Michael Shaughnessy

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Technology: AWS/GCP, Linux, Python, SQL, Machine Learning

Experience

April 2019- *Technical Fellow* **Exponential Interactive**
Developing machine learning approaches to automated decision making and identity resolution.

2016-2019 *Machine Learning Team Lead* **AppThis, LLC (Acquired Dec 2018)**
Automated decision making for mobile ad transactions, increasing revenue and profit by 30%. Built and operated prediction API handling 600M requests/day.

2015 *VP of Engineering* **Leap Year Technologies**
Executed a plan for differential privacy-based data analytics. Defined and implemented differentially private data analytics algorithms.

2014- 2015 *Data Scientist / Data Engineer* **RTBiQ, Inc**
Algorithms for pricing RTB advertising inventory. Deployed an ad-buying system that lowered cost by up to 50%, identified fraud, and improved KPIs.

2013-2014 *R&D Engineer* **Synopsys TCAD**
Integrated quantum mechanical methods into TCAD software. Enabled customers to simulate III-V semiconductors without experimental data.

2011-2013 *Postdoctoral Researcher* **Sandia National Labs**
Supported national security and nuclear weapons reliability missions through machine learning, molecular dynamics, and electronic structure calculations.

2009-2011 *Lawrence Scholar* **Lawrence Livermore National Lab**
Identified new magnetic alloys for permanent magnet and spintronic applications.

2004-2011 *Research Assistant***University of California, Davis**

2003-2004 *Student Researcher* **Musculoskeletal Research Lab, Hershey**

2002 *Student Researcher* **Cornell Controlled Environment Agriculture, Ithaca**

2000-2004 *Library Supervisor* **Cornell Physical Sciences Library, Ithaca**

Education

2011 PhD, Physics, University of California, Davis
Thesis: *Electronic and Magnetic Structure in Doped Semiconductors*
2004 BS, Agricultural and Biological Engineering, Cornell University

Patents

Differentially private processing and database storage (US 20170126694 A1)
Adaptive Parallelization for Multi-Scale Simulation (14/497681)
First Principles Design Automation Tool (PCT/US14/57803)
Estimation of Effective Channel Length for FinFETs and Nanowires (PCT/US14/57637)
Simulation Scaling with DFT and Non-DFT (14/498458)
Iterative Simulation with DFT and Non-DFT (14/498492)
Parameter Extraction of DFT (PCT/US14/57840)
Characterizing Target Material Properties Based on Properties of Similar Materials (14/497695)
Mapping Intermediate Material Properties to Target Properties to Screen Materials (PCT/US14/57707)

Publications

2008 J.Y. Lim, M. Shaughnessy, Z. Zhou, H. Noh, E. A. Vogler, and H. J. Donahue. Surface energy effects on osteoblast spatial growth and mineralization. *Biomaterials* **29**: 1776-1784

2009 M. Shaughnessy, C.Y. Fong, R. Snow, K. Liu, J. Pask, and L.H. Yang. Origin of Large Moments in Mn_xSi_{1-x}. *Appl. Phys. Lett.* **95**: 022515

C. Y. Fong, M. Shaughnessy, R. Snow, Kai Liu, J. E. Pask, and L. H. Yang. Physical origin of measured magnetic moment in Mn_xSi_{1-x} with x = 0.1%. (invited) *Proceedings of SPIE*, **7398**: 73980J-1

2010 M. Shaughnessy, C.Y. Fong, L.H. Yang, Ryan Snow, X.S. Chen, and Z.M. Zhiang. Structural and magnetic properties of single dopants of Mn and Fe for Si-based spintronic materials. *Phys. Rev. B* **82**: 035202

C. Y. Fong, M. Shaughnessy, R, Snow, and L. H. Yang. Theoretical investigations of defects in a Si-based digital ferromagnetic heterostructure - a spintronic material. *Physica Status Solidi C*, **7**: 747

2011 M. Shaughnessy, Ryan Snow, L. Damewood, and C. Y. Fong. Memory and Spin Injection Devices Involving Half Metals. *Journal of Nanomaterials*, **2011**: 140805

2012 S. Dag, M. Shaughnessy, C.Y. Fong, X.D. Zhu, L.H. Yang. First principles studies of a Xe atom adsorbed on NB(110) surface. *Physica B*, **407**: 2100

C. Y. Fong, M. Shaughnessy, L. Damewood, and L. H. Yang. Theory, Experiment and Computation of Half Metals for Spintronics: Recent Progress in Si-based Materials. *Nanoscale Systems: Mathematical Modeling, Theory and Applications*, **1**:

1-22, 2012.

2013 M. Shaughnessy, C. Y. Fong, L. Damewood, C. Felser and L. H. Yang. Structural variants and the modified Slater-Pauling curve for transition-metal-based half-Heusler alloys. *Journal of Applied Physics*, **113**: 043709 (2013)

A.C. Ford, M. Shaughnessy, B.M. Wong, A. Kane, O.V. Kuznetsov, K.L. Krafcik, W.E. Billups, R.H. Hauge, F. Leonard. Physical Removal of Metallic Carbon Nanotubes from Nanotube Network Devices Using a Thermal and Fluidic Process. *Nanotechnology.* **24**: 105202. (2013)

L.H. Yang, M. Shaughnessy, L. Damewood, C.Y. Fong. Half-metallic hole-doped Mn/Si trilayers. *Jour. of Phys. D.: Appl. Phys.*. (2013)

2014 M. Shaughnessy, J.D Sugar, N. Bartelt, J. Zimmerman. Energetics and thermodiffusion of Au in Bi_2Te_3. *Journal of Applied Physics.*(2014)

2015 L. Damewood, B. Busemeyer, M. Shaughnessy, C.Y. Fong, L.H. Yang, C. Felser. Stabilizing and increasing the magnetic moment of half-metals: The role of Li in half-Heusler LiMn Z (Z= N, P, Si). *Physical Review B.* (2015)

2016 M. Shaughnessy and R. E. Jones, Efficient use of an adapting database of ab initio calculations to generate accurate Newtonian dynamics. *Journal of Chemical Theory and Computation.* (2016)

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