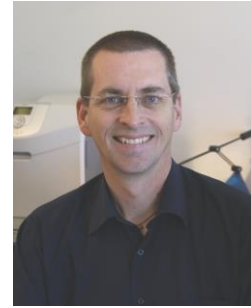


CURRICULUM VITAE

Name: Vince D. Calhoun, Ph.D.
Born: October 1, 1967, Toledo, Ohio
Family: Married to June; son Jachin (age 10), daughter Anaiah (age 4), daughter Sarita (age 2)



Education:

B.S. Electrical Engineering, University of Kansas, Lawrence, KS, May 1991
M.A. Biomedical Engineering, Johns Hopkins University, Baltimore, MD, May 1993
M.S. Information Systems, Johns Hopkins University, Baltimore, MD, January 1996
Ph.D. Electrical Eng., Univ. of Maryland Baltimore County, Baltimore, MD, May 2002

Career:

2013- present UNM Distinguished Professor
University of New Mexico, Albuquerque, NM

2013- present Professor, Department of Biology (secondary appointment)
University of New Mexico, Albuquerque, NM

2012-present Executive Science Officer
The Mind Research Network, Albuquerque, NM

2011- 2012 Chief Executive Officer
The Mind Research Network, Albuquerque, NM

2011- present Adjunct Senior Scientist
Lovelace Respiratory Research Institute

2010- present Professor, Departments of Electrical and Computer Engineering (primary),
Neurosciences, Computer Science, and Psychiatry
University of New Mexico, Albuquerque, NM

2010 Associate Professor, Department of Psychiatry
The University of New Mexico, Albuquerque, NM

2009-2011 Chief Technology Officer
The Mind Research Network, Albuquerque, NM

2009-present Affiliate Professor, Chester F. Carlson Center for Imaging Science
Rochester Institute of Technology, Rochester, NY

2007-2010 Associate Professor, Department of Computer Science
University of New Mexico, Albuquerque, NM

- 2007-2010 Associate Professor, Department of Neurosciences
University of New Mexico, Albuquerque, NM
- 2006- present Director Image Analysis and MR Research
The Mind Research Network, Albuquerque, NM
- 2006-2010 Associate Professor, Department of Electrical and Computer Engineering
University of New Mexico, Albuquerque, NM
- 2005- present Associate Professor, Adjunct, Department of Psychiatry
Yale University, New Haven, CT
- 2002- present Assistant Professor, Adjunct, Department of Psychiatry
Johns Hopkins University, Baltimore, MD
- 2002-2005 Assistant Clinical Professor, Department of Psychiatry
Yale University, New Haven, CT
- 2002-2006 Director, Medical Image Analysis Laboratory
Institute of Living, Hartford, CT
- 2001-2002 Senior Research Engineer, Psychiatric Neuroimaging
Johns Hopkins University, Baltimore, MD
- 1996-2001 Research Engineer, Psychiatric Neuroimaging
Johns Hopkins University, Baltimore, MD
- 1993-1996 System Manager/Programmer, Psychiatric Neuroimaging
Johns Hopkins University, Baltimore, MD
- 1993-1993 Research Technician, Laboratory for Studies on the
Controlled Release of Bioactive Materials
Johns Hopkins University, Baltimore, MD
- 1990-1991 Research Assistant, Remote Sensing Laboratory
University of Kansas, Lawrence, KS

Professional Honors or Recognition:

- Outstanding teacher award, ISMRM 2013 Educational Course
“Network Discovery with fMRI: Analytic Choices & Their Implications”
- 2013 Fellow, Institute of Electrical and Electronics Engineers (IEEE)
- 2013 Fellow, American Association of Advanced Science (AAAS)
- 2012 Recipient, A. Earl Walker Neuroscience Award
Dept. of Neurosciences, University of New Mexico

2010 Recipient, Outstanding Young Engineer Award
IEEE, Albuquerque Section

2010 Recipient, Distinguished Researcher Award
Department of ECE, University of New Mexico

2008 Recipient, Junior Faculty Research Award
School of Engineering, University of New Mexico

Course on “Independent Component Analysis of BOLD fMRI Data” Selected for International Society of Magnetic Resonance in Medicine (ISMRM) Global Outreach Program (online 2008-2011)

2006-2013 Senior Member, IEEE

2006- Member, American College of Neuropsychopharmacology

2006 Recipient, Young Investigator Memorial Travel Award
American College of Neuropsychopharmacology

2005 Recipient, Young Investigator Award
International Congress on Schizophrenia Research

2004 Recipient, Early Career Investigator Award
International Society for Neuroimaging in Psychiatry

2002-2006 Member, IEEE

1992, 1995 Student Travel Award
International Society of Magnetic Resonance in Medicine

1991-2002 Student Member, IEEE

Member, Phi Beta Kappa (honor society)

Member, Omicron Delta Kappa (honor society)

Member, Secretary, Mortar Board (honor society)

Member, President, Tau Beta Pi (engineering honor society)

Member, Eta Kappa Nu (engineering honor society)

Annotation and Citations (as of March 2013) for Ten Selected Articles:

- 1) *V. D. Calhoun, T. Adali, G. D. Pearlson, and J. J. Pekar, "A Method for Making Group Inferences from Functional MRI Data Using Independent Component Analysis," Hum.Brain Map., vol. 14, pp. 140-151, 2001. [625 citations]*

In this article Dr. Calhoun presents an algorithm for making group and single-subject inferences using a data-driven approach to identify hidden patterns in fMRI data. Group ICA is widely used in the fMRI field as is Dr. Calhoun's software, GIFT, which implements this technique. The group ICA approach has significantly impacted the field of fMRI and helped propel the excitement and interest in studying intrinsic brain activity during a task or during rest. The approach has proven robust, able to provide information about both group data as well as individual subjects, and produces features which have been found to be useful for predicting behavior, diagnosis, and treatment.

- 2) *A. Garrity, G. D. Pearlson, K. McKiernan, D. Lloyd, K. A. Kiehl, and V. D. Calhoun, "Aberrant 'default mode' functional connectivity in schizophrenia," Am.J.Psychiatry, vol. 164, pp. 450-457, 2007. [422 citations]*

This article includes an application of his methods to show the first differences in functional connectivity in schizophrenia patients in the so-called "default mode" brain network, a brain network thought to be involved in mediating internal reflection. This paper showed not only that certain regions of the default mode network were significantly different in schizophrenia patients, but also that there were regions which were related to patient symptoms. Finally, an interesting finding showed the frequency content of the patients was shifted higher, so the brain activity in the patients was more rapid, but presumably less efficient. This finding was consistent with an existing model of schizophrenia called cognitive dysmetria, but had not been evaluated in the context of functional connectivity of the default mode network. Dr. Calhoun's methods made such a test possible.

- 3) *V. D. Calhoun, T. Adali, G. D. Pearlson, and J. J. Pekar, "Spatial and temporal independent component analysis of functional MRI data containing a pair of task-related waveforms," Hum.Brain Map., vol. 13, pp. 43-53, 2001. [336 citations]*

This is the first comparison of temporal and spatial ICA applied to fMRI data.

- 4) *V. D. Calhoun, J. Liu, and T. Adali, "A Review of Group ICA for fMRI Data and ICA for Joint Inference of Imaging, Genetic, and ERP data," NeuroImage, vol. 45, pp. 163-172, 2009. [153 citations]*

This paper reviews Dr. Calhoun's efforts in data fusion of multimodal imaging and genetic data. Multivariate methods for combining these data are sorely needed in the field, and Dr. Calhoun has been one of the first to advance this area. For example, he has shown that prediction of schizophrenia is much more accurate when using both fMRI and genetic data. He has also identified some new putative risk genes associated with schizophrenia. Though only a few years old, such methods are now used widely in the field.

- 5) C. Sorg, V. Riedl, M. Muhlau, V. D. Calhoun, L. L., A. Drzezga, H. Forstl, A. Kurz, C. Zimmer, and A. Wohlschlager, "Selective changes of resting-state networks in patients at high risk for Alzheimer's disease – an example for profiling functional brain disorders," *PNAS*, vol. 104, pp. 18760-18765, 2007. [318 citations]
- 6) K. A. Celone, V. D. Calhoun, B. C. Dickerson, A. Atri, E. F. Chua, S. Miller, K. DePeau, D. M. Rentz, D. Selkoe, M. S. Albert, and R. A. Sperling, "Alterations in Memory Networks in Mild Cognitive Impairment and Alzheimer's Disease: An Independent Component Analysis," *Journal of Neuroscience*, vol. 26, pp. 10222-10231, 2006. [272 citations]

These two articles provide exciting applications of Dr. Calhoun's approach to study changes in resting-state network in Alzheimer's disease. Dr. Calhoun played a central role in providing the methods, performing the analysis, and writing the manuscripts.

