Dong Zhou

zhou.dong@gmail.com   (917) 207-8391 (mobile)
https://sites.google.com/site/zhoudong

Summary

A scientist and programmer. Looking for opportunities in applying machine learning to solve social problems, especially in the fields of education and healthcare. Past experience includes image processing, mathematical modeling, computational mathematics and physics, stochastic processes, etc. Familiar with magnetic resonance imaging, quantum computing and biophysics.

Skills

Python, Matlab, C/C^{++}, Linux shell scripts, d3.js
Machine learning, Image processing, Stochastic process
Mathematical modeling, Optimization with regularization, Numerical analysis

Education and Experience

- Postdoc in radiology, Weill Cornell Medical College   2012–2016
- Postdoc in physics, Yale University   2011–2012
- Ph.D in physics, University of Wisconsin-Madison   2006–2011
- Graduate study in physics, University of Georgia-Athens   2004–2006
- B.S. in physics, Honored Mixed Class, Zhejiang University, China   2000–2004

Reviewer for Journal of Physics A: mathematical and theoretical, IEEE TBME, PLOS ONE, Quantum Information Processing, New Journal of Physics, Medicine, Journal of Neuroscience Methods, NeuroImage, Magnetic Resonance in Medicine, Medical Physics, NMR in Biomedicine

Honors and Awards

- ISMRM Merit Award, magna cum laude, 2014
- International Student Academic Achievement Award, UW-Madison, 2011
- Ray and Anne Herb Award for Wisconsin Distinguished Graduate Fellowship, 2008
- Emanuel R. Piore Award for Highest Scorer on the Qualifier Exam, UW-Madison, 2007
- University Housing's Favorite Instructor Award for Fall 2006, UW-Madison, 2006
- Van Vleck Fellowship for Graduate Students in Physics, UW-Madison, 2006
- Honored Graduate of Zhejiang University, China, 2004
- Honorary Enrollment, Zhejiang University, China, 2000
- Tan Jiazhen (C. C. Tan) Scholarship for Outstanding High School Student in Biology, 1999
- Kang Hui Scholarship for 1st Place in High School Entrace Exam, Hangzhou, China, 1996

PUBLICATIONS

1. *Susceptibility underestimation in a high susceptibility phantom: dependence on imaging resolution, magnitude contrast and other parameters*
D. Zhou, J. Zhang, P. Spincemaille, Y. Wang, submitted to Magn Reson Med, (2016)

2. *Preconditioned Total Field Inversion (TFI) Method for Quantitative Susceptibility Mapping*
Z. Liu, Y. Kee, **D. Zhou**, Y. Wang, and P. Spincemaille, submitted to Magn Reson Med (2016)

3. *Cerebral Metabolic Rate of Oxygen (CMRO2) Mapping with Hyperventilation Challenge using Quantitative Susceptibility Mapping (QSM)*
J. Zhang, **D. Zhou**, P. Spincemaille, Y. Wang, accepted by Magn Reson Med, (2016)

4. *QSM and R2* measured changes during white matter lesion development in multiple sclerosis: myelin breaking down, myelin debris degradation and removal, and iron accumulation*
Y. Zhang, S.A. Gauthier, **D. Zhou**, Y. Wang, acceptted by AJNR, (2016).

5. *Longitudinal change in magnetic susceptibility of new enhanced multiple sclerosis (MS) lesions measured on serial quantitative susceptibility mapping (QSM)*
Y. Zhang, S.A. Gauthier, A. Gupta, J. Comunale, G. C.-Y. Chiang, **D. Zhou**, W. Chen, A.E. Giambrone, W. Zhu, Y. Wang, accepted by JMRI (2016).

6. *Three-dimensional MR Phase Unwrapping via Dual Decomposition*
J. Dong, F. Chen, **D. Zhou**, T. Liu, Z. Yu, and Y. Wang, accepted by Magn Reson Med (2016).

7. *Simultaneous Phase Unwrapping and Removal of chemical Shift (SPURS) using Graph Cuts: Application in Quantitative Susceptibility Mapping*
J. Dong, T. Liu, F. Chen, **D. Zhou**, A. Dimov, A. Raj, Q. Cheng, P. Spincemaille, and Y. Wang, IEEE TMI 34 (2) 531 (2015).

8. *Background field removal by solving the Laplacian boundary value problem*
D. Zhou, T. Liu, P. Spincemaille, and Y. Wang, NMR in Biomedicine, 27 (3), 312 (2014).

9. *An Iterative Spherical Mean Value (iSMV) Method for Background Field Removal in MRI*
Y. Wen, **D. Zhou**, T. Liu, P. Spincemaille, and Y. Wang, Magn Reson Med 72 (4) 1065 (2014).

