

Michael SOLLAMI

Senior Software Architect and Machine Learning PhD



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I enjoy developing industry-disruptive software by inventing beyond-state-of-the-art technology. After completing my doctorate I worked as a data scientist, AI researcher, and lead engineer at multiple technology companies. I now lead visionary research and engineering teams to solve challenging real world problems in the fields of deep learning and computer vision.

Summary of core strengths :

- > Depth of experience in leading research and development teams on large scale system engineering projects
- > Research level knowledge of artificial intelligence with an emphasis on deep neural networks and their applications
- > Fluency in most high performance machine learning libraries and a deep passion for creativity and innovation

☰ Competencies

Primary Languages : Python, Lua, Java/Scala, C/C++, Clojure/Lisp, Rust, Julia, Go, C#, Mathematica

Deep Learning : Tensorflow, (py)Torch, Theano, Keras, MXNet, Caffe, CNTK, Apache Singa/Mahout

Data Science : XGBoost, Vowpal Wabbit, Numpy/Scipy, Scikit-learn, Pandas, OpenCV, D3, Open Frameworks

Big-data processing : Spark, Hadoop, Apache Drill, ElasticSearch

Cloud computing : Amazon web services, Google Cloud Engine, Azure, Softlayer

Database systems : Redis, RedShift, Posgres/SQL, Nosql, Oracle, MySQL, PostgreSQL

Development tools : git, cython, docker, bash, cmake, vim, Eclipse, Jenkins

HPC/GPU computing : MPI, OpenMP/CL, RabbitMQ, CUDA

📁 Professional Experience

Now
January 2017

Senior Data Scientist, Shutterstock Inc, New York, NY

As a founding member of the computer vision research team at Shutterstock I built deep neural network based systems for many imaging applications.

- > Prototyped various AI technologies for supporting the company's Search platform
- > Designed, implemented, and deployed a facial detection and attribute recognition service.

Tensorflow Torch OpenCV Docker AWS

January 2017
December 2014

Chief Scientist, Ditto Labs, Cambridge, MA

At Ditto, I led the team that brought deep learning and image recognition to internet scale in Ditto's social media listening service and cloud vision APIs.

- > Provided technical leadership for product design and systems architecture
- > Designed and trained custom deep convolutional neural networks for clients
- > Developed distributed neural network training libraries
- > Designed and implemented an active learning system for bootstrapping classifier ensembles
- > Achieved scaling needed to analyze petabytes of images in realtime
- > Built an active learning system for bootstrapping hierarchical classifiers ensembles

Caffe Python C++ OpenCV Flask AWS

December 2014

Lead Engineer of Research & Development, Mustbin Inc, Boston, MA

December 2012

At Mustbin, I directed research and development of an ultra-private social network using a novel crypto-system for iOS/OSX and Android - the world's first "NSA-proof" cloud-based data storage and sharing system.

- > Designed and tested our patented crypto-system, which was given the highest possible rating by security advisor Matasano (now NCC)
- > Implemented networking and cloud synchronization architectures with restful and thread-safe design patterns
- > Received multiple technology commendations along with the prestigious MITX award for the *Most Innovative App of 2014*

Objective C/C++ Swift iOS XCode Python Django AWS Java Android

November 2012

Technical Consultant for Flagship Exhibit, The National Museum of Mathematics, New York, NY

As the principal member of flagship exhibit design team and I oversaw development and the onsite installation of the exhibit for the grand opening.

- > Coded the graphics engine powering the exhibit's interactive console
- > Resolved major performance issues by implementing fast polyhedron boolean operators in Java
- > Integrated custom built electronics by writing custom firmware

J2ME Java Python Mathematica AWS

December 2012

Senior Research Engineer, Wolfram Research Inc, Cambridge, MA

June 2009

As a senior member of Stephen Wolfram's Advanced Research group I was tasked with engineering core functionalities for Mathematica and Wolfram Alpha.

- > Created the query recognition system and the NLP interpreter powering Apple's Siri and Microsoft's Bing services for quickly answering questions involving scientific data and/or mathematical entities and operations (e.g. step by step integration).
- > Developed the NLP technology used in the automated data analytics tool *Wolfram Alpha Pro*.
- > Prototyped next generation data science visualization capabilities
- > Designed algorithms in Alpha Pro for automatic report generation and intelligently summarized statistical conclusions
- > Taught at the Wolfram Science summer schools - intense research boot camps exploring computational methods in Wolfram's monogram "A New Kind of Science".

Mathematica Go SVN/CVS jQuery Eclipse

2008 - 2009

Software Engineer, Goddard Space Flight Center, Greenbelt, MD

At NASA's Formation Flying Test Bed (FFTB) I worked on the Magnetospheric multiscale mission (launched in 2015) developing software to simulate and analyze formation flying satellites.

- > Simulated the dynamics of the geo-space environment in order to test the satellite communication systems on land
- > Ensured correctness of onboard systems by accounting for relativistic clock effects

C/C++ Python Linux

August 2007

Lead Quantitative Analyst, Warisan Capital LLC, Westport, CT

May 2006

As head of the quantitative division at Warisan Capital (a globally mandated hedge fund of funds) I oversaw the statistical analyses of our holdings.

- > Developed time series modeling and portfolio stress testing using C++ and GTK
- > Designed proprietary financial engineering metrics and fund allocation methods
- > Held broker license certifications Series 7 & 63

C Symbolic C++ Python Matlab Visual Basic

Education

- 2012 **PhD in Mathematics - University of Wyoming**
 - > Completed a dissertation in theoretical computer science with Professor Craig Douglas
 - > Graduated with a GPA of 4.0/4.0

- 2009 **Master of Science in Mathematics - University of Wyoming**
 - > Recipient of the Most Outstanding Graduate Major Award
 - > Recipient of the Steven Lane Ashley Scholarship

- 2006 **Bachelors of Science in Computer Science and Mathematics - Trinity College**
 - > First student ever to graduate with dual honors in three years
 - > Graduated Summa Cum Laude (7th in class) with a GPA of 3.98/4.0
 - > Recipient of the Phi Gamma Delta Mathematics Prize
 - > Recipient of the University of Central Florida Computer Vision Research Fellowship

- 2003 **Storm King Preparatory School**
 - > Class Valedictorian
 - > Graduated in 3 years with a GPA of 4.0/4.0

Patents

- > Modifying Images for Enhanced Market Appeal.
- > The Bin Enabled Data Object Encryptions and Storage Apparatuses, Methods, and Systems. (MBIN)

Publications

- > M. Sollami, C. Douglas, M. Liebmann, *An Improved Lower Bound for n -Brinkhuis k -Triples*, 2016. arXiv :1606.00835
- > M. Sollami, *Novel Graph Approximation Algorithms*, 2013.

References

Available upon request.