- 7) Y. Li, T. Adali, and V. D. Calhoun, "Estimating the number of independent components for fMRI data," *Hum. Brain Map.*, vol. 28, pp. 1251-1266, 2007. [212 citations]
- 8) V. D. Calhoun and T. Adali, "'Unmixing' Functional Magnetic Resonance Imaging with Independent Component Analysis," *IEEE Eng. in Medicine and Biology*, vol. 25, pp. 79-90, 2006. [133 citations]

The above are two key papers on the group ICA approach.

- 9) M. Jafri, G. D. Pearlson, M. Stevens, and V. D. Calhoun, "A Method for Functional Network Connectivity Among Spatially Independent Resting-State Components in Schizophrenia," *NeuroImage*, vol. 39, pp. 1666-1681, 2008 [209 citations]

This paper presents a new approach to analyze functional connectivity in the context of networks instead of just individual voxels in a brain. It has become a widely used approach applied to study many different diseases.

- 10) T. Eichele, S. Debener, V. D. Calhoun, K. Specht, A. K. Engel, K. Hugdahl, D. Y. Cramon, and M. Ullsperger, "Prediction of human errors by maladaptive changes in event-related brain networks," *PNAS*, vol. 105, pp. 6173-6178, 2008. [156 citations]

The above paper shows that using group ICA, multiple brain networks can be used to predict errors up to 30 seconds prior to them being made. Dr. Calhoun worked closely with the first author and provided all the methods used in this paper.

List of Funded Research:

*indicates obtained (or renewed) while at UNM

Active

- *NIBIB; 1R01EB000840 (Calhoun)** 2/1/08-1/31/13
A unified framework for flexible brain image analysis \$350,000/year directs
The imaging findings in schizophrenia are widespread, heterogeneous, not diagnostic, and have limited replicability and it is likely that in part the lack of consistent findings is because most models do not adequately account for the variability present in the data from schizophrenia patients. The successful completion of this research will provide a powerful set of algorithms and software tools for the research community to increase the sensitivity and specificity of functional brain imaging techniques.
Role: Principle Investigator
- *NIH/NIBIB; 1R01EB006841 (Calhoun)** 4/1/07 – 3/31/15
Multivariate methods for identifying multi-task/multimodal brain imaging biomarkers \$350,000/year directs
To develop methods, based upon independent component analysis, for joint-statistical analysis of multi-task and multimodal brain data (functional MRI, DTI, structural MRI) to identify multimodal biomarkers.
Role: Principle Investigator
- *NIH/NIBIB; 2R01EB005846 (Calhoun)** 5/1/09 – 4/30/13
Informed Data-Driven Fusion of Behavior, Brain Function, and Genes \$350,000/year directs
This application proposes to further develop, enhance, and disseminate a set of sophisticated multivariate analysis tools for combination and examination of data from multiple modalities such as fMRI, ERP, genomic, and behavioral studies.
Role: Principle Investigator
- *NIH/NCRR; 1P20RR021938 (Calhoun)** 8/1/08 – 7/31/13
COBRE: Neural Mechanisms of Schizophrenia: Use of Multiple Tools \$1,725,415/year directs
to Examine Dysfunctions in Neural Integration
Center grant funding 4 junior PIs and 4 cores which examines functional and anatomical connectivity in schizophrenia using multimodal neuroimaging analyses.
Role: Principle Investigator
- *NSF; 1116944 (Calhoun)** 8/1/2011 – 7/31/2014
CIF: Small: Collaborative Research: Entropy Rate for Source Separation and Model Selection: Applications in fMRI and EEG \$120,000/year directs
We will develop a class of powerful methods for source separation—primarily using independent component analysis (ICA)—and model selection using entropy rate so that we can fully take both the full higher-order-statistical information and sample correlation into account in the development. We will apply these techniques to the analysis of functional magnetic resonance (fMRI) data (both the magnitude and full complex fMRI data) and the rejection of gradient and pulse artifacts in electroencephalography (EEG) in concurrent EEG-fMRI data. In both cases, information on the nature of source distribution as well as the extent of correlation—e.g. through the use of reference electrocardiogram (ECG) and eye movement data collected during the acquisition, as well as the information on the imaging parameters.
Role: Principle Investigator [collaborative project with Tulay Adali @ UMBC]
- *NSF; 1016619 (Calhoun)** 8/15/10–7/31/13
III: Small: Collaborative Research: Canonical Dependence Analysis \$170,000/year directs
for Multi-modal Data Fusion and Source Separation
We will develop a set of powerful tools for multi-subject (multi-set) data analysis and multi-modal data fusion based on canonical dependence analysis that extends the power and flexibility of multiset canonical correlation analysis. We will study brain function and functional associations during simulated driving, a naturalistic task where data-driven methods have proven especially useful. We will also investigate genetic associations with good or poor driving behavior and will study the brain function variability at different blood alcohol levels.
Role: Principle Investigator [collaborative project with Tulay Adali @ UMBC]

*NIH/NIMH 1R01MH094524 (Calhoun & Turner, Co-PIs)	1/1/12 – 12/31/17
Mining the Genomewide Scan: Genetic Profiles of Structural Loss in Schizophrenia	\$414,000/yr Directs
<p>The development of both neuroimaging and genome-wide scan technologies have created a proliferation of data about neuropsychiatric disorders. It is possible to collect more information in a study about each subject than there are subjects available to study, creating a challenge for standard statistical techniques. We develop an approach already used separately in imaging and genetics, but apply it here to the combination of imaging genetic data on a massive dataset, to determine genetic effects on brain structure in psychiatric disorders.</p>	
<p>Role: Principle Investigator [Co-PI with Jessica Turner]</p>	
5R01MH085010 (Kiehl)	7/17/09 - 4/30/14
NIH/NIMH	\$396,653/yr Direct
The Cognitive Neuroscience of Female Psychopathy	
<p>To test the paralimbic dysfunction hypothesis of psychopathy in female offenders using event-related potentials and functional magnetic resonance imaging</p>	
<p>Role: Co-Investigator</p>	
5R01DA026505 (Kiehl)	9/1/09 - 5/31/14
NIH/NIDA	\$424,868/yr Direct
Socio-moral processing in psychopathy and substance abuse	
<p>To use functional imaging to elucidate and characterize the functional neuroanatomy of processing of moral stimuli for linguistic and picture stimuli in psychopathy and substance abuse</p>	
<p>Role: Co-Investigator</p>	
1R01DA026964 (Kiehl)	7/01/10 - 6/30/15
NIH/NIDA	\$352,115/yr Direct
Action monitoring, action observation and dopamine genes as predictors of substance abuse	
<p>To utilize multimodal imaging techniques (ERP/fMRI) to characterize the integrity of neural circuits engaged in action-monitoring in incarcerated drug-abusers</p>	
<p>Role: Co-Investigator</p>	
1R21DA027626 (Liu)	9/1/09 - 8/31/13
NIH/NIDA	\$253,613/yr Direct
A multilevel vulnerability study of substance abuse via CNV, brain activation and behavior	
<p>This project focuses on the understanding of the vulnerability to substance abuse in different developmental phases will greatly assist the diagnosis, prevention and treatment plans. The efficiency and effectiveness of prevention and treatment efforts can also be improved with increased knowledge about common pathways underlying disorders related to different substances</p>	
<p>Role: Co-Investigator</p>	
RO1MH077945 (Pearlson)	12/1/07–11/30/12
NIH/NIMH	\$670,295/yr Direct
Bipolar & Schizophrenia Consortium for Parsing Endophenotypes	

The overall goal of the proposed research is to examine a broad panel of putative endophenotypes in affected individuals with schizophrenia and bipolar and their unaffected relatives in order to: 1) characterize the degree of familial phenotypic overlap between SZ and psychotic BP; 2) identify patterns of endophenotypes unique to the two disorders, and 3) contrast the heritability of endophenotypes across the disorders.

Role: PI on Subcontract

R01MH080956-01 (Stevens) 4/1/08-03/31/13
NIH/NIMH \$250,000/yr Direct

Characterizing Two Distinct ADHD Neurobiologies with fMRI

A study using functional imaging, genetic analysis, and neuropsychological assessment to examine whether there are two separate profiles of neurobiological impairment underlying impulsive behavior in ADHD.

Role: PI on Subcontract

R01MH081969 (Stevens) 7/1/08-6/30/13
NIH/NIMH \$250,000/yr Direct

Adolescent maturation of brain network integration for executive control abilities

Develop novel analytic tools for fMRI and aid in structure/function analysis. In addition, implement the data fusion analysis.

