MEENA MANI

Multidisciplinary: medical imaging, applied machine learning, statistics, physics and semiconductors.
Work experience: research (medical imaging), hospital (radiology), industry (semiconductors).
Excited about deep learning applied to radiology and medical imaging.

EDUCATION

Ph.D. Medical Imaging, *INRIA/University of Rennes 1, Rennes, France* Jan 2011
Mention très honorable (highest honors)
Thesis: Quantitative Analysis of Open Curves in Brain Imaging: Applications to White Matter Fibers and Sulci

M.S. Statistics, *University of California, Los Angeles, California, USA* June 2007
Thesis: Mapping Genetic Influences on Brain Shape using Multi-Atlas Automated Segmentation

M.S. Physics, *Rensselaer Polytechnic Institute, Troy, New York, USA*
Thesis: The stress-temperature behavior of epitaxial Al films deposited using the partially ionized beam technique

Non-degree master's-level coursework
- Deep learning specialization at Coursera/Andrew Ng 2017
- Statistics at University of California, Santa Cruz 2002 – 2004
- Semiconductors, electrical engineering at Stanford, Cornell, Rensselaer Polytechnic Institute

B.A. Math and Physics, *Smith College, Northampton, Massachusetts, USA*
Project: Compared a classical macroscopic model to semi-classical microscopic models of heavy-ion fusion

International Baccalaureate, *United World College, Montezuma, New Mexico, USA*
Awarded the prestigious Hinduja scholarship to attend this international high school that promotes peace

Selected Academic Honors & Scholarships
- Elected as student member to Sigma Xi, Science Honor Society
- Hinduja Scholarship to attend the United World College (10 selected from 10,000 applicants)
- Obtained a top position in the Class 10 board exam held all across India

DATA SCIENCE SKILLS
Deep Learning: Keras, TensorFlow, CNNs, Classification/Segmentation
Data Analysis: Python (pandas/scikit-learn/statsmodels/skimage/numpy/PySpark), R, Matlab, SQL
Misc: OpenCV, C, HTML, Latex, Linux/Unix (20+ yrs scripts, Vi)

DATA SCIENCE/RESEARCH EXPERIENCE
Research Fellow, *Radiology, Mayo Clinic, Minnesota* 06/2014-08/2015
Genetic signatures in gliomas: unsupervised feature learning methods, classification based on sparse coding.
Skills: Python, Matlab, image processing

Postdoc research, *Center for Magnetic Resonance Research, UMN, Minneapolis* 06/2012-06/2013
Connectivity-based parcellation: clustering using brain connectivity as a feature.
Algorithms (affinity propagation, co-clustering, LDA, EM, topic modeling, K-means).
Tools: R, Matlab, Unix scripts, FSL

Doctoral research, *Visages Lab,* INRIA, *Rennes, France* 09/2007-01/2011
- Applied novel Riemannian framework for study of joint feature spaces to brain structures
- Demonstrated its applicability to problems such as the detection of multiple sclerosis

- Designed novel scheme using multidimensional scaling to label primary sulci

Independent self-guided research formulating projects, initiating collaborations, end-to-end data analysis
Visiting research student, *Statistical Shape Analysis Lab, FSU, Tallahassee* 08/2009-11/2009
Skills: R, Matlab, shape analysis, clustering, applied machine learning, brain imaging, differential geometry

Visiting researcher, *Ariana Lab*, *INRIA, Sophia-Antipolis, France* 05/2006-10/2006
Aerial tree classification. Published conference paper.
Skills: Matlab, texture analysis, shape analysis, SVM

Master's research, *Lab Of Neuroimaging (LONI), UCLA, Los Angeles* 09/2005-04/2007
- Genetic influences on brain shape: designed and implemented new restricted maximum likelihood algorithm for computing heritability in a twin study. Published conference paper.
- Developed statistical methods in diffusion tensor imaging. Published conference abstract.

Skills: R, Matlab, shape analysis, segmentation, image registration, statistical methods (FDR, resampling)

REPRESENTATIVE PUBLICATIONS

- M. Mani, C. Barillot. *Supervised Labeling of Brain Sulci based on the Relational Pattern Matching Paradigm*, (journal paper submitted).
- M. Mani, A.Srivastava, C. Barillot. *Quantitative Study of Morphological Changes in the Corpus Callosum using Riemannian Metrics*, SPIE 2013.
- M. Mani, S.Kurtek, C. Barillot, A.Srivastava. *A Comprehensive Riemannian Framework for the Analysis of White Matter Fibers*, ISBI 2010.
- M. Mani, A. Srivastava, C. Barillot. *The Labeling of Cortical Sulci using Multidimensional Scaling*, MICCAI MMI Workshop, 2008.
- M. Mani, Y.Chou, N. Lepore, A. Klunder, J. de Leeuw, A. Toga, P.M. Thompson et al. *Mapping Genetic Influences on Brain Shape using Multi-Atlas Fluid Image Alignment*, FBIT 2007.

SELECTED PRESENTATIONS

- SPIE Medical Imaging 2013, Lake Buena Vista: oral presentation
- ISBI 2010, Rotterdam: oral presentation
- Machine Learning Workshop 2009, University of Chicago: poster presentation
- MICCAI MMI Workshop 2008, New York City: oral presentation

TEACHING & PROFESSIONAL SERVICE

- Reviewer, IEEE Transactions on Medical Imaging 2013
- Reviewer, MICCAI (medical imaging conference), 2011-2013
- Teaching Assistant**,** Statistics Department, University of California, Los Angeles
- Teaching Assistant, Physics Department, Rensselaer Polytechnic Institute

SEMICONDUCTOR/INDUSTRY EXPERIENCE

Senior Software Engineer, *Maxtor, California, USA* 2000 - 2001
- Advanced Technology projects in the Network Systems group

Software Engineer, *Quickturn/Cadence California, USA* 1998 - 2000
- Designed tools, automated testing processes, validation of HDL synthesis tool

Senior Product Engineer, *Advanced Micro Devices, California, USA* 1994 - 1998
- Responsible for all 5V Flash Memory products
- Recognized by senior management for identifying root cause for massive charge gain failure mode and implementing effective screens

Semiconductor Process Engineer, *Integrated Device Technology, California, USA* 1992 - 1994
- Overall responsibility for CVD WSi_x and PECVD TEOS processes
- Leader, Statistical Process Control team: Improved area productivity as measured by Cpk indices

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