Youguang Chen

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Education

Jan 2019 - *Current*	PhD in Computational Science and Engineering *The University of Texas at Austin* Advisor: George Biros Gpa: 4.00/4.00
Aug 2016 - Dec 2018	Master of Science in Petroleum Engineering *The University of Texas at Austin* Thesis: "Upscaling Methodology for Flow Simulation of Fractured Systems" Gpa: 4.00/4.00
Aug 2012 - June 2016	Bachelor of Science in Environmental Engineering *Tsinghua University* Gpa: 91.6/100.0 | Rank: 4/81

Research Interests

Machine Learning, High Performance Computing, Computational Fluid Dynamics

Publication

2020	*KNN-DBSCAN: a DBSCAN in high dimensions,* https://arxiv.org/abs/2009.04552. **Youguang Chen**, William Ruys, George Biros
2020	*An efficient method for modeling flow in porous media with immersed faults,* https://arxiv.org/abs/2009.04574. **Youguang Chen**, George Biros
2018	*A fully three dimensional semianalytical model for shale gas reservoirs with hydraulic fractures,* Energies. Yuwei Li, Lihua Zuo, Wei Yu, **Youguang Chen**
2016	*Static formation temperature prediction based on bottom hole temperature,* Energies. Changwei Liu, Kewen Li, **Youguang Chen**, Lin Jia, Dong Ma
2016	*More general relationship between capillary pressure and resistivity data in gas-water system,* Journal of Petroleum Science and Engineering. Changwei Liu, Kewen Li, Dong Ma, **Youguang Chen**
2015	*Removal of perfluorinated carboxylates from washing wastewater of perfluorooctanesulfonyl fluoride using activated carbons and resins,* Journal of Hazardous Materials. Ziwen Du, Shubo Deng, **Youguang Chen**, Bin Wang, Jun Huang, Gang Yu

Research Experience

Aug 2020 - present *Research Assistant*	**Oden Institute, UT Austin** Topic: Representative subset selection for semi-supervised learning Advisor: George Biros *Proposed new new method for selecting representative instances for classification.* *Empirically examined the good performance of the proposed method by comparing with other sampling methods: random, k-means, spectral clustering, coresets and MMD.*
Aug 2019 - Aug 2020 *Research Assistant*	**Oden Institute, UT Austin** Topic: Parallel algorithms for clustering Advisor: George Biros *Proposed new algorithm to use k-nearest neighbor graph for density-based clustering.* *Designed, implemented, and tested a hybrid MPI/OpenMP parallel algorithm.* *Performed tests to assess the clustering quality and the scalability of the new scheme.*
Aug 2018 - Aug 2019 *Research Assistant*	**Oden Institute, UT Austin** Topic: Fluid simulation in porous media with immersed faults Advisor: George Biros *Derived new PDEs as approximations and conducted convergence analysis.* *Implemented the new formulations using Galerkin methods.* *Tested preconditioned iterative Krylov solves of the new method.*
Aug 2016 - Aug 2018 *Research Assistant*	**Department of Petroleum Engineering, UT Austin** Topic: Upscaling techniques for fractured reservoir simulation Advisor: Kamy Sepehrnoori *Established a non-intrusive, hierarchical upscaling method for fast flow simulation.* *Implemented algorithms of the new method, combined with commercial simulation software, and verified the new method using tests with different fracture patterns.*

Notable Project

Parallel kNN-DBSCAN	A MPI/OpenMP parallel algorithm for kNN based density clustering. https://github.com/ut-padas/knndbscan

Honors and Awards

Sep 2019	NIMS Fellowship in Oden Institute, UT Austin ($30,000)
Aug 2018	S.P. Yates Graduate Fellowship, UT Austin ($3,500)
Aug 2017	S.P. Yates Graduate Fellowship, UT Austin ($3,500)
Aug 2015	Tsinghua University Academic Excellence Scholarship (10/81)
Aug 2014	Tsinghua University Independent Research Assistantship (5/81)

Computer Skills

Programming Languages	C++11, C, Python, Matlab, Fortran
Tools	OpenMP, MPI, cmake, git, LaTeX, Gmsh, FEniCS
Operating Systems	Linux, MacOS, Windows