Role: PI on Subcontract

1 R01AA016599 (Pearlson) 2/1/07-1/31/12
NIH/NIAAAA \$446,656/yr Direct

Alcohol and Drug Use in College Students: Cognition and fMRI

Investigates effects of drug and alcohol use on cognitive abilities, structural and functional brain MRI in freshman college students, with repeat assessment at 24 months.

Role: PI on Subcontract

1 R01DA025074 (Hutchison) 9/30/08-8/31/13
NIH/NIDA \$396,000/yr Direct

Effectiveness of Varenicline: Testing Individual Differences

Role: Co-Investigator

1R01MH090169-01A1 (Kosson) 7/1/11 - 6/30/15
NIH/NIMH \$285,000/yr Direct

Neural Substrate of Cognitive and Emotional Deficits in Psychopathy

The current project examines regional brain activation while offenders and healthy controls complete cognitive and emotional tasks validated for differentially activating left hemisphere systems.

Role: Co-Investigator

2 R44 MH075481-03A2 (Ruano) 09/2/09 - 8/31/12
NIH/NIMH \$200,000/yr Direct

MRI DNA Biomarkers for Neuropsychiatric Disease

There is an urgent need for innovative technologies to study the multi-gene etiology of these disorders for early diagnosis, prevention, and treatment. Advances in the Genomas PhysioGenomics™ technology allow us to develop disease related DNA arrays. These products will enable researchers to couple neuropsychiatric endophenotypes, structural and functional imaging of the brain) with genetic information from hundreds of genes, including single nucleotide polymorphisms (SNPs) and haplotypes, to build multigene DNA markers of disease.

Role: PI on Subcontract

Completed

*NIMH; 1RC1MH089257 (Calhoun) 9/30/09-9/29/12
 Genetic Markers of White Matter Integrity and Clinical Severity in Schizophrenia \$320,000/year directs

The goal of this Challenge grant application is to identify novel biomarkers of clinical severity in patients with schizophrenia. There are currently no reliable biomarkers for schizophrenia, so the proposed use of sophisticated genotyping, neuroimaging and biostatistical tools for searching biomarkers that can predict disease severity in two large cohorts of patient has a high clinical impact. The identification of such biomarkers will not only increase our knowledge of the pathophysiology of schizophrenia but also, and most importantly, may help predict an increased risk for this illness even before the onset of symptoms.

Role: Principle Investigator

NARSAD; (Calhoun) 4/1/04-3/31/09
 Assessment of the State-Trait Specificity of Auditory Cortex fMRI \$60,000 directs
 Synchrony Maps in Schizophrenia and Bipolar Disorder

Study of specificity of auditory cortex maps in acute psychotic bipolar patients and after 6 months of medication. Maps are generated using independent component analysis methods we have developed.

Role: Primary Investigator

NIAAA; 1 RO1 AA015615-01 (Pearlson) 3/1/05 – 2/28/09
 Alcohol and Driving: fMRI Studies \$250,000/year directs

To study specific cognitive impairments caused by alcohol, their underlying functional anatomy and how they relate to performance on a validated simulated driving task.

Role: PI on subcontract

NIMH; 1 R01 MH072681-01 (Kiehl) 7/1/05-6/30/09
 Abnormal functional connectivity in psychosis \$250,000/year

To use functional brain imaging measures to differentially diagnose schizophrenia from psychotic bipolar illness.

Role: Co-Investigator

NIMH; K23 MH070036-01 Stevens (PI) 8/01/04 - 7/01/09
 Neuroimaging Cognition in Adolescent Behavior Disorders \$142,250/year

A 5-year Career Development Award to provide the PI skills for an independent clinical neuroscience research career investigating how brain function relates to diagnoses associated with disruptive behavior.

Role: Co-Mentor

NIH/NIBIB; R01EB005846 (Calhoun) 8/1/05 – 5/31/09
 Collaborative Research: Spatiotemporal Fusion of fMRI, EEG, and Genetic Data Using Independent Component Analysis \$220,000/year directs

To develop data fusion approaches for fMRI, EEG, and gene SNP array data.

Role: Primary Investigator

*NSF-CCF; 0635129 (Calhoun) 8/1/06-7/31/10
Collaborative Research: Complex-Valued Signal Processing and its Application to Analysis of Brain Imaging Data \$100,000/year directs
To establish a framework for complex-valued signal processing such that the full potential of complex-valued signal processing can be realized and the need for simplifying assumptions such as circularity of signals can be eliminated. We will then show how this framework can be utilized to derive efficient algorithms for performing ICA in the complex domain, and focus upon functional magnetic resonance imaging (fMRI), structural MRI (sMRI) and diffusion tensor imaging (DTI).
Role: Primary Investigator

NSF-SEI; 0612076 (Calhoun) 8/1/06-7/31/10
Collaborative Research: SEI: Independent Component Analysis of Complex-Valued Brain Imaging Data \$200,000/year directs
To develop multivariate methods for incorporating complex-valued processing strategies in the context of structural MRI, functional MRI, and diffusion tensor imaging data.
Role: Primary Investigator

NIMH; 2 RO1 MH43775-14 (Pearlson) 3/1/05 – 2/28/11
Quantitative Neuroimaging in Psychosis \$250,000/year
Investigates circuit-wide abnormalities in schizophrenia using functional and structural brain MRI in schizophrenia and healthy controls.
Role: Co-Investigator

NIDA; 1 R01 DA020870-01 (Kiehl) 9/1/05-8/31/10
Neurocognitive changes associated with behavioral treatment in cocaine abusers \$388,096/year
To examine functional and structural changes associated with three cognitive behavioral treatment protocols in cocaine abusers.
Role: Co-Investigator

NIH: 1 R24 RR021992 (Potkin) 4/1/06-3/31/12
BIRN: Functional Imaging Research for Schizophrenia Testbed \$157,000/year directs
Federated database project involving 19 performance sites. PI involvement in cognitive, statistics, and calibration workgroups.
Role: PI on Subcontract

Service:

Member, Program Committee
2012 International Conference on Pattern Recognition in NeuroImaging (PRNI)

Vice-Chair
Machine Learning for Signal Processing, 2013

Associate Editor
Journal of Neuroscience Methods, 2013-

Founding Editor-in-Chief: Engineering Section
Computation, 2012-

Member of Academic Editorial Board
PeerJ, 2012-

Associate Editor
Frontiers in Brain Imaging Methods, 2012-

Editorial Board
NeuroImage: Clinical, 2012-

Editorial Board
ISRN Biomedical Imaging, 2012-

Editorial Board
Brain Connectivity, 2010-

Member, Program Committee
Mathematical Methods in Biomedical Image Analysis (MMBIA)
San Francisco, 2010

Member, Program Committee
First International Conference on Pattern Recognition (ICPR) workshop on Brain Decoding
Pattern recognition challenges in fMRI neuroimaging, Aug 2010

Treasurer, Organization for Human Brain Mapping, June 2009-

NIH Study Section, Biomedical Imaging Technology (BMIT), Charter Member, Nov 2009-

Member, Program Committee
2009 International Congress on Schizophrenia Research (ICOSR2009)

Member, Technical Committee
2009 IEEE Workshop on Statistical Signal Processing (SSP2009)

NIH Study Section, Genetics and Psychopathology (ZRG1 HOP-V), Feb 2008

NIH Study Section, Surgical Sciences, Biomed. Imaging and Bioeng. (SBIB-J), June 2007

Member
IEEE Signal Processing Society BISP Technical Committee, 2008-2012

Member, Program Committee IEEE International Symposium on Signal Processing and
Information Technology (IEEE ISSPIT'08)

Editorial Board
NeuroImage, 2008-

Editorial Board
Frontiers in Human Neuroscience, 2007-

Editorial Board

The Open Biomedical Engineering Journal, 2007-

Associate Editor

International Journal of Computational Intelligence and Neuroscience, 2006-

Chapter Organizer, 2006

IEEE EMBS, Albuquerque

Associate Editor

IEEE Signal Processing Letters, 2005-2009

NIH Study Section, Biomedical Imaging Technology (BMIT), June 2005, Feb 2006, Sept 2007

Natural Sciences and Engineering Research Council of Canada (NSERC), Ad hoc grant reviewer, Jan 2006, Dec 2012

The Scottish Executive Healthy Department, Ad hoc grant reviewer, Feb 2006

NIH Study Section, RFA New way of imaging neural activity, April 2006

The Wellcome Trust, Ad hoc grant reviewer, March 2005, May 2006

NSF Grant Review Panel (CRCNS), March 2006

NSF Grant Review (BCS), November 2006

Netherlands Organization for Scientific Research (NWO), Social Sciences, grant reviewer, Nov 2006

General Chair

Machine Learning for Signal Processing 2005, Mystic Connecticut

Member, Technical Committee

First International Workshop on Biosignal Processing and Classification (BPC), 2005-

