

Matthew R. Goodman

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Work Address

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Objective

Fuel world betterment by small incremental measured change.

Work Experience and Leadership

CTO & Co-Founder, 3Scan May 2011 – Present

- Grown and managed 3Scan through four doublings of staff, from 4 to 80+
- Hire, manage, grow, and develop ICs and leads in software, totaling ≈ 30 engineers.
- Architected complete microscopy tool suite including robotics, image processing, high-performance storage, analysis, and customer interfaces
- Working with the the board, VCs, and pharma partners to provide strategic vision and technical roadmap planning

President, Coup De Foudre Fall 2015 – Present

- Create and lead high-voltage technical arts troupe
- Responsible for incorporation of a 501c3 charity structure
- Maintain donors, museums, and grantee relations

Scientific Data Analyst, ATI Allvac, Monroe, NC Summer 2007 – Summer 2008

- Unified huge body of process data from several databases for purposes of process auditing and improvement by data-mining and machine-learning techniques
- Developed tools for engineers and analysts to model casting/forging processes
- Automated process simulation of solidification for statistical process control and improvement
- Datamining and scientific data analysis for process control for process improvement and cost savings resulting in large cost savings by predictive/preventive maintenance

Graduate Researcher, University of Texas at Austin Fall 2010 – Fall 2012

- Computational modeling and imaging analysis of the primary visual cortex of primates
- Development of machine learning techniques for medical recommendation systems
- Literal monkey wrangling

Graduate Research Assistant, University of Arizona Fall 2008 – Spring 2010

- Modeled heat and mass transfer for NASA/ESA space solidification experiments on ISS.
- Developed HPC CFD solver for solidification, microfluidics, and biological systems.
- Worked with early GPU tech and large HPC systems.

Consultant, PACE Metallography, ATI Allvac, Phoenix Heat Treating Various

Project Leader, SEDS “Rockoon” project Fall 2008 – Spring 2010

- Led team of two-dozen undergraduates in interdisciplinary design project
- Responsible for FAA Clearances and safety of high-altitude high-power rocketry

President, Keramos & Vice-President, Material Advantage Fall 2007 – Spring 2008

- Provided tutoring, and social organization
- Lead ≈ 10 students in outreach, teaching, and grant-writing.
- Keramos Awarded “Most Improved Chapter” in 2008

Treasurer – President, h+ Tucson

Fall 2007 – Spring 2008

- Technoprogressive Journal Club – Basis of [h+ magazine](#)

MSE Laboratory TA/Preceptor, University of Arizona

Fall 2007 – Spring 2008

- MSE 414 – Solidification of Castings – Ran aluminum casting laboratory
- MSE 223 – Materials Processing – Taught three groups of 5–7 about materials processing
- MSE 110 – Solid State Chemistry – Oversaw MSE related lab activities

Patents & Publications

F Aeffner, D Bowman, N Buchbinder, M Bui, M Goodman, M Hartman, K Lillard, G Lujan, M Milani, O Turner, V Vemuri, A Yuil-Valdes, M Zarella “Introduction to Digital Tissue Image Analysis: DPA Whitepaper” Digital Pathology Association (in review)

M Goodman, T Huffman, C Daniel “Spatial multiplexing of histological stains” [US Patent App. 15/205,288](#)

C Daniel, M Goodman, K Sean, T Huffman “Methods and apparatuses for sectioning and imaging samples” [US Patent App. 15/084,186](#)

S Raghavan, M Goodman, T Huffman, C Daniel, C Monteith, J Kwon “Internet-connected high-throughput and high-resolution three-dimensional tissue scanner to enable large-scale automated histology” [Imaging Systems and Techniques \(IST\)](#), 2016.

M Goodman, C Daniel “Motion strategies for scanning microscope imaging” [US Patent App. 14/529,503](#)

C Sung, Y Choe, M Goodman, T Huffman, “Scalable, Incremental Learning for Cell Detection in High-Throughput 3D Microscopy Data” [International Joint Conference on Neural Networks 2013](#).

AG Hendrick, RG Erdmann, MR Goodman, “Practical Considerations for Selection of Representative Elementary Volumes for Fluid Permeability in Fibrous Porous Media,” [Transport in Porous Media. Volume 94](#). 2012.

MR Goodman. “Brain–Machine Interfaces” – Chapter 26 of *New Materials and Technologies For Healthcare*. [ISBN: 978-1848165588](#). 2012.

RG Erdmann, AG Hendrick, and MR Goodman “Properties of Stochastic Permeability,” [Transactions of the Indian Institute of Metals](#). 2011.

Presentations

“Cloud Pathology” [re:Invent] Symposium: Cloud Computing for Biotech R&D. 10/2018

“New Approaches for Volumetric Pathology.” MICCAI COMPAY 2018 Workshop. 9/2018

“Digital Pathology Challenges” Vision Industry and Technology Forum. 12/2017

“Make Dangerous Art” Phage Talks 9/2017

“The Physics of Tesla Coils and Swing-Sets” Ignite Talks	9/2016
“Down and Dirty Image Compression” Planet Labs	3/2012
“10 Tools For Everything” Lightning talk at SciPy	2012

Education

PhD. Biomedical Engineering (Incomplete)

[University of Texas at Austin](#)

M.S. Materials Science and Engineering, (GPA 3.83/4.0)

Thesis: “[Properties of Stochastic Flow and Permeability of Random Porous Media](#)”

[University of Arizona](#), Tucson, AZ

B.S. Materials Science and Engineering (In major GPA 3.55/4.0)

[University of Arizona](#), Tucson, AZ

Academic Honors

UT – NIH NRSA Fellowship for Imaging Science and Informatics	2010–2011
UA – Deans List	Spring 2008
UA – ASM International – Darko Babic Scholarship	2007–2008
UA – ASM National Education Subcommittee Student Representative	2007–2008
UA – College of Engineering – Award for Academic Distinction	2006–2008
UA – College of Engineering – Departmental Honors for Outstanding Achievement	2005–2006

Languages and Tools

<u>Fluent in:</u>	English, Python, Java, git, C, JIRA, Jenkins, Gradle, \LaTeX
<u>Rusty at:</u>	Typescript/Javascript, Vue, Docker, ansible, C++, LLVM-IR, CUDA
<u>Used in prod:</u>	Japanese, FORTRAN, qBasic, php, sql, RoR, bash, Meteor
<u>Played with:</u>	Golang, Scala/Kotlin, Electron, React Native, jHipster

Miscellaneous

<u>OSS Contributions:</u>	cPython, numba, scipy, pycuda, datadog, ecto, emscripten, pandas
<u>Architectures:</u>	Atmel, Embedded ARM, Desktop, CPU/GPU Clusters, Petaflop HPC
<u>Interests:</u>	Brain-Machine Interfaces, Atmospheric Plasma Physics, Rock Climbing, Blacksmithing and Casting, High Power Electronics, EDA Software Abstract Algebra, Group-Theory, Quasicrystals