, Jacob Verburgt, Daipayan Sarkar, Tunde Aderinwale, **Xiao Wang**, Daisuke Kihara, ..., & S.J. Wodak (108 authors), Prediction of protein assemblies, the next frontier: The CASP14-CAPRI experiment. *Proteins*, (2021) [Paper]
 - 6 I. Gubins, M.L. Chaillet, G.v.d. Schot, M.C. Trueba, R.C. Velkamp, F. Forster, **Xiao Wang**, Daisuke Kihara, E. Moebel, N.P. Nguyen, T. White, F. Bunyak, G. Papoulias, S. Gerolymatos, Z. Stavros, E.I. Zacharaki, K. Moustakas, X. Zeng, S. Liu, M. Xu, Y. Wang, C. Chen, X. Cui, F. Zhang, SHREC 2021: Classification in cryo-electron tomograms, *Eurographics Workshop on 3D Object Retrieval*, (2021). [Paper]
 - 7 Zhang, Mei, Zhicheng Zhang, **Xiao Wang**, Hui Yu, Yifan Xia, Kanran Tan, and Fei-Yue Wang. "From AR to AI: Augmentation Technology for Intelligent Surgery and Medical Treatments." *IFAC-PapersOnLine* 53, no. 5 (2021): 792-796. [Paper]
 - 8 Ilja Gubins, Marten L. Chaillet, Gijs van der Schot, Remco C. Velkamp, Friedrich Förster, Yu Hao, Xiaohua Wan, Xuefeng Cui, Fa Zhang, Emmanuel Moebel, **Xiao Wang**, Daisuke Kihara, Xiangrui Zeng, Min Xu, Nguyen P. Nguyen, Tommi White, Filiz Bunyak, SHREC'20 Benchmark: Classification in cryo-electron tomograms, *Computers & Graphics*, (2020). [Paper]
 - 9 **Xiao Wang**, Yuanyuan Zhang, Shengnan Yu, Xiwei Liu, Yong Yuan, and Fei-Yue Wang. E-learning recommendation framework based on deep learning. In *SYSTEMS, MAN, AND CYBERNETICS, 2017 IEEE International Conference on (IEEE SMC)*. pp. 455-460, IEEE, (2017). [Paper]
 - 10 **Xiao Wang**, Yuanyuan Zhang, Shengnan Yu, Xiwei Liu, and Fei-Yue Wang. Computerized adaptive English ability assessment based on deep learning. In *Pacific-Rim Symposium on Image and Video Technology*. pp. 158-171. Springer, (2017). [Paper]
 - 11 Xiaoyan Gong, Xiwei Liu, Sifeng Jing, and **Xiao Wang**. Parallel education systems under perspective of system construction for new IT era. In *Pacific-Rim Symposium on Image and Video Technology*. pp. 131-143. Springer, (2017). [Paper]

PRESENTATIONS & TALKS

- 1 Invited Talk: "Macromolecular Structure Modeling and Evaluation by Deep Learning", **Xiao Wang**, The University of Hong Kong (HKU), Dec 2nd, 2022.
- 2 Invited Talk: "Macromolecular Structure Modeling and Evaluation by Deep Learning", **Xiao Wang**, Nanyang Technological University (NTU), Nanyang Assistant Professorship, Nov 21th, 2022.
- 3 Invited Talk: "Macromolecular Structure Modeling and Evaluation by Deep Learning", **Xiao Wang**, King Abdullah University of Science and Technology (KAUST), Oct 24th, 2022.
- 4 Invited Talk: "The GRU-based Car-Following Model.", **Xiao Wang**. Institute of Automation, Chinese Academy of Sciences, Aug 15, 2022.
- 5 Invited Talk: "How to achieve adversarially self-supervised learning?", **Xiao Wang**. TechBeat, Aug 4, 2022.
- 6 Invited Talk: "De novo DNA/RNA structure modeling from cryo-EM maps by deep learning.", **Xiao Wang**. The Molecular Sciences Software Institute, Virginia Tech, June 29, 2022.
- 7 Conference Presentation: "On the Importance of Asymmetry for Siamese Representation Learning.", **Xiao Wang***, Haoqi Fan*, Yuandong Tian, Daisuke Kihara, Xinlei Chen. CVPR 2022 Representation Learning Session. June 22, 2022.
- 8 Invited Talk: "Adversarial self-supervised learning", **Xiao Wang**. Huawei Central Research. May 16th,

2022.