Member, Program Committee

International Conference on Intelligent Knowledge Systems (IKS-2005)

NIH Study Section, Ad hoc member, Human Brain Project (HBP)/Neuroinformatics, 2005

Editorial Board

Human Brain Mapping 2004-

Member, Technical Program Committee

Machine Learning for Signal Processing (MLSP), 2004-

Member, Advisory Board

International Conference on Informatics (ICI-2004)

NIH Study Section, Ad hoc member, Human Brain Project (HBP)/BIST (Biomedical Information Science and Technology), Feb 2004

Member, Technical Program Committee
Neural Networks for Signal Processing (NNSP 2003)

Member: Tau Beta Pi Mentoring Program, 2003-

Member: International Review Panel, 2003-
Medical Science Monitor

UNM Service:

Member: School of Engineering Promotion and Tenure Committee, 2011-

Member: CTSC Multidisciplinary Advisory Committee, Fall 2011-present

Member: Engineering Dean's Selection Committee, 2009

Member: ECE Promotion & Tenure Committee, 2008

Member: ECE Strategic Planning Committee, 2008/2009

Area Chair: CompE Group, Spring 2007-Spring 2009

Member: Graduate Committee, ECE, Fall 2007-present

Member: CompE Faculty Search Committee, Fall 2006

Chair: Bioengineering Committee, Fall 2006

Chapter organizer: UNM IEEE Engineering in Medicine and Biology Chapter, 2007-present

Member, Advisory council, Program in Interdisciplinary Biological and Biomedical Sciences (PIBBS), 2007-present

Full Bibliography (h-index = 53; over 11000 citations as of July 2013):

Peer Reviewed Journal Articles (over 290 published or in press journal articles):

- [1] B. Reisfeld, S. Blackband, V. D. Calhoun, S. Grossman, S. Eller, and K. Leong, "The use of magnetic resonance imaging to track controlled drug release and transport in the brain," *Mag.Res.Imag.*, vol. 11, pp. 247-252, 1993.
- [2] S. Kalyanasundaram, V. D. Calhoun, and K. W. Leong, "A finite element model for predicting the distribution of drugs delivered intracranially to the brain," *Am.J.Physiol.*, vol. 273, pp. R1810-R1821, 1997.

- [3] V. D. Calhoun, T. Adalı, M. Kraut, and G. D. Pearlson, "A Weighted-Least Squares Algorithm for Estimation and Visualization of Relative Latencies in Event-Related functional MRI," *Magn.Res.Med.*, vol. 44, pp. 947-954, 2000.
- [4] V. D. Calhoun, T. Adalı, V. McGinty, J. J. Pekar, T. Watson, and G. D. Pearlson, "fMRI Activation In A Visual-Perception Task: Network Of Areas Detected Using The General Linear Model And Independent Component Analysis," *NeuroImage*, vol. 14, pp. 1080-1088, 2001.
- [5] V. D. Calhoun, T. Adalı, G. D. Pearlson, and J. J. Pekar, "A Method for Making Group Inferences from Functional MRI Data Using Independent Component Analysis," *Human Brain Mapping*, vol. 14, pp. 140-151, 2001.
- [6] V. D. Calhoun, T. Adalı, G. D. Pearlson, and J. J. Pekar, "Spatial and temporal independent component analysis of functional MRI data containing a pair of task-related waveforms," *Hum.Brain Map.*, vol. 13, pp. 43-53, 2001.
- [7] V. D. Calhoun, T. Adalı, G. D. Pearlson, P. C. van Zijl, and J. J. Pekar, "Independent component analysis of fMRI data in the complex domain," *Magn Reson.Med.*, vol. 48, pp. 180-192, 2002.
- [8] V. D. Calhoun, J. J. Pekar, V. B. McGinty, T. Adalı, T. D. Watson, and G. D. Pearlson, "Different activation dynamics in multiple neural systems during simulated driving," *Hum.Brain Map.*, vol. 16, pp. 158-167, 2002.
- [9] A. Horska, V. D. Calhoun, D. H. Bradshaw, and P. B. Barker, "A rapid method for correction of partial CSF volume in quantitative proton MR spectroscopic imaging," *Magn.Res.Med.*, vol. 48, pp. 555-558, 2002.
- [10] M. A. Kraut, S. Kremen, L. R. Moo, J. B. Segal, V. D. Calhoun, and J. Hart, Jr., "Object activation in semantic memory from visual multimodal feature input," *J.Cogn Neurosci.*, vol. 14, pp. 37-47, 2002.
- [11] M. A. Kraut, S. Kremen, J. B. Segal, V. D. Calhoun, L. R. Moo, and J. Hart, Jr., "Object activation from features in the semantic system," *J.Cogn Neurosci.*, vol. 14, pp. 24-36, 2002.
- [12] N. Mikhelashvili-Browner, D. M. Yousem, A. S. Mandir, V. D. Calhoun, C. Wu, K. K. Oguz, and C. L. Vaughan, "Correlation of reaction time in and out of the functional MR unit," *Acad.Radiol.*, vol. 9, pp. 513-519, 2002.
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- [359] D. Lin, J. Zhang, J. Li, V. D. Calhoun, and Y.-P. Wang, "Identifying Genetic Connections with Brain Functions in Schizophrenia using Group Sparse Canonical Correlation Analysis," in *International Symposium on Biomedical Imaging: From Nano to Macro*, 2013.
- [360] J. Liu, D. Boutte, J. Chen, and V. D. Calhoun, "A three-modality parallel ICA method for analyzing genetic effect on brain structure and functional variation," in *Proc. HBM*, Seattle, WA, 2013.
- [361] J. Liu, D. Boutte, E. Claus, V. D. Calhoun, and K. Hutchison, "Relationship of brain function responding to alcohol and smoking cues during separate tasks," in *Proc. HBM*, Seattle, WA, 2013.
- [362] J. Liu, J. Chen, S. Ehrlich, E. Walton, T. White, and V. D. Calhoun, "Can DNA methylation from blood indicate the status of schizophrenia patients?," in *International Imaging Genetics Conference*, Irvine, CA, 2013.
- [363] S. Ma, R. Phlypo, V. D. Calhoun, and T. Adali, "Capturing group variability using IVA: a simulation study and graph-theoretical analysis," in *ICASSP*, Vancouver, Canada, 2013.
- [364] A. M. Michael, R. Miller, M. Anderson, T. Adali, and V. D. Calhoun, "Capturing Inter-Subject Variability in fMRI Networks: A Performance Evaluation of ICA and IVA " in *Proc. HBM*, Seattle, WA, 2013.
- [365] R. Miller and V. D. Calhoun, "Frequency Space Analysis Reveals Marked Differences in Whole Brain Resting State Spatiotemporal Activation Patterns between Schizophrenia Patients and Healthy Controls," in *Proc. HBM*, Seattle, WA, 2013.
- [366] V. Potluru, S. M. Plis, J. Le Roux, B. Pearlmutter, V. D. Calhoun, and T. P. Hayes, "Block Coordinate Descent for Sparse NMF," in *ICLR*, Scottsdale, AZ, 2013.
- [367] S. Rachakonda and V. D. Calhoun, "Efficient Data Reduction in Group ICA Of fMRI Data," in *Proc. HBM*, Seattle, WA, 2013.
- [368] B. Rashid, E. Damaraju, and V. D. Calhoun, "Comparison of resting state dynamics in healthy, schizophrenia and bipolar disease," in *Proc. HBM*, Seattle, WA, 2013.
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- [370] R. Silva and V. D. Calhoun, "A Statistically Motivated Simulation Framework for Data Fusion Models Applied to Neuroimaging," in *Proc. HBM*, Seattle, WA, 2013.

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- [373] J. Turner, C. Wilhemi, G. E. Bigelow, J. Bustillo, J. M. Houck, V. D. Calhoun, and R. J. Thoma, "Brain networks underlying active hallucinations during fMRI in schizophrenia," in *Proc. HBM*, Seattle, WA, 2013.
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- [376] S. T. Witt, V. D. Calhoun, and M. Stevens, "FNC of set-shifting," in *Proc. HBM*, Seattle, WA, 2013.
- [377] C. Wright, V. S. Patel, V. D. Calhoun, S. Ehrlich, E. Walton, N. Perrone-Bizzozero, E. E. Morrow, S. Schulz, and T. Wassink, "Gray matter effects of miR-137 putative targets involves in axonal guidance," in *UCI international imaging genetics conference*, Irvine, CA, 2013.
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- [379] L. Wu, A. Caprihan, and V. D. Calhoun, "Connectivity Patterns Revealed by Whole Brain Tractography Parcellation with Group ICA," in *Proc. HBM*, Seattle, WA, 2013.
- [380] Q. Yu, J. Sui, K. A. Kiehl, G. Pearlson, and V. D. Calhoun, "Global and local brain networks during resting state and an auditory oddball task in schizophrenia," in *Proc. HBM*, Seattle, WA, 2013.