10. *Magnetic susceptibility anisotropy: cylindrical symmetry from macroscopically ordered anisotropic molecules and accuracy of MRI measurements using few orientations*
C. Wisnieff, T. Liu, P. Spincemaille, S. Wang, **D. Zhou**, and Y. Wang, NeuroImage 70, 363 (2013).

11. *Mediated gates between spin qubits*
J. Fei, **D. Zhou**, Y.-P. Shim, S. Oh, X. Hu, and M. Friesen, Phys. Rev. A 86, 062328 (2012). arXiv:1207.6063

12. *Cavity-assisted quantum bath engineering with a superconducting qubit*
K. W. Murch, U. Vool, **D. Zhou**, S. J. Weber, S.M. Girvin, and I. Siddiqi, Phys. Rev. Lett. 109, 163602 (2012); arXiv:1207.0053

13. *Phenomenological noise model for superconducting qubits: two-state fluctuators and 1/f noise*
D. Zhou and R. Joynt, Supercond. Sci. Techno. 25, 045003 (2012); arXiv:1102.5766

14. *Topology of entanglement evolution of two qubits*
D. Zhou, G.-W. Chern, J. Fei, and R. Joynt, Int. J. Mod. Phys. B 26, 1250054 (2012); arXiv:1007.1749

15. *Disappearance of entanglement: a topological point of view*
    D. Zhou and R. Joynt, QIP 11, 571 (2012); arXiv:1006.5474

16. *Suppression of decoherence and disentanglement by the exchange interaction*
    A. De, A. Lang, **D. Zhou**, and R. Joynt, Phys. Rev. A 83, 042331 (2011); arXiv:1006.5943

17. *Quasi-Hamiltonian Method for Computation of Decoherence Rates.*
    R. Joynt, **D. Zhou** and Q.-H. Wang, Int. J. Mod. Phys. B 25, 2115 (2011); arXiv:0906.2843

18. *Noise-induced looping on the Bloch sphere: Oscillatory effects in dephasing of qubits subject to broad-spectrum noise.*
    D. Zhou and R. Joynt, Phys. Rev. A 81, 010103 (2010); arXiv:0907.0463

19. *Nacre Protein Fragment Templates Lamellar Aragonite Growth*
    RA Metzler, JS Evans, CE Killian, **D Zhou**, TH Churchill, N Appathurai, SN Coppersmith, PUPA Gilbert, J. Am. Chem. Soc. 132, 6329-6334 (2010).

20. *X-ray photoelectron emission spectromicroscopic analysis of arborescent lycopsid cell wall composition and Carboniferous coal ball preservation.*
    C. K. Boyce, M. Abrecht, **D. Zhou**, and P.U.P.A. Gilbert, Int. J. Coal Geol. 83, 146-153 (2010).

21. *Disentanglement and decoherence from classical non-Markovian noise: Random telegraph noise.*
    D. Zhou, A. Lang, and R. Joynt, QIP 9, 727 (2010); arXiv:0912.3313

22. *Two-particle quantum walks applied to the graph isomorphism problem.*
    J. Gamble, M. Friesen, **D. Zhou**, R. Joynt, and S.N. Coppersmith, Phys. Rev. A 81, 052313 (2010); arXiv:1002.3003

23. *A high-resolution chemical and structural study of framboidal pyrite formed within a low-temperature bacterial biofilm.*
    L.C.W. MacLean, T. Tyliszczak, P.U.P.A. Gilbert, **D. Zhou**, T.J. Pray, T.C. Onstott, G. Southam. Geobiology 6, 471-480 (2008).

24. *Gradual Ordering in Red Abalone Nacre.*
    P.U.P.A. Gilbert, R. A. Metzler, **D. Zhou**, A. Scholl, A. Doran, A. Young, M. Kunz, N. Tamura, S. N. Coppersmith. J. Am. Chem. Soc. 130, 17519-17527 (2008); arXiv:0710.4573

25. *Assignment of polarization-dependent peaks in carbon K-edge spectra from biogenic and geologic aragonite.*
    D. Zhou, R.A. Metzler, T. Tyliszczak, J. Guo, M. Abrecht, S.N. Coppersmith, P.U.P.A. Gilbert. J. Phys. Chem. B 112, 13128-13135 (2008).

26. *Probing the organic-mineral interface in model biominerals.*
    R. A. Metzler, I.-W. Kim, K. Delak, J.S. Evans, **D. Zhou**, E. Beniash, F. Wilt, M. Abrecht, J.-W. Chiou, J. Guo, S.N. Coppersmith, P.U.P.A. Gilbert. Langmuir 24, 2680-2687 (2008).

27. *Polarization-dependent imaging contrast in abalone shells.*
    R.A. Metzler, **D. Zhou**, M. Abrecht, J.-W. Chiou, J. Guo, D. Ariosa, S.N. Coppersmith, P.U.P.A. Gilbert. Phys. Rev. B 77, 064110 (2008).