- 9 Invited Talk: “Pre-task and contrastive self-supervised learning”, **Xiao Wang**, OPPO AI Research, March 11th, 2022.
- 10 Conference Presentation: “Deep learning-based local quality estimation for protein structure models from cryo-EM maps”, Genki Terashi*, **Xiao Wang***, Sai Raghavendra Maddhuri Venkata Subramaniya, John J. G. Tesmer, Daisuke Kihara, 66th Biophysical Society Annual Meeting, San Francisco, Feb. 19-23, 2022
- 11 Invited Talk: “Pre-task and contrastive self-supervised learning”. **Xiao Wang**, Meta AI, Feb 22th, 2022.
- 12 Invited Talk: “Pre-task and contrastive self-supervised learning”. **Xiao Wang**, Microsoft Research, Dec 10th, 2021.
- 13 Invited Talk: “Introduction of self-supervised learning”. **Xiao Wang**, Google Brain, Nov 29th, 2021.
- 14 Invited Talk: “Pre-task and contrastive self-supervised learning”. **Xiao Wang**, VISA AI Research, Nov 12th, 2021.
- 15 Conference Presentation: “The OC_Finder: A deep learning-based software for in vitro osteoclast counting”, **Xiao Wang**, Mizuho Kittaka, Yilin He, Yiwei Zhang, Daisuke Kihara, Yasuyoshi Ueki, 2021 Annual Meeting of The American Society for Bone and Mineral Research, October 1-4, 2021.
- 16 Conference Presentation: “Emap2sec+: Detecting protein and DNA/RNA structures in cryo-EM maps of intermediate resolution using deep learning.”, **Xiao Wang**, Eman Alnabati, Tunde W. Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi, Daisuke Kihara, 71st Annual Meeting of the American Crystallographic Association, July 30 - Aug 5, 2021.
- 17 Invited talk: “Asymmetrical self-supervised learning. ”, **Xiao Wang***. Facebook AI CV group, July 24, 2021.
- 18 Conference Presentation: “Adversarial Contrast for Efficient Learning of Unsupervised Representations from Self-Trained Negative Adversaries”, **Xiao Wang**, Qianjiang Hu, Wei Hu, Guo-Jun Qi. CVPR 2021 Representation Learning Session. June 17, 2022.
- 19 Invited Talk: “Adversarial self-supervised learning”, **Xiao Wang**, Microsoft Research Asia, May 15, 2021.
- 20 Conference Presentation: “Detecting protein and DNA/RNA structures in cryo-EM maps of intermediate resolution using deep learning”, **Xiao Wang**, Eman Alnabati, Tunde W. Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi, Daisuke Kihara, The Hitchhiker’s Guide to the Biomolecular Galaxy 2021, May 12-13, 2021.
- 21 Conference Presentation: “Detecting protein and DNA/RNA structures in cryo-EM maps of intermediate resolution using deep learning”, **Xiao Wang**, Eman Alnabati, Tunde W. Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi, Daisuke Kihara, 2021 65th Biophysical Society Annual Meeting, February 22-26, 2021.
- 22 Conference Presentation: “Emap2sec+: Detecting protein and DNA/RNA structures in cryo-EM maps of intermediate resolution using deep learning”, **Xiao Wang**, Eman Alnabati, Tunde Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi, Daisuke Kihara, Frontiers in Cryo-Electron Microscopy, Keystone Symposia, Feb. 3-4, 2021.
- 23 Invited Talk: “Adversarial self-supervised learning.”, **Xiao Wang**. Facebook AI Research, Jan 20, 2021.
- 24 Conference Presentation: “Protein Docking Model Evaluation by Graph Neural Networks”, **Xiao Wang**, Sean T. Flannery, Daisuke Kihara, Structural and Computational Biology and Biophysics (SCBB) Graduate Student Symposium of Purdue, Dec 16, 2020.
- 25 Conference Presentation: “Emap2sec+: Detecting protein and DNA/RNA structures in cryo-EM maps of intermediate resolution using deep learning”, **Xiao Wang**, Eman Alnabati, Tunde Aderinwale, Sai Raghavendra Maddhuri Venkata Subramaniya, Genki Terashi, Daisuke Kihara, 5th Annual Southern California Cryo-EM Symposium, Oct 30, 2020.
- 26 Guest Lecture: “Review of car-following model”, **Xiao Wang**, Institute of Automation, Tsinghua University, April 21, 2020.
- 27 Invited talk: “Protein docking model evaluation by 3D convolutional neural networks”, **Xiao Wang**. invited talk by Aggregate Intellect - AI.SCIENCE, Mar 24, 2020. [Video].