Book Chapters/Reviews:

- [1] V. D. Calhoun and B. Hong, "Independent component analysis of functional magnetic resonance imaging data," in *Handbook of Pattern Recognition and Computer Vision*. vol. 3rd, C. H. Chen, Ed.: World Scientific Publishing, 2005.
- [2] M. Assaf, P. Rivkin, M. Kraut, V. D. Calhoun, J. Hart, G. D. Pearlson, J. Hart, and M. Kraut, "Schizophrenia and Semantic Memory," in *The Neural Basis of Semantic Memory*: Cambridge University Press, 2006.
- [3] V. D. Calhoun, M. Rizzo, and R. Parasuraman, "Investigation of Brain Networks Involved in Simulated Driving Using Functional Magnetic Resonance Imaging," in *NeuroErgonomics: The Brain at Work*: Oxford University Press, 2006.
- [4] V. D. Calhoun, G. D. Pearlson, F. Hillary, and J. DeLuca, "Alcohol Intoxication Effects on fMRI Activation," in *Functional Neuroimaging in Clinical Populations*: Guilford Press, 2007.
- [5] V. D. Calhoun and T. Adali, "ICA for Fusion of Brain Imaging Data," in *Signal Processing Techniques for Knowledge Extraction and Information Fusion*, D. Mandic, M. Golz, A. Kuh, D. Obradovic, and T. Tanaka, Eds.: Springer, 2008.
- [6] D. Lloyd, V. D. Calhoun, R. Astur, and G. D. Pearlson, "Functional brain imaging and the problem of other minds," in *Theory of Mind in Literature and Cognitive Science*, 2008.

- [7] N. Swanson, T. Eichele, G. D. Pearlson, and V. D. Calhoun, "Lateral Differences in the Default Mode Network in Schizophrenia," in *The two halves of the brain: Information processing in the cerebral hemispheres*: MIT Press, 2009.
- [8] D. Bridwell and V. D. Calhoun, "Fusing concurrent EEG and fMRI," in *MEG-From Signals to Dynamic Cortical Networks*: Springer Verlag, 2013.

Educational Activities: Teaching/Lecturing (not comprehensive):

At UNM:

ECE Seminar "Data Driven Brain Image Analysis: Algorithms & Applications"	4/2006
ECE Seminar "Data Driven Brain Image Analysis: Algorithms & Applications: Part II"	6/2006
2-day ICA and GIFT Software Workshop The Mind Research Network	4/2006
Organized 4-part mini-series on biomedical imaging ECE Seminar	Fall 2006
Neuroscience Seminar "Fusion of multi-task and multi-modal brain imaging data: An integrated approach and several examples"	9/2007
ECE 595: Analysis Methods in fMRI (18 students) [ICES overall avg 5.5]	Spring 2007
ECE 510: Medical Imaging (33 students) [WebCT Avg 4.75/5.0, IDEA 4.9/5.0 raw; 4.6/5.0 adj]	Fall 2007
CS/591C 004, Stat/579D 004, Math/579D 004, Anthro 560, Bio 503 004 Topics in Interdisciplinary Biology and Biological Sciences: Functional Imaging of the Brain	Fall 2007
ECE 340: Probabilistic Methods in Engineering (45 students) [ICES overall avg 3.14, 40-50% rated 4 or higher]	Spring 2008
3-day fMRI Acquisition and Analysis Course 40 attendees	2/2008
Lecturing for Undergraduate survey in Bioengineering	Spring 2008
3-day fMRI Acquisition and Analysis Course 30 attendees	5/2008
ECE 510: Medical Imaging (12 students)	Fall 2008

3-day fMRI Acquisition and Analysis Course 30 attendees	8/2008
ECE 595: Analysis Methods in fMRI (10 students)	Spring 2009
3-day fMRI Acquisition and Analysis Course 30 attendees	3/2009
3-day fMRI Acquisition and Analysis Course 30 attendees	6/2009
ECE 510: Medical Imaging (20 students)	Fall 2009
ECE 511: Analysis Methods in fMRI (10 students)	Spring 2010
ECE 510: Medical Imaging (18 students)	Fall 2010
ECE 510: Medical Imaging (22 students)	Fall 2011

Outside UNM:

Instructor, Course on MEASURE, volumetric analysis of structural MRI Johns Hopkins Division of Psychiatric Neuro-Imaging Development of Software Manuals, Training Material, and Course Syllabi	10/1995
Instructor, Course on MEASURE, volumetric analysis of structural MRI Johns Hopkins Division of Psychiatric Neuro-Imaging	8/1996
Organizer of Functional Imaging Journal Club Johns Hopkins Division of Psychiatric Neuro-Imaging FM Kirby Center for Functional Brain Imaging	1996-2002
Lecturer at Graduate Seminar, University of Maryland, Baltimore County “Motion Correction in functional MRI (fMRI)”	4/1998
Lecturer at Psychiatry Research Potpourri, Johns Hopkins University “Movies of the brain: Simultaneous display of spatial and temporal functional MRI data”	5/1998
Lecturer at Psychiatry Research Seminar, Johns Hopkins University “Visual Evoked Responses in fMRI”	11/1998
Guest Instructor: Computer Visualization University of Maryland, Baltimore County	11/1998
Statistics Grand Rounds Presentation at Johns Hopkins Public Health School “Methods for Exploring Temporal Dynamics of fMRI of the Visual System”	5/1999

Speaker at Opening Symposium for FM Kirby Center for Functional Brain Imaging “Temporal Dynamics of Functional MRI in the Visual System”	5/1999
Organizer and Instructor: Course on fMRI Analysis Methods Johns Hopkins Division of Psychiatric Neuro-Imaging	9/1999
Presenter at Psychiatry Research Potpourri, Johns Hopkins University “Brain Networks activated during a Motor-Free Visual Perception Task: An fMRI Analysis of Functional Connectivity”	5/2000
Presenter at Graduate Seminar, University of Maryland, Baltimore County “A Weighted-Least Squares Method for Estimating Latencies in functional MRI”	5/2000
Invited Panelist and Speaker, NINDS Workshop "Opportunities in Cognitive Neuroscience Research: Neuroimaging and Beyond"	11/2000
Presenter at Graduate Seminar, University of Maryland, Baltimore County “An ICA Model for Application to fMRI: Application to a Simulated Driving Paradigm”	4/2001
Presenter at Psychiatry Research Seminar, Johns Hopkins University “An Introduction to fMRI and its Use in the Study of Complex Behaviors”	5/2001
Organizer and Instructor: Course on SPM Analysis of PET and fMRI Data Johns Hopkins Division of Psychiatric Neuro-Imaging	8/2001
Guest Instructor: Neural Networks University of Maryland, Baltimore County	10/2001
Presenter at Psychiatry Research Seminar, Johns Hopkins University “Simulated Driving and the Effects of Marinol: An fMRI Study”	11/2001
Organizer and Instructor: Course on SPM Analysis of PET and fMRI Data Johns Hopkins Division of Psychiatric Neuro-Imaging	1/2002
Invited Course: Statistical Parametric Mapping analysis of fMRI Data National Institute of Health Gerontology Research Center	2/2002
Chairman’s Grand Rounds Presentation at Wayne State University “Simulated Driving: Quantification, Validation and fMRI Studies of Driving While Intoxicated”	3/2002
Co-chair and organizer, workshop on “Novel Methods for processing fMRI Data” Annual meeting of the Society of Biological Psychiatry	5/2002
Invited Speaker, Human Brain Mapping “An Infomax Method for Performing ICA of fMRI Data in the Complex Domain”	6/2002
Presenter at Neuropsychopharmacology Grand Rounds, Institute of Living “Intoxication Effects on Simulated Driving”	10/2002

Invited co-organizer, workshop on “Independent Component Analysis of fMRI Data” 5/2003
Annual meeting on Independent Component Analysis (ICA 2003)

Guest Instructor: Biomedical Engineering Seminar (BENG480a) 10/2003
Yale University School of Biomedical Engineering

Lecturer at fMRI Seminar Series: 10/2003
“Independent Component Analysis for fMRI”
Yale University School of Medicine

Guest Instructor: Neuroscience Seminar 10/2003
Trinity College School of Engineering

Lecturer at Bioimaging Seminar Series: 11/2003
“Complex-valued fMRI data analysis”
Yale University School of Medicine

Lecturer for Statistics Series: 11/2003
“The use of higher order statistics for the analysis of functional brain imaging data”
Yale University School of Medicine

Invited Panelist and Speaker, workshop on virtual reality 12/2003
Society of Biological Psychiatry

Lecturer: Neuroimaging in Neuropsychiatry 4/2004
Yale University School of Medicine

Invited Speaker, University of Toronto 7/2004
“Independent Component Analysis of fMRI: What?, When?, and How?”

