

Michael Shaughnessy

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Competencies

A - Ability to analyze and interpret written technical materials, rules, regulations, instructions and reports.

B - Ability to establish and maintain effective public relations with diverse groups.

C - Skill in oral communications in order to make clear and convincing oral presentations.

D - Ability to produce well-written information for technical material.

Experience

Related competencies (see above) are marked where applicable e.g. **A, B, D** means the experience relates to competencies A, B, and D.

March 2015- **LeapYear Technologies, Berkeley** *VP of Engineering*

Present *Salary: Equity + \$100,000 / year*

Lead data analytics and data privacy teams.

- Lead a team building Shroudbase (Rust, Haskell and Python on AWS EC2) for private machine learning on sensitive data in medical, advertising and financial industries. **A, B, C, D**

Aug 2014- Feb 2015

RTBiQ, Inc. San Francisco | *Data Engineer & Data Scientist*

Salary: Equity only

Designed and implemented real-time bidding control and optimization algorithms for pricing mobile advertising.

- Dynamic control algorithm lowers cost by to 50-100%, compared to the previous method and replies to up to hundreds of thousands of queries per second with latency less than 150 ms. **A**

- Bayesian machine learning allows customers to automatically avoid fraudulent impressions and systematically improve KPIs. **A**

- Created integration test harness for QA, including a realistic simulated ad exchange, sending requests over HTTP. **A, D**

- Built video ad unit capability, allowing customers to upload video advertising creative. Dynamically generated VAST XML bid responses to video auction requests. Integrated the platform with two video advertising exchanges, LiveRail and Vdopia, serving up to tens of thousands of requests per second. [A](#), [B](#), [C](#), [D](#)

Aug 2013-Aug 2014

Synopsys TCAD, Mountain View | *R&D Engineer*

Salary: \$110,000 / year

Developed an API interfacing quantum mechanical calculations with commercial continuum reaction-diffusion simulators.

- Calculated ab-initio data sets for ternary III-V alloys and dopants, enabling industrial customers to simulate these materials without experimental data. [A](#)
- Set up a Linux-based compute environment for rapid, parallelized multi-scale calculations. Used VASP, LAMMPS, VMD, and Python scripting. [A](#)
- Documented methodology and API usage for clients and internal customers. Drafted intellectual property disclosures for legal department. [A](#), [B](#), [D](#)

Aug 2011- Aug 2013

Sandia National Labs, Livermore | *Researcher - Materials Physics*

Salary \$85,000 / year

- Developed machine learning software for molecular dynamics simulations based on *ab-initio* calculations without interatomic potentials or force fields. [A](#)
- Computed contact resistance to nanostructures using multi-scale methods. [A](#)
- Simulated transport across grain boundaries in thermoelectric materials and developed a thermoelectric materials aging software package. [A](#)
- Initiated and won U.S. Naval Research Lab funding for a multi-year topological insulator device research effort. [C](#), [D](#)

2009-2011 **Lawrence Livermore National Lab, Livermore:** *Lawrence Scholar*

Salary: \$65,000 / year

Identified new magnetic alloys for permanent magnet and spintronic applications. Utilized terascale computers and databases for multi-scale modeling. [A](#)

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

Calculated properties of spintronic materials using density functional theory. Investigated topological and quantum mechanical properties of black hole and Euclidean solutions in gravity. Lead laboratory courses in physics and wrote solutions for graduate quantum mechanics courses. Orally presented research at APS and MRS conferences. [C](#)

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

Created nanostructured surfaces for bone cell growth using plasma etching and polymer spin-coating. Characterized cell response using FTIR spectroscopy and electron microscopy.

- 2002 ***Cornell University Controlled Environment Agriculture Group, Ithaca: Student Researcher***
Developed a physical model of water diffusion in germinating seeds and built a hydroponic spinach prouting system.
- 2000-2004 ***Cornell University Physical Sciences Library, Ithaca: Library Manager***
Managed day-to-day library operations and customer service.

Education

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

Honors & Clearance

- 2011 DOE EERE Postdoctoral Fellowship Awardee
2009 Lawrence Scholar Fellowship
2011-2013 DOE L Clearance

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.
- L.H. Yang, M. Shaughnessy, L. Damewood, C.Y. Fong. Half-metallic hole-doped Mn/Si trilayers. *Jour. of Phys. D.: Appl. Phys.*,
- 2014 • M. Shaughnessy, J.D Sugar, N. Bartelt, J. Zimmerman. Energetics and thermodiffusion of Au in Bi₂Te₃. *Journal of Applied Physics*.

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