

# Sohan Seth

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Computational NeuroEngineering Lab

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## Education

Ph.D., Electrical and Computer Engineering, University of Florida, *Expected* 2011

Dissertation Title: On Nonparametric Measures of Dependence and Conditional Independence: Theory and Applications

Dissertation Committee Members:

Professor José C. Príncipe (chair), [principe@cnel.ufl.edu](mailto:principe@cnel.ufl.edu), +1 352 392-2682

Professor John. G. Harris, [harris@cnel.ufl.edu](mailto:harris@cnel.ufl.edu), +1 352 392-2682

Professor Anand Rangarajan, [anand@cise.ufl.edu](mailto:anand@cise.ufl.edu), +1 352 392-1507

Professor Murali Rao, [mrao@math.ufl.edu](mailto:mrao@math.ufl.edu), +1 352 392-0281 (ext. 259)

M.S., Electrical and Computer Engineering, University of Florida, 2008

B.E., Instrumentation and Electronics Engineering, Jadavpur University, 2005

## Fields of Interest

Information theoretic learning, Adaptive signal processing, Statistical machine learning, Statistical dependence estimation, Conditional independence estimation, Causal inference, Signal processing in reproducing kernel Hilbert space, Computational neuroscience

## Academic Experience

**Research Assistant**, University of Florida, Electrical and Computer Engineering Dept. Research on information theoretic learning, adaptive filtering, echo state network and compressed sensing under José C. Príncipe, August, 2006 - Present

**Junior Research Fellow**, Jadavpur University, Instrumentation and Electronics Engineering Dept. Research on nuclear quadrupole resonance (NQR) under Dr. Rajib Bandyopadhyay and Dr. Anu-tosh Chatterjee, Nov., 2005 - July, 2006

## Publication

### Book Chapter

José C. Príncipe, Weifeng Liu, Pushkal Pokharel, Jianwu Xu, Sohan Seth, *Correntropy for Random Variables: Properties, and Applications in Statistical Inference*, in Information Theoretic Learning: Renyi's Entropy and Kernel Perspectives, José C. Príncipe, Springer Verlag, 2009 (Ch. 10)

## Journal

- Murali Rao, Sohan Seth, Jianwu Xu, Yunmei Chen, Hemant Tagare, José C. Príncipe, *A test of independence based on a generalized correlation function*, Signal Processing, Volume 91, Issue 1, Pages 15-27, 2011
- Nabarun Bhattacharyya, Sohan Seth, Bipan Tudu, Pradip Tamuly, Arun Jana, Devdulal Ghosh, Rajib Bandyopadhyay, Manabendra Bhuyan and Santanu Sabhapandit, *Detection of Optimum Fermentation Time for Black Tea Manufacturing using Electronic Nose*, Sensors and Actuators B: Chemical, Volume 122, Issue 2, Pages 627-634, 2007

## Conference

- Sohan Seth, Il Park, Austin J. Brockmeier, Mulugeta Semework, John Choi, Joe Francis, José C. Príncipe, *A Novel Family of Non-parametric Cumulative Based Divergences for Point Processes*, Neural Information Processing Systems, 2010
- Sohan Seth, José C. Príncipe, *Variable Selection: A Statistical Dependence Perspective*, International Conference on Machine Learning and Applications, 2010
- Sohan Seth, José C. Príncipe, *A Conditional Independence Perspective of Variable Selection*, Int. Workshop on Machine Learning for Signal Processing, 2010
- Lin Li, Il Park, Sohan Seth, Justin Sanchez, José C. Príncipe, *Neuronal Functional Connectivity Dynamics in Context: An MSC-based Approach*, Int. Conference of the IEEE Engineering in Medicine and Biology Society, 2010
- Sohan Seth, José C. Príncipe, *A test of Granger Non-causality Based on Nonparametric Conditional Independence*, Int. Conference on Pattern Recognition, 2010.
- Sohan Seth, José C. Príncipe, *A Conditional Distribution Function Based Approach to Design Nonparametric Tests of Independence and Conditional Independence*, Int. Conference on Acoustics, Speech, and Signal Processing, 2010.
- Jung Phil Kwon, Sohan Seth, Andreas Keil, José C. Príncipe, *Estimation of Instantaneous Power in the EEG to Assess Brain Connectivity with High Temporal Resolution*, Int. Conference of the IEEE Engineering in Medicine and Biology Society, 2009.
- Lin Li, Sohan Seth, IL Park, Justin Sanchez, José C. Príncipe, *Estimation and Visualization of Neuronal Functional Connectivity in Motor Task*, Int. Conference of the IEEE Engineering in Medicine and Biology Society, 2009.
- Sohan Seth, José C. Príncipe, *Estimation of Density Ratio and its Application to Design a Measure of Dependence*, Int. Workshop on Machine Learning for Signal Processing, 2009.
- Sohan Seth, José C. Príncipe, *On Speeding up Computation in Information Theoretic Learning*, Int. Joint Conference on Neural Networks, 2009.
- Sohan Seth, IL Park, José C. Príncipe, *A New Nonparametric Measure of Conditional Independence*, Int. Conference on Acoustics, Speech, and Signal Processing, 2009.
- Sohan Seth, José C. Príncipe, *Compressed Signal Reconstruction using the Correntropy Induced Metric*, Int. Conference on Acoustics, Speech, and Signal Processing, 2008.
- Sohan Seth, Mustafa C. Ozturk, José C. Príncipe, *Signal Processing with Echo State Networks in the Complex Domain*, Int. Workshop on Machine Learning for Signal Processing, 2007.

## Poster

Sohan Seth, José C. Príncipe, *Estimation of Conditional Mutual Information and its Application as a Measure of Conditional Dependence*, Learning Workshop, 2009.

## Teaching Experience

Neural networks for signal processing, Fall 2009 (Guest lectures), Adaptive signal processing, Spring 2010 (Guest lectures), Neural networks for signal processing, Fall 2010 (Guest lectures)

## Professional Activities

**Reviewer:** Journal of Neural Processing Letters, International Journal of Pattern Recognition and Artificial Intelligence, Int. Workshop on Machine Learning for Signal Processing 2009, International Joint Conference on Neural Networks 2010,

**Member:** Eta Kappa Nu

## Referees

Professor José C. Príncipe, [principe@cnel.ufl.edu](mailto:principe@cnel.ufl.edu),

Professor Murali Rao, [mrao@math.ufl.edu](mailto:mrao@math.ufl.edu),

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