Training and initial release of GIFT Software 7/2004
Software available at: <http://icatb.sourceforge.net>

Lecturer: Neuroimaging in Neuropsychiatry 11/2004
Yale University School of Medicine

Psychiatry Grand Rounds: 11/2004
“Update on the Olin Center: Medical Image Analysis Lab”
Yale University School of Medicine

Instructor: Independent Component Analysis for fMRI 11/2004
Olin Neuropsychiatry Research Center
Attended by 20 individuals from multiple labs

Lecturer at fMRI Seminar Series: 12/2004
“Fusion of multi-task and multi-modal imaging data: joint-ICA modeling approaches”
Yale University School of Medicine

Organizer/Lecturer: Neuroimaging in Neuropsychiatry I: Methods This is a course on neuroimaging methods and techniques targeted at residents, clinical interns, and neuroscience graduate students	7/2005-12/2005
Guest Instructor: Neuroscience Seminar Trinity College School of Engineering	11/2005
Invited Speaker, BIRN All Hands Meeting “Applications of Independent Component Analysis to fMRI”	11/2005
Organizer and Lecturer, 3-day course on fMRI Data Acquisition and Analysis Olin Neuropsychiatry Research Center, Hartford, CT 30 attendees from around the world	6/2005
Organizer, workshop on “Mining the Complexity of Functional MRI Data” Organization for Human Brain Mapping	5/2005
Organizer and Lecturer, 3-day course on fMRI Data Acquisition and Analysis Olin Neuropsychiatry Research Center, Hartford, CT 50 attendees from around the world	11/2005
Organizer/Lecturer: Neuroimaging in Neuropsychiatry II: Applications This is a course on neuroimaging applications targeted at residents, clinical interns, and neuroscience graduate students	1/2006-5/2006
Organizer and Lecturer, 3-day course on fMRI Data Acquisition and Analysis Olin Neuropsychiatry Research Center, Hartford, CT 50 attendees from around the world	3/2006
Organizer and Lecturer: Workshop on GIFT Software MIND Institute, University of New Mexico, Albuquerque, New Mexico 15 attendees	4/2006
Instructor: International Society for Magnetic Resonance in Medicine “Multi-Modal fMRI: Physiology, Acquisition, and Analysis”	5/2006
Instructor: Mining Brain Dynamics A Tutorial Workshop on Independent Component Analysis in Neuroimaging Bergen, Norway	9/2006
ICA and GIFT Software Workshop MGH and MIT 40 attendees	3/2007
Instructor: International Society for Magnetic Resonance in Medicine “Multi-Modal fMRI: Physiology, Acquisition, and Analysis”	6/2007
Instructor: Course on Mining Brain Dynamics Bergen, Norway	8/2009
Plenary Lecture: Default Mode Network Workshop	6/2010

Barcelona, Spain

Morning Workshop at Human Brain Mapping Conference 6/2011
From basepairs to epigenetics: Multivariate methods for identifying genetic effects on brain imaging measures
Ontario, CA

Morning Workshop at Human Brain Mapping Conference 6/2011
Comparison of multi-subject ICA methods for analysis of fMRI data: Consistency and Variability of Intrinsic Networks in the Healthy and Diseased Brain
Ontario, CA

Educational Activities: Training/Mentoring (not comprehensive)

Faculty

Dr. Alireza Atri, M.D., Ph.D., Harvard
Mentor for NIH K32: Modeling cholinergic modulation of fMRI memory networks

Dr. Judy Ford: Professor, Yale University
Mentor for NIH K02: FMRI Analysis

Dr. Michael Stevens, Assistant Professor, Yale University
Mentor for NIH K02 award: FMRI Analysis

Dr. Julie Staley: Assistant Professor, Yale University
Training in SPM and Voxel-based Morphometry

Dr. Robert Schultz: Associate Professor, Yale University
Training in Voxel-based Morphometry, Pulse Sequence Setup for 3T Siemens Trio

Dr. Wil Cunningham: Assistant Professor, University of Toronto
Training in Group ICA of fMRI

Dr. David Schretlen, Associate Professor, Johns Hopkins University
Training in SPM and Voxel-based Morphometry

Dr. Reisa Sperling, Assistant Professor, Harvard University
Training on Independent Component Analysis of FMRI data and the GIFT software

Dr. Chris Abbott, Assistant Professor, University of New Mexico
Training on Independent Component Analysis of FMRI data and the GIFT software
Mentor on K Award

Dr. Robert Thoma, Associate Professor, University of New Mexico
Mentor for COBRE project

Post Doctoral Fellows (not comprehensive)

Dr. Jean Liu: Postdoctoral Fellow in the Medical Image Analysis Lab, on fusion of

functional MRI, genetics, and EEG data

Dr. Madiha Jafri: Postdoctoral Fellow in the Medical Image Analysis Lab, on multivariate functional connectivity in schizophrenia

Dr. Baoming Hong: Postdoctoral Fellow in the Medical Image Analysis Lab, on the signal properties of fMRI, ICA, and the development of realistic constraints for ICA analysis.

Dr. Jinsuh Kim: Postdoctoral Fellow in the Medical Image Analysis Lab.

Dr. Mona Noureldin: JHU Radiology fellow, on using SPM to analyze fMRI to study normal motor paradigms and Parkinson disease.

Dr. Nina Mikhelashvili: JHU Radiology fellow, on using SPM to analyze fMRI to study normal motor paradigms and Parkinson disease.

Dr. Kader Karli Oguz: JHU Radiology, on using SPM to analyze fMRI of normal motor paradigms.

Students (not comprehensive)

Li Yiou (PhD, Graduated 2006)

Nicole Correa (MS, Graduated 2006, post-qualifying PhD)

Karyn Backus (MS, Graduated 2006)

Xiaoyang Cheng (PhD, Graduated 2006)

Zhao Juan (PhD, Graduated 2007)

Matt Sutherland (PhD, Graduated 2007)

Matthias Moosman (PhD, Graduated 2007)

Tom Eichele (PhD, Graduated 2007)

Lai Xu (ECE PhD, Graduated 2009)

Sid Siddarth (RIT PhD, graduated 2012)

Lei Wu (ECE PhD, post-qualifying)

Vamsi Potluru (CS PhD, post-qualifying)

Eduardo Castro (ECE PhD, post-qualifying)

William Gruner (ECE PhD, post-qualifying)

Rogers Silva (ECE PhD, post-qualifying)

Michelle Juarez (ECE MS, graduated 2011)

Andrew Michaels (RIT ECE PhD, graduated 2009)

Joel Bixler (UTexas ECE Undergrad)

Guilherme Machado: Senior undergraduate student, UNM ECE, 2006

Jeffrey Lie: Senior undergraduate student, UNM ECE, 2007
Worked with me as part of the EYES program

Chris Parchert: Senior undergraduate student, UNM ECE, 2007-2008

Janet Nguyen: Senior undergraduate student, UNM ECE 2007-2008

Michelle Juarez: Senior undergraduate student, UNM ECE 2006-2007

Doris Nguyen: Undergraduate Student (via the TBP mentor program), 2003-2005.

Samara Reynolds: Undergraduate Student, Trinity College: Matlab toolbox for 1) timing correction, 2) laterality analysis, and 3) latency estimation for fMRI

Abbie Garrity: Undergraduate Student, Trinity College: differences in the default mode network in schizophrenia, Fall/Spring 2004-2006

Christina Davidson: High school senior, Albuquerque, 2007

Nicole Giuliani: Accepted to Stanford Graduate School PhD Program, Fall 2005.

David Schneider: Graduate Student, University of Connecticut: Accepted to PhD program in Biomedical Engineering at Columbia University, Spring 2006

Kim Celone: PhD Student, Boston College

Alvin Chon: Undergraduate Student, Trinity College, senior project in informatics: multimodality database and data mining techniques applied to functional MRI, structural MRI, diffusion tensor MRI, and EEG, Fall 2003.

Deanna McDevitt: Undergraduate Student, Yale University, Directed Reading in Psychology on a Depression and the Christian Psychologist, Spring 2003.

Eric Egolf: Undergraduate Computer Science Student: Trinity College, senior project: development of functional connectivity toolbox for SPM99, 2002-2003.

Adam Dziorny: Undergraduate Biomedical Engineering Student, Johns Hopkins University, fMRI processing strategies and research skills, 2001-2002.

