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Lieyu Shi

Seeking software engineering intern for 2019 Summer
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Education

2014–2019 **Ph.D.** student in **Computer Science**, University of Houston, TX, USA
Research: Particle-based fluid simulation and analysis

July 2013 **Bachelor** of Science in **Computational Mathematics**, Xi'an Jiaotong University, China
Thesis: "Two-grid finite element algorithm for semi-linear elliptic equations"

Project

2018 SM **Dash-based Drilling Data Visualization (Shell)**
- Developed dash-based visualization template for drilling data with Python plotly.
- Built an interactive visualization application for Shell China which incorporated drilling data analytics algorithm.

2017 **Unsupervised machine learning in flow visualization**
- Performed mainstream clustering for high-dimensional data with novel metrics by K-means, K-modoids, DBSCAN, OPTICS, BIRCH, spectral clustering, Agglomerative hirarchical clustering and affinity propagation with C++ which enables versatile user interactions.
- Developed an extensible cmake-based C++ project accelerated with OpenMP in Linux environment through object-oriented designing and analyzing principles.
- Applied clustering analysis to evaluate and assess clustering algorithms and distance metrics.

2016 **Sharding and replication implementation for online storage**
- Designed a simplified two-way online storage system with Java socket programming.
- Enabled backup and record of data information while downloading and uploading data.
- Used makefile to compile and run Java software on server with local library linkage.

2016 **Particle-based fluid simulation**
- Simulated large-scale scenarios with OpenMP-accelerated C++ project on Paraview.
- Designed a glui-library based GUI application for interactive visualization of high-dimensional flow data with OpenGL and GLSL in Linux environment.
- Improved rendering effect by applying texture mapping and light shading.
- Built GPU version for both simulation and visualization of this project.

2015 **PCA and BP Neural Network**
- Implemented PCA and BP Neural Network in OpenMP-C++ for clustering flow trajectories.
- Experimentally compared the tagging results for point clouds of both methods in Matlab.

Work Experience

2018 SM | Data Analyst Contractor in **Shell**
2014–now | Teaching Assistant for Computer Science department of UH

Publication

2017/01 *Analysis-enhanced particle based flow visualization*, VDA 2017, **Lieyu Shi**, Guoning Chen
2017/08 *Metric-based curve clustering and feature extraction in flow visualization*, CAD&CG 2017, **Lieyu Shi**, Guoning Chen

Courses

Graduate: Computer Architecture, Computer Network, Operating System, Machine Learning, Data Structure, Algorithm, Computer Graphics, Visualization, Numerical Analysis, Theory of Computation, Fundamental of Medical Imaging, Artificial Intelligence

Computer Skills

Intermediate: C++, C, Java, Matlab, R, Mathematics, latex, Paraview, OpenGL, GLSL, Linux, Python
Basic: VTK, Cuda, Qt, CMake, Blender, OpenMP, Tensorflow