

Matthew R. Goodman

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Work Address

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Objective

Work with 3Scan to bring volumetric pathology to researchers and doctors everywhere.

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

B.S. Materials Science and Engineering (In major GPA 3.55/4.0)
University of Arizona, Tucson, AZ

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,” [Trans-](#)

actions 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
- “10 Tools For Everything” Lightning talk at SciPy 2012

Work Experience and Leadership

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

- Provide strategic vision and technical roadmap for 3Scan
- Grown and managed 3Scan’s software group from scratch to into 4 groups totaling 16 engineers. Responsible for hiring, engineering management, and developer growth.
- Architected complete microscopy tool suite including robotics, image processing, high-performance storage, analysis, and customer interfaces.
- Early fundraising, grant writing, and VC interactions

President, [Coup De Foudre](#) 5/2015 – Present

- Create and lead technical high-voltage arts troupe
- Incorporation of a 501c3 charity and organisation

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

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.

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

Scientific Data Analyst, ATI Allvac, Monroe, NC Summer 2007 and 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 algorithms used by engineers and business analysts for understanding complex processes resulting in large cost savings by predictive/preventive maintenance
- Automated post process simulation of complex solidification phenomena for purposes of statistical process control and improvement (Python)
- Data-mining and scientific data analysis for process control resulting in process improvement and sizable cost savings

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

- Materials Science Honors Fraternity, Tutoring, and Social Organizations – Lead 10 students in outreach, teaching, and grant-writing. Keramos Awarded “Most Improved Chapter”

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

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, C, JIRA, Wrike, Jenkins, Gradle
<u>Rusty at:</u>	Typescript/Javascript, Vue, C++, LLVM-IR, CUDA
<u>Used in prod:</u>	Japanese, FORTRAN, qBasic, php, sql, Ruby/Rails, bash, Meteor
<u>Played with:</u>	Golang, Scala/Kotlin, Electron

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