Mayur Pandya: Third Year Medical Student, Ohio University College of Osteopathic Medicine, doing neuro-imaging research elective, 2001.

Joseph Hong, High School Student, learning research skills in the Psychiatric Neuro-Imaging Lab, 2000.

Daniel Hong, High School Student, learning research skills in the Psychiatric Neuro-Imaging Lab, 1999.

Annotated list of Trainees (not comprehensive):

Peer-reviewed publications of trainees are listed. Trainees' names are highlighted in bold font.

Chris Abbott, MD

Clinician, Dept. of Psychiatry, University of New Mexico

Role: Mentor on K award

Dr. Abbott is a current CTSC scholar at UNM. He has been working closely with Dr. Calhoun for years, and as part of his training, he spent a year interacting with lab members in Dr. Calhoun's group and learning how to work with brain imaging data.

Publications:

- [1] C. **Abbott**, A. Caprihan, J. Yamamoto, N. I. Perrone-Bizzozero, G. Pearlson, and V. D. Calhoun, "Source Based Morphometry Analysis of Group Differences in Fractional Anisotropy in Schizophrenia," in *Proc. HBM*, Quebec City, Canada, 2011.
- [2] C. **Abbott**, D. I. Kim, S. Sponheim, J. R. Bustillo, and V. D. Calhoun, "Decreased Default Mode Neural Modulation with Age in Schizophrenia," *American Journal of Geriatric Psychiatry*, vol. 18, pp. 897-907, 2010, PMC Pending #202225.
- [3] C. **Abbott**, M. Juarez, T. White, R. L. Gollub, G. D. Pearlson, J. R. Bustillo, J. Lauriello, B. C. Ho, H. J. Bockholt, V. P. Clark, V. Magnotta, and V. D. Calhoun, "Antipsychotic Dose and Diminished Neural Modulation: A Multi-Site fMRI Study," *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, vol. 35, pp. 473-482, 2011, PMC Pending #255577.
- [4] C. **Abbott**, F. Merideth, D. Ruhl, Z. Yang, V. P. Clark, V. D. Calhoun, F. M. Hanlon, and A. R. Mayer, "Auditory orienting and inhibition of return in schizophrenia: A functional magnetic resonance imaging study," *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, In Press, PMC Pending #346258.
- [5] A. Caprihan, C. **Abbott**, J. Yamamoto, G. D. Pearlson, N. Bizzozero, J. Sui, and V. D. Calhoun, "Source-based morphometry analysis of group differences in fractional anisotropy in schizophrenia," *Brain Connectivity*, In Press, PMC Pending #304239.
- [6] J. Turner, H. Chen, D. Mathalon, E. Allen, A. Mayer, C. **Abbott**, V. D. Calhoun, and J. Bustillo, "Reliability of the amplitude of low-frequency fluctuations in resting state in chronic schizophrenia," *Psych.Res.Neuroimaging*, In Press, PMC Pending #326593.

Lai Xu

PhD Student, University of New Mexico, Dept. of ECE, post-proposal

Role: Advisor for PhD

Ms. Xu is a current PhD student, post proposal, expected to defend her thesis in May 2010. She won a fellowship funded by Howard Hughes as part of the Program in Interdisciplinary Biology and Biological Sciences (PIBBS) program at UNM. She also had multiple posters presented at conferences and has two published journal articles and another submitted.

Publications:

- [1] L. **Xu**, J. Liu, and V. D. Calhoun, "Functional Connectivity among Spatially Independent Brain Regions During a VR Task," in *Proc. HBM*, Chicago, IL, 2007.
- [1] J. Liu, L. **Xu**, A. Caprihan, and V. Calhoun, "Extracting Principle Components for Discriminant Analysis of fMRI Images," in *Proc. ICASSP*, 2008.

- [2] J. Sui, J. Liu, L. Wu, A. Michael, **L. Xu**, T. Adali, and V. D. Calhoun, "A Constrained Coefficient ICA Algorithm For Group Difference Enhancement," in Proc. ICASSP, 2008.
- [3] **L. Xu**, J. Liu, T. Adali, and V. D. Calhoun, "Source Based Morphometry And Its Application To Identify Relative Gray Matter And White Matter Differences In Schizophrenia Versus Controls," in Proc. ICASSP, 2008.
- [4] **L. Xu**, G. D. Pearlson, and V. D. Calhoun, "Joint Source Based Morphometry to Identify Sources of Gray Matter and White Matter Relative Differences in Schizophrenia Versus Healthy Controls," in Proc. ISMRM, Toronto, Canada, 2008.
- [5] **L. Xu** and V. D. Calhoun, "sMRI Complex Framework For Evaluating Relative Gray And White Matter Group Differences," in Proc. ISMRM, Honolulu, Hawaii, 2009.
- [6] **L. Xu** and V. D. Calhoun, "Source Based Morphometry: Approaches to Identify Gray and White Matter Group Differences with Application to Schizophrenia," in Proc. HBM, San Francisco, CA, 2009.
- [2] **L. Xu**, K. Groth, G. Pearlson, D. Schretlen, and V. Calhoun, "Source Based Morphometry: The Use of Independent Component Analysis to Identify Gray Matter Differences with Application to Schizophrenia," Hum Brain Mapp, Under revision.
- [3] **L. Xu**, G. Pearlson, and V. Calhoun, "Joint Source Based Morphometry to Identify Relative Gray Matter and White Matter Group Differences," NeuroImage, vol. 44, pp. 777-789, 2009.

Rogers Silva

PhD Student, University of New Mexico, Dept. of ECE, pre-qualifying

Role: Advisor for MS, Advisor for PhD

Mr. Silva is a currently a PhD student funded from my NIH R01 grant. He contributed to a technical paper published this year, and is currently working on a journal article on the selection of imaging biomarkers from multimodal data.

Publications:

- [1] V. D. Calhoun, R. **Silva**, and J. Liu, "Identification of Multimodal MRI and EEG Biomarkers Using Joint-ICA and Divergence Criteria," in Proc. MLSP, 2007.
- [2] R. F. **Silva** and V. D. Calhoun, "Identification of Brain Imaging Biomarkers by Optimized Selection of Multimodal Independent Components," in Proc. IEEE SSIAT, Santa Fe, NM, 2008.
- [3] R. **Silva** and V. D. Calhoun, "Identification of Brain Image Biomarkers by Optimized Selection of Multimodal Datasets," in Proc. ISMRM, Toronto, 2008.
- [4] R. **Silva** and V. D. Calhoun, "Divergence Measurements for the Optimal Identification of Multimodal Biomarkers," in Proc. HBM, San Francisco, CA, 2009.
- [5] R. **Silva** and V. D. Calhoun, "Evaluating Joint Histograms in a Joint ICA Fusion Framework: Methods for Feature Extraction and Component Selection," in Human Brain Mapping, Barcelona, Spain, 2010.

Vamsi Potluru

MS/PhD Student, University of New Mexico, Dept. of CS, post-qualifying

Role: Advisor for PhD

Vamsi completed his Masters with me and now is working on his PhD thesis and expects to finish next year. During his time with me he has published multiple refereed conference papers and is working on several journal articles.

Publications:

- [1] **V. Potluru** and V. D. Calhoun, "Group Learning using NMF Variants," in Proc. ISCAS, 2008.
- [2] **V. Potluru**, S. M. Plis, and V. D. Calhoun, "Sparse shift-invariant NMF," in Proc. IEEE SSIAT, Santa Fe, NM, 2008.
- [3] S. M. Plis, **V. Potluru**, V. D. Calhoun, and T. Lane, "Correlated Noise: How it Breaks NMF, and What to Do About It," in Proc. MLSP, Grenoble, France, 2009.
- [4] **V. Potluru**, S. M. Plis, M. Morup, V. D. Calhoun, and T. Lane, "Efficient Multiplicative updates for Support Vector Machines," in Proc. SDM, Sparks, NV, 2009.

Lei Wu

PhD Student, University of New Mexico, post-qualifying

Role: Advisor for PhD

Publications:

- [1] J. Sui, J. Liu, L. **Wu**, A. Michael, L. Xu, T. Adali, and V. D. Calhoun, "A Constrained Coefficient ICA Algorithm For Group Difference Enhancement," in Proc. ICASSP, 2008.
- [2] L. **Wu** and V. D. Calhoun, "An Approach for Fusion between EEG and fMRI Data," in Proc. ISMRM, Toronto, Canada, 2008.
- [3] L. **Wu**, V. D. Calhoun, and T. Eichele, "Functional connectivity in eyes open vs. eyes closed resting state fMRI," in Proc. HBM, San Francisco, CA, 2009.
- [4] L. **Wu**, T. Eichele, and V. D. Calhoun, "Alpha Hemodynamic Responses in Eyes Open vs. Eyes Closed Resting State EEG-fMRI," in Proc. HBM, Barcelona, Spain, 2010.
- [5] V. D. Calhoun, L. **Wu**, K. A. Kiehl, T. Eichele, and G. D. Pearlson, "Aberrant Processing of Deviant Stimuli in Schizophrenia Revealed by Fusion of FMRI and EEG Data," Acta Neuropsychiatria, In Press, PMC pending #184787.
- [6] L. **Wu**, T. Eichele, and V. D. Calhoun, "Reactivity of hemodynamic responses and functional connectivity to different states of alpha synchrony: a concurrent EEG-fMRI study," NeuroImage, Submitted.

