

## Matthew R. Goodman

### Home Address

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### Objective

Be a force for world betterment via incremental measured change.

### Work Experience and Leadership

#### CTO & Co-Founder, 3Scan

May 2011 – May 2019

- Lead data intensive biotech startup from foundation to merger with Strateos
- Grew the organization through four doublings of staff, from 4 to 80+
- Hired, managed, and developed ICs and leads, totaling > 60 engineers.
- Worked with the cofounders, board, VCs, leads, and pharma partners to provide strategic vision, technical roadmap, and product delivery
- Managed high performance ( $\approx 50\text{Gb/s}$ ), big-data ( $> 10\text{PB}$ ) tooling for storage, analysis, and visualization of 3d histological data

#### President, Coup De Foudre

Fall 2015 – Present

- Created and lead a high-voltage technical arts troupe
- Delivered Burning Man 2019 Honorarium art project “Theophany”
- Incorporated and maintained a 501c3 charity structure
- Curate relationships with donors, museums, and grantees
- Portfolio: <https://meawoppl.github.io/portfolio.html>

#### Scientific Data Analyst, ATI Allvac

Summer 2007 – Summer 2008

- Unified huge body of process data from several databases for purposes of ML application
- Developed tools for engineers and analysts to model casting/forging processes
- Automated process simulation of solidification for 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

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

Various

#### 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 ISS payload operations on-site in Huntsville Alabama

#### 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  $\approx 10$  students in outreach, teaching, and grant-writing.
- Keramos Awarded “Most Improved Chapter” in 2008

**Treasurer – President**, h+ Tucson

Fall 2007 – Spring 2008

- Organized a technoprogressive journal club
- This group became [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

**Barista**, Starbucks

Fall 2005 – Fall 2008

## Patents & Publications

F Aeffner, M Zarella, N Buchbinder, M Bui, **M Goodman**, D Hartman, G Lujan, M Molani, A Parwani, K Lillard, O Turner, V Vemuri, A Yuil-Valdes, and D Bowman “Introduction to Digital Image Analysis in Whole-slide Imaging” Digital Pathology Association, 2019.

**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.

## News & Publications

“An operating system for the biology lab”

[Nature Outlook](#)

9/2019

“Three-dimensional Imaging and Scanning: Current and Future Applications for Pathology”

[Journal of Pathology Informatics](#) 9/2017

“3Scan raises \$14 million for a robotic microscope that could accelerate drug discovery”  
[TechCrunch](#) 7/2016

“Digital Imaging On The Cutting Edge Of Tissue Analysis”  
[Forbes](#) 1/2015

“Mapping brain circuitry with a light microscope”  
[Nature Methods](#) 6/2013

## **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” Ignite Talks 9/2017

“The Physics of Tesla Coils and Swing-Sets” Ignite Talks 9/2016

“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 – College of Engineering – Award for Academic Distinction 2005–2008  
UA – College of Engineering – Departmental Honors for Outstanding Achievement 2005–2006

## **Languages and Tools**

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

## **Miscellaneous**

OSS Contributions: cPython, numba, scipy, pycuda, datadog, ecto, emscripten, pandas, smile, progressbar  
Architectures: FPGA, Atmel, ARM, x86, CPU/GPU Clusters, Petaflop HPC  
Interests: Brain-Machine Interfaces, Plasma Physics, Rock Climbing,  
Blacksmithing and Casting, High Power Electronics, EDA Software  
Abstract Algebra, Group-Theory, Quasicrystals, Satellites, Astronomy