

## Chris Hinrichs

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### CONTACT INFORMATION

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### RESEARCH INTERESTS

Statistical Machine Learning; NeuroImaging; Multi-Modality Image Analysis; Kernel Methods; Alzheimer's Disease and other Neurodegenerative Disorders

### EDUCATION

**University of Wisconsin – Madison**, Madison, Wisconsin USA

Ph.D. Candidate, Computer Sciences, (expected graduation: July 2012)

- Advisor: Vikas Singh
- Thesis: “Multi-Modality Inference Methods for Neuroimaging with Applications to Alzheimer's Disease Research”

**University of Chicago**, Chicago, Illinois USA

M.S., Computer Science, August, 2006

**University of Illinois at Chicago**, Chicago, Illinois USA

B.S., Computer Science, May, 2004

### ACADEMIC EXPERIENCE

**University of Wisconsin – Madison**, Madison, Wisconsin USA

*Graduate Student*

**August, 2006 - present**

Conducted research; presented research in seminars; attended graduate courses and consulted on cross-disciplinary projects.

- Computation and Informatics in Biology and Medicine (CIBM)  
Pre-doctoral trainee
- Research Assistant

**July 2009 – June 2012**

**May 2008 – June 2009**

*Teaching assistant*

**August, 2006 - May, 2008**

Conducted programming lab sessions and discussions during office hours; graded works; designed and implemented student assignments; produced and distributed solutions to assignments.

- CS 302: Introduction to programming, Fall 2006, Spring 2007
- CS 525: Linear Optimization, Fall 2007
- CS 640: Special topics: Medical Image Analysis, Spring 2008
- CS 769: Adv. Natural Language Processing, Spring 2008

### PUBLICATIONS

**C. Hinrichs**, V. Singh, N. M. Dowling, S. C. Johnson.

*MKL-based sample enrichment and customized outcomes enable smaller AD clinical trials*

Workshop on Machine Learning and Interpretation in NeuroImaging (MLINI) NIPS 2011 workshop.  
[selected for oral presentation, 12.5% acceptance]

D. Pachauri, **C. Hinrichs**, M. K. Chung, S. C. Johnson, and V. Singh.

*Topology based Kernels with Application to Inference Problems in Alzheimer's disease.*

IEEE Transactions on Medical Imaging Issue PP(99), 29 April 2011.

[impact factor: 3.55]

**C. Hinrichs**, V. Singh, G. Xu, and S. C. Johnson.  
*Predictive Markers for AD in a Multi-Modality Framework: An Analysis of MCI Progression in the ADNI Population.*  
NeuroImage, 55(2):574–589, 2011.  
[impact factor: 5.74]

K. Motwani, N. Adluru, **C. Hinrichs**, A. L. Alexander, and V. Singh.  
*Epitome driven 3-D Diffusion Tensor image segmentation: on extracting specific structures.*  
Neural Information Processing Systems (NIPS), 2010.  
[selected for oral spotlight, 5.9% acceptance]

L. Mukherjee, V. Singh, J. Peng, and **C. Hinrichs**.  
*Learning Kernels for variants of Normalized Cuts: Convex Relaxations and Applications.*  
IEEE conf. on Computer Vision and Pattern Recognition (CVPR), 2010.  
[26.8% acceptance]

**C. Hinrichs**, V. Singh, G. Xu, and S. C. Johnson.  
*MKL for Robust Multi-modality AD Classification.*  
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 786–794, 2009.  
[32% acceptance]

**C. Hinrichs**, V. Singh, L. Mukherjee, G. Xu, M. K. Chung, and S. C. Johnson.  
*Spatially augmented LPBoosting for AD classification with evaluations on the ADNI dataset.*  
NeuroImage, 48(1):138–149, 2009.  
[impact factor: 5.74]

#### INVITED TALKS

- **Oral presentation:** *MKL-based sample enrichment and customized outcomes enable smaller AD clinical trials*  
Workshop on Machine Learning and Interpretation in NeuroImaging (MLINI) at NIPS 2011  
Sierra Nevada, Spain. December 16–17, 2011
- **Invited talk:** *A novel clinical trial methodology for neuroimaging data*  
Workshop on Mathematical Methods in Medical Image Analysis.  
Seoul National University, Seoul, S. Korea. September 26–27, 2011
- **Guest lecture:** *Multi-Kernel Learning and applications to the Alzheimers Disease Neuroimaging Initiative (ADNI) dataset*  
Statistical Methods in NeuroImage Analysis. (course)  
Seoul National University, Seoul, S. Korea. September 16, 2011
- **Plenary talk:** *Learning disease patterns from medical images: Applications to Alzheimers Disease research*  
NLM Informatics Training Conference.  
Bethesda, MD. June 28–30, 2011
- **Seminar:** *Learning to recognize disease patterns in medical imaging: Applications to Alzheimer's Disease research*  
Computation and Informatics in Biology and Medicine (CIBM) Seminar.  
Madison, WI. October 26, 2010

#### PROFESSIONAL EXPERIENCE

##### Journal Reviewer

- NeuroImage
- IEEE Transactions on Biomedical Engineering
- International Journal of Biomedical Data Mining
- PLoS-ONE

### **Conference Reviewer**

- IEEE conf. on Computer Vision and Pattern Recognition (CVPR) 2009–2011

### COMPUTER SKILLS

- Statistical and Optimization Packages: Matlab; CPLEX; CVX; YaLMIP; SDPT3; SeDuMi; SVM\_Light; LibSVM; Shogun; GNU Scientific Library (GSL)
- Other libraries: Visualization ToolKit (VTK)
- Languages: Matlab; C++; Perl; Python; basic Unix shell scripts
- Applications:  $\text{\LaTeX}$ ; spreadsheet, and presentation software
- Algorithms: Linear and Non-linear systems and solvers; Kernel Methods;
- Operating Systems: GNU/Linux; Windows.