

# Michael Shaughnessy

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Denver, CO 530-219-0940

Computer Skills : AWS/GCP, Linux, Python, SQL, Machine Learning, LLM prompting

## Experience

- July 2024 - Present *Founder and CEO* **The Mithril Company**  
Forging AI armor.
- 2019 - July 2024 *Technical Fellow* **Exponential Interactive**  
Developing machine learning game strategies to automate ad-buying 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**  
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 nuclear energy and 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  $\text{Mn}_x\text{Si}_{1-x}$ . *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  $\text{Mn}_x\text{Si}_{1-x}$  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<sub>2</sub>Te<sub>3</sub>. *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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