PROFESSIONAL SERVICES

Associate Editor

IEEE Transactions on Intelligent Vehicles (IEEE-T-IV)

Reviewer

Journal or Conference	2019	2020	2021	2022	2023
<i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i>				1	1
<i>Nature Methods</i>				1	1
<i>IEEE Transactions on Image Processing</i>	4	1	1	4	3
<i>IEEE Transactions on Multimedia</i>				4	2
<i>ACM Transactions on Knowledge Discovery from Data</i>			2	3	4
<i>Engineering Applications of Artificial Intelligence</i>				1	2
<i>Information Processing and Management</i>					3
<i>Pattern Recognition</i>			1	3	3
<i>Bioinformatics</i>			1	1	
<i>IEEE Transactions on Intelligent Transportation Systems</i>	5	5	3	2	2
<i>IEEE Transactions on Reality</i>					1
<i>IEEE Intelligent Systems</i>			1	1	
<i>Frontiers in Bioinformatics</i>			1		
<i>Conference on Neural Information Processing Systems (NeurIPS)</i>	1		1		
<i>Conference on Computer Vision and Pattern Recognition (CVPR)</i>			2	5	5
<i>International Conference on Computer Vision (ICCV)</i>			2		5
<i>European Conference on Computer Vision (ECCV)</i>				8	
Total	10	6	15	34	32

TEACHING & MENTORING EXPERIENCE

Teaching

Java Programming, XJTU Spring 2017
Role: undergraduate TA (5 hour/week). This was a 50-student undergraduate course and I am responsible for java instruction and homework.

Computing for Life Sciences, XJTU Fall 2019, Fall 2023
Role: Tutor for some courses (5 courses in total). This is a 20-student graduate course and I am responsible for teaching Python programming.

Guest Lecture

Traffic Flow Theory, Tsinghua April, 7th, 2020
Molecular Sciences, Virginia Tech July, 25th, 2020

Mentoring

Javad Baghirov, undergraduate from Purdue University 2023-2023
Grace Su, undergraduate from Columbia University 2021-2022
Yunhan Huang, undergraduate student from Purdue University 2021-2022
Yuhang Huang, undergraduate from Shanghai University 2021-2022
Rohan Raghavan Narasimha, M.S. graduate student from Purdue University 2020-2021
Qianjiang Hu, undergraduate from Peking University 2020-2021
Yilin He, undergraduate summer intern from Shandong University 2019
Yiwei Zhang, undergraduate summer intern from Rensselaer Polytechnic Institute 2019

OPEN SOURCE PROJECTS

Project	Summary	Paper	Code	Citations	Stars
AdPE	a MIM based self-supervised learning method with adversarial position embeddings	[Paper]	[GitHub]	0	3
DeepMainMast	a computational tool using deep learning to automatically build full protein atomic structure from cryo-EM map		[GitHub] [Colab] [CodeOcean] [Server]	0	1
CryoREAD	a computational tool using deep learning to automatically build full DNA/RNA atomic structure from cryo-EM map		[GitHub] [Colab] [Server]	0	7
DAQ-Refine	a protein structure refinement tool by DAQ-score and ColabFold	[Paper]	[GitHub] [Colab]	5	6
Asym-Siam	study the importance of asymmetry for Siamese Representation	[Paper]	[GitHub]	29	95
DAQ	software accesses the quality of protein models built from cryo-Electron Microscopy (EM) maps	[Paper]	[GitHub] [Colab] [Server]	11	11
CaCo	a state-of-the-art cooperative-adversarial contrastive learning method where both positive and negative samples are directly learnable	[Paper]	[GitHub]	4	15
CoSeg	a self-supervised learning-based event boundary detection method	[Paper]	[GitHub]	0	3
OC_Finder	a computational tool using deep learning for fully automated osteoclast segmentation, classification, and counting	[Paper]	[GitHub] [Colab]	5	4
CLSA	a general contrastive learning framework by introducing the information from stronger augmentation	[Paper]	[GitHub]	90	52
GNN-DOVE	software can evaluate the quality of protein-docking models using graph neural networks by reformulating protein structures as graphs	[Paper]	[GitHub]	52	50
GNN-Pocket	software that can detect protein pockets with graph neural network	[Paper]	[GitHub]	10	0
AdCo	an algorithm for effective self-supervised learning through adversarial training of negative examples	[Paper]	[GitHub]	118	161
Emap2sec+	software detects local structure information of proteins and DNA/RNA in cryo-EM maps	[Paper]	[GitHub] [Colab] [CodeOcean] [Server]	31	15
Attention_AD	software that can distinguish active and inactive peptides for gene expression using LSTM	[Paper]	GitHub	3	1
EnAET	software that benefits semi-supervised learning via self-trained ensemble auto-encoding transformations	[Paper]	[GitHub] [GitHub]	83	148
DOVE	software can evaluate the quality of protein-docking models using 3D neural networks	[Paper]	[GitHub] [Server]	70	54

SKILLS

- Expertise: Pytorch, Python, Tensorflow, Matlab, Java
- Capable: SQL, C, C++, Fortran, Java Web, Latex, Android