Monami Banerjee

monamie.b@gmail.com

EDUCATION

University of Florida — Gainesville, FL, USA
M.S., Ph.D. in Computer Science — *Aug. 2013 – Dec. 2018*

University of Florida — Gainesville, FL, USA
M.S. in Statistics — *Aug. 2015 – Dec. 2018*

Indian Statistical Institute — Kolkata, India
M.Tech. in Computer Science — *2010 – 2012*

Jadavpur University — Kolkata, India
B.E. in Electerical Engineering — *2004 – 2008*

EXPERIENCE

Postdoctoral Researcher — Jan. 2019 – Sep. 2020
Facebook Oculus — *Palo Alto, CA*

- Develop and apply algorithms to compress neural networks with minimal performance degradation, so that these networks can be deployed in computation and memory constraint devices and wearables.
- Develop a multilayer perceptron model to predict a person's stance only from the person's head and hands coordinates.
- Optimize a deeplearning model to predict the lower body skeleton of a user from upper body skeleton. Given only the upper body joint positions, the goal is to obtain coherent full body skeleton with realistic posture and movement. For this purpose, we develop two models, one regression based deterministic model and another probabilistic model based on WGAN-GP.

Research Intern — May 2017 – Aug. 2017
Siemens Corporate Research — *NJ, USA*

- Developed novel image segmentation technique for MR imaging datasets.

Research Intern — May 2011 – July 2011
Indian Statistical Institute — *Kolkata, India*

Executive Engineer — July 2008 – July 2010
Siemens Ltd. — *Kolkata, India*

Intern — May 2007 – July 2007
National Aerospace Laboratory (NAL) — *Bangalore, India*

PUBLICATIONS

Deep learning for manifold valued data

- "VolterraNet: A higher order convolutionalnetwork with group equivariance for homogeneous manifolds", **Monami Banerjee**, Rudrasis Chakraborty, Jose Bouza, Baba C. Vemuri, *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 2020.
- "DMR-CNN: A CNN Tailored for DMR Scans with Applications to PD Classification", **Monami Banerjee**, Rudrasis Chakraborty, Derek Archer, David Vaillancourt and Baba Vemuri in *International Symposium of Biomedical Imaging (ISBI)*, 2019.
- "Statistical Recurrent Models on Manifold valued Data", Rudrasis Chakraborty, Chun-Hao Yang [†], Xingjian Zhen [†], **Monami Banerjee**, Derek Archer, David Vaillancourt, Vikas Singh and Baba C Vemuri in *32nd Conference on Neural Information Processing Systems (NeuRIPS)*, 2018.

Efficient statistics for manifold valued data

- "Sparse Exact PGA on Riemannian Manifolds", **Monami Banerjee**, Rudrasis Chakraborty and Baba Vemuri, in *International Conference of Computer Vision (ICCV)*, (pp. 5010-5018), 2017.
- "L_2E: A Framework for Robust Fréchet Mean and PGA on Riemannian Manifolds with Applications to Neuroimaging", **Monami Banerjee**, Bing Jian and Baba Vemuri, in *Information Processing in Medical Imaging (IPMI)*, (pp. 3-15), 2017 [**Selected as an Oral Presentation**].

- "Statistics on the space of trajectories for Longitudinal data analysis", Rudrasis Chakraborty, **Monami Banerjee** and Baba Vemuri, in *IEEE International Symposium on Biomedical Imaging (ISBI)*, (pp. 999-1002), 2017.

Non-linear regression technique for manifold valued data
- "A nonlinear regression technique for manifold valued data with applications to Medical Image Analysis", **Monami Banerjee**, Rudrasis Chakraborty, Edward Ofori, Michael Okun, David Vaillancourt and Baba Vemuri, in Proceedings of the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
- "Nonlinear Regression on Riemannian Manifolds and Its Appications to Neuro-Image Analysis", **Monami Banerjee**, Rudrasis Chakraborty, Edward Ofori, David Vaillancourt and Baba Vemuri, in *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, (pp. 719-727), 2015.

Analysis of Diffusion Imaging data
- "A geometric framework for ensemble average propagator reconstruction from diffusion MRI", Baba C Vemuri, Jiaqi Sun, **Monami Banerjee**, Zhixin Pan, Sara M Turner, David D Fuller, John R Forder, Alireza Entezari, in *Medical Image Analysis*, 2019.
- 'A Method for Automated Classification of Parkinson's Disease Diagnosis using an Ensemble Average Propagator Template Brain Map Estimated from Diffusion MRI", **Monami Banerjee**, Michael Okun, David Vaillancourt and Baba C. Vemuri, in *PLoS One*, 11(6): e0155764.doi:10.1371/journal.pone.0155764

Miscellaneous Publications

"Interpolation on the Manifold of K Component GMMs", Hyunwoo Kim, Nagesh Adluru, **Monami Banerjee**, Baba Vemuri and Vikas Singh, in Proceedings of the *IEEE International Conference on Computer Vision (ICCV)*, (pp. 2884-2892), 2015.

"Unsupervised Feature Selection with Controlled Redundancy (UFeSCoR)", **Monami Banerjee** and Nikhil R. Pal, in *IEEE Trans. on KDE* (Volume 27, No. 12).

"Feature Selection with SVD Entropy: some modification and extension", **Monami Banerjee** and Nikhil R. Pal, in *Information Sciences* (Volume 264, 20 April 2014)

Accolades

Doctoral Consortium award to present PhD work in International Conference of Computer Vision (ICCV), 2017.

CISE *Gartner Group Info Tech Scholarship* for good academic performance in 2017.

IPMI Scholarship for Junior Scientists from Underrepresented Populations in 2017.

UF Informatics Institute Graduate fellowhsip for research on "Robustness and sparsity of representation in statistical analysis of manifold valued data".

CISE travel grant to attend CVPR 2016.

Teaching and Research Assistantships from CISE Dept., University of Florida.

Best dissertation award during Master's curriculum from Indian Statistical Institute, Kolkata.

Stood first in final semester of M.Tech curriculum in Indian Statistical Institute, Kolkata.

Received award in forms of books in 1st (2nd rank), 3rd (2nd rank) and 4th (1st rank) semester during M.Tech curriculum in Indian Statistical Institute, Kolkata.

Appeared second in M.Tech Curriculum in Indian Statistical Institute

Technical Skills

Languages: Python, C/C++, R
Reviewerships: NeurIPS, CVPR, ACCV, Entropy, Information Sciences, Applied Soft Computing