YI WANG

Tel: +1-5125779870 Email: panzer.wy@utexas.edu github: https://github.com/Reimilia/

EDUCATION

University of Science and Technology of China Sept. 2013 - Jun. 2017
School of Mathematical Science
Bachelor of Science, major in *Math and Applied Math* GPA: 3.90/4.30
Supervisor : Ligang Liu

The University of Texas at Austin Jan. 2018 - Present
Computational Visualization Center, Oden Institute for Computational Engineering and Sciences
Doctor of Philosophy, Computational Science, Engineering and Mathematics (CSEM) GPA: 3.92/4.00
Supervisor: Chandrajit Bajaj,

SKILLS AND INTERESTS

Research Interests	Geometric Processing; Numerical Optimization; Surface Reconstruction
Programming Language Proficiency	C++ (since 2010), Python (since 2014), MATLAB (since 2014)
Library Proficiency:	OpenMesh, Libigl, PCL, Pytorch, Pytorch3d

INTERNSHIP

Boston Children's Hospital Jul. 2016 - Dec. 2016
Protein Docking using CNN *Boston, MA*

- Contributed to developing *Affinity*, a deep learning library for molecular geometry.
- Develop Parallel Scheme of Protein-Ligand Scoring Function as the cost function for CNN.

SELECTIVE PROJECTS

G^1 Spline Fitting for Manifold Approximation Apr. 2018 - Apr. 2019
The University of Texas at Austin *Austin, TX*

- Given point cloud as the source input, reconstruct 3D surface using generalized Voronoi Diagram as the minimum topologically correct support for G^1 spline fitting to recover geometric features.
- Developed in Julia and C++. Development Octree and other geometric data structure in Julia.

Adaptive Stochastic Variance-Reduced Gradient (Adaptive SVRG) Mar. 2019 - May. 2019
The University of Texas at Austin *Austin, TX*

- Combined the idea of adaptive step size (ADAM) with the variance reduction technique (SVRG).
- Accelerate the performance of gradient descent scheme on large scale data with sparsity.

Discrete Elastic Rods Apr. 2019 - May. 2019
The University of Texas at Austin *Austin, TX*

- Simulate the behaviour of an elastic rod with heterogeneous material property.
- Visualized Physical Simulation Developed based on Libigl frame.

Compression on Dynamic Mode Decomposition Jun. 2019 - Dec. 2019
The University of Texas at Austin *Austin, TX*

- Implemented *SketchyCoreSVD*, our newly proposed matrix sketching algorithm, to tackle down a high-dimensional numerical simulation result of combustion engine model with respect to time. The data is a dense matrix of size 41 GigaBytes.
- Applied *SkechyCoreSVD* to learn the reduced order modeling(ROM) and obtain its Koopman modes, a.k.a. eigen-decomposition.

Robust Adversarial Patch Attack in 3D Domain Sep. 2019 - Nov. 2020
The University of Texas at Austin *Austin, TX*

- Modified part of textures of 3D human meshes to cloak humans from detectors by optimizing rendering 2D images in Pytorch3D.
- Learning to generate universal textures from SMPL model to an unseen human model in digital space.

Subspace Learning For Image Denoising Jul. 2020 - Oct. 2020
The University of Texas at Austin *Austin, TX*

- Patch-based latent space clustering algorithm in VAE and pass to different filters for heterogeneous image recovery.

- Adapted out network architecture and algorithm into multiple low-level vision tasks in realistic image datasets.

Molecular Surface Reconstruction with Adaptive Oriented Sampling (Ongoing) Sep. 2020 - Present
The University of Texas at Austin *Austin, TX*

- Constructed dynamical Octree for molecule surfaces whose atomic information is utilized to estimate local sampling probability.
- Training the Adaptive Octree CNN to learn to represent signed distance function and further recover the surface using .

Non-Parametric Probabilistic Inference of Multi-Phase Problem(Ongoing) Sep. 2021 - Present
The University of Texas at Austin *Austin, TX*

- Random Field Generative model with Multiple Matrix-Valued Kernel Surrogate Modeling.
- Application in multi-phase material inverse design.

RESEARCH PUBLICATIONS

- Chandrajit, Bajaj, Ahmed, Blidia, Bernard, Mourrain, and **Yi, Wang**. "Manifold Approximations with Topological Accuracy." submitted to Shape Modeling International(SMI), 2019.
- Chandrajit, Bajaj, **Yi Wang**, and Tianming Wang. "SketchyCoreSVD: SketchySVD from Random Subsampling of the Data Matrix." 2019 IEEE International Conference on Big Data (Big Data). IEEE, 2019.
- Tianlong, Chen, **Yi Wang**, Jingyang Zhou, Sijia Liu, Shiyu Chang, Chandrajit, Bajaj, and Zhangyang Wang. "Can 3D Adversarial Logos Cloak Humans?". arXiv preprint arXiv:2006.14655, 2020.
- Arman Maesumi, Mingkang Zhu, **Yi Wang**, Tianlong Chen, Zhangyang Wang, and Chandrajit Bajaj, Learning Transferable 3D Adversarial Cloaks for Deep Trained Detectors, arXiv:2104.11101, 2021
- Yunhao Yang, Yuhan Zheng, **Yi Wang**, Chandrajit Bajaj, Learning Deep Latent Subspaces for Image Denoising, arXiv: 2104.00253, 2021

TALKS

- "**Discontinuous Petrok Galterkin for Poisson Boltzmann Equation,** ", Integrating Design and Analysis(IGA), The University of Texas at Austin, Austin, Texas, October 10-12, 2018
- "**Deep Learning for automatic tasks over Tumor Tissue**",2nd Annual Meeting of the SIAM Texas-Louisiana Section, Southern Methodist University, Dallas, Texas, November 1-3, 2019

TEACHING EXPERIENCE

Teaching Assistant of CSE383M, Algorithm Foundation of Data Sciences Feb. 2018 - May. 2018
University of Texas at Austin *Austin, TX*

- Course Topic: Computational aspects of data sciences, machine learning and statistical inference analysis

Teaching Assistant of CSE392, Geometric Foundations Of Data Science Sep. 2018 - Dec. 2018
University of Texas at Austin *Austin, TX*

- Course Topic: High Dimensional Geometry of Data, Probabilistic Modeling, Sampling and Dimension Reductions.

Teaching Assistant of CSE383M Statistics/Discrete Methods of Scientific Computing Feb. 2019 - May. 2019
University of Texas at Austin *Austin, TX*

- Course Topic: Geometry of Probabilistic Inference, Optimization and Deep Learning.

Teaching Assistant of M408C, Differential And Integral Calculus Sep. 2019 - Dec. 2019
University of Texas at Austin *Austin, TX*

- Course Topic: Calculus, including derivatives and integrals.

Teaching Assistant of CSE386L, Mathematical Methods In Applied Engineering And Sci. Feb. 2020 - May. 2020
University of Texas at Austin *Austin, TX*

- Course Topic: Curvilinear systems, Variational Methods, Partial Differential Equations and Complex Anaysis.

SCHOLARSHIP

National Scholarship. Sept. 2014
University of Science and Technology of China *Hefei, China*