Michelle Juarez

MS Student, University of New Mexico

Role: Advisor for MS

Publications:

- [1] G. Machado, M. **Juarez**, V. P. Clark, R. L. Gollub, V. Magnotta, T. White, and V. D. Calhoun, "Probing Schizophrenia With A Sensorimotor Task: Large-Scale (N=273) Independent Component Analysis Of First Episode And Chronic Schizophrenia Patients," in Proc. Society for Neuroscience, San Diego, CA, 2007.
- [2] M. **Juarez**, T. White, G. D. Pearlson, J. R. Bustillo, J. Lauriello, B. C. Ho, H. J. Bockholt, V. P. Clark, R. Gollub, V. Magnotta, G. Machado, and V. D. Calhoun, "Functional connectivity differences in first episode and chronic schizophrenia patients during an auditory sensorimotor task revealed by independent component analysis of a large multisite study," in Proc. HBM, San Francisco, CA, 2009.
- [3] M. **Juarez**, C. Abbott, T. White, R. L. Gollub, G. D. Pearlson, J. R. Bustillo, J. Lauriello, B. C. Ho, H. J. Bockholt, V. P. Clark, V. Magnotta, and V. D. Calhoun, "Sensory deficits in schizophrenia with a large-scale independent component analysis of schizophrenia patients," Hum. Brain Map., Submitted.

Alex Franco

PhD Student, University of New Mexico (defended 2009)

Role: Served on PhD Committee

Currently director at imaging center in Brazil following post-doc at Emory University

Publications:

- [1] A. R. **Franco**, M. Mannell, J. Ling, B. Bedrick, V. D. Calhoun, and A. R. Mayer, "Connectivity Between Consistent Resting State Networks and Fractional Anisotropy Revealed by Joint Independent Component Analysis," in Proc. HBM, San Francisco, CA, 2009.
- [2] A. R. **Franco**, J. Ling, A. Caprihan, V. D. Calhoun, R. Jung, G. L. Heileman, and A. R. Mayer, "Multimodal and Multi-tissue Measures of Connectivity Revealed by Joint Independent Component Analysis," IEEE JSTSP, vol. 2, pp. 986-997, 2008, PMC2748354.
- [3] A. R. **Franco**, A. Pritchard, V. D. Calhoun, and A. R. Mayer, "Inter-rater and Inter-method Reliability of Default Mode Network Selection," Hum Brain Mapp, vol. 30, pp. 2293-2303, 2009, PMC2751639.
- [4] M. Mannell, A. R. **Franco**, V. D. Calhoun, J. M. Canive, R. J. Thoma, and A. R. Mayer, "Resting state and task-induced deactivation: A methodological comparison in patients with schizophrenia and healthy controls," Hum Brain Mapp, In Press, PMC pending #132340.
- [5] M. Mannell, A. R. **Franco**, V. D. Calhoun, and A. R. Mayer, "Reproducibility, Reliability and Connectivity of Resting State Networks," NeuroImage, Submitted.

Andrew Michael

PhD Student, Rochester Institute of Technology (defended 2009).

Role: Advisor for PhD

Currently Assistant Professor at MRN with academic affiliation with RIT.

Publications:

- [1] A. **Michael**, J. Fries, S. Baum, B. C. Ho, N. C. Andreasen, and V. D. Calhoun, "A Method to Analyze Correlations between Multiple Brain Imaging Tasks to Characterize Schizophrenia," in Proc. IEEE SSIAT, Santa Fe, NM, 2008.

- [2] A. **Michael**, V. D. Calhoun, S. Baum, and N. C. Andreasen, "A Method to Classify Schizophrenia using Inter-Task Spatial Correlations of Functional Brain Images," in Proc. EMBC, 2008.
- [3] A. **Michael**, S. Baum, V. D. Calhoun, and A. Caprihan, "Correlations of Diffusion Tensor Imaging Values and Symptom Scores in Patients with Schizophrenia," in Proc. EMBC, 2008.
- [4] J. Sui, J. Liu, L. Wu, A. **Michael**, L. Xu, T. Adali, and V. D. Calhoun, "A Constrained Coefficient ICA Algorithm For Group Difference Enhancement," in Proc. ICASSP, 2008.
- [5] A. **Michael**, S. Baum, V. P. Clark, R. Jung, K. O. Lim, T. White, B. C. Ho, R. L. Gollub, and V. D. Calhoun, "Fusion of Structural-Functional Brain Images Reveals Differences in Schizophrenia in a Multi Site Study," in Proc. ISMRM, Honolulu, Hawaii, 2009.
- [6] A. **Michael**, S. Baum, T. J. White, N. C. Andreasen, J. M. Segall, R. E. Jung, V. P. Clark, R. L. Gollub, S. C. Schulz, J. L. Roffman, B. C. Ho, K. O. Lim, H. J. Bockholt, and V. D. Calhoun, "Inter-voxel Cross-Correlation Reveals Aberrantly Low Structural and Functional Linkage in Schizophrenia in a Multi-Site Study," in Proc. HBM, San Francisco, CA, 2009.
- [7] A. **Michael**, V. D. Calhoun, G. D. Pearlson, S. Baum, and A. Caprihan, "An Analysis of using Diffusion Tensor Imaging Measures and Symptom Scores to Classify Patients with Schizophrenia," in Proc. HBM, San Francisco, CA, 2009.
- [8] A. **Michael**, V. D. Calhoun, G. Pearlson, S. Baum, and A. Caprihan, "Application of Canonical Correlation Analysis to Identify Regions of Significant Correlation between Symptom Scores and DTI Measures in Schizophrenia," in Proc. ISMRM, Honolulu, Hawaii, 2009.
- [9] A. **Michael**, S. Baum, and V. D. Calhoun, "A Technique to Detect Outliers Automatically in Multi-Site fMRI Data," in Proc. ISMRM, Honolulu, Hawaii, 2009.
- [10] U. Sakoglu, A. **Michael**, and V. D. Calhoun, "Classification of schizophrenia patients vs healthy controls based on dynamic functional network connectivity," in Proc. HBM, San Francisco, CA, 2009.
- [11] O. Demirci, M. C. Stevens, N. C. Andreasen, A. **Michael**, J. Liu, T. White, G. D. Pearlson, V. P. Clark, and V. D. Calhoun, "Investigation of relationships between fMRI brain networks in the spectral domain using ICA and Granger causality reveals distinct differences between schizophrenia patients and healthy controls," *NeuroImage*, vol. 46, pp. 419-431, 2009, PMC2713821.
- [12] A. **Michael**, S. Baum, J. Fries, B. C. Ho, R. Pierson, N. C. Andreasen, and V. D. Calhoun, "A Method to Fuse fMRI Tasks Through Spatial Correlations: Applied to Schizophrenia," *Human Brain Mapping*, vol. 30, pp. 2512-2529, 2009, PMC2711995.
- [13] A. **Michael**, S. Baum, T. White, O. Demirci, N. C. Andreasen, J. M. Segall, R. E. Jung, G. D. Pearlson, V. P. Clark, R. L. Gollub, S. C. Schulz, J. Roffmann, K. O. Lim, B. C. Ho, H. J. Bockholt, and V. D. Calhoun, "Does Function Follow Form?: Methods to Fuse Structural and Functional Brain Images Show Decreased Linkage in Schizophrenia," *Hum Brain Mapp*, In Press, PMC pending #184511.
- [14] U. Sakoglu, G. D. Pearlson, K. A. Kiehl, Y. Wang, A. **Michael**, and V. D. Calhoun, "A Method for Evaluating Dynamic Functional Network Connectivity and Task-Modulation: Application to Schizophrenia," *MAGMA*, In Press, PMC pending #180300.

Nicolle Correa

PhD Student, University of Maryland Baltimore County, Dept. of CSEE, post-proposal
 Role: co-advisor (with Tülay Adalı) for Master's thesis (received 2006), co-advisor for PhD
 (graduated in 2010)

Work during her PhD student was funded from an NIH R01 grant. This training occurred via e-mail, phone conference, and monthly travel between Baltimore and Hartford and now Ms. Correa is currently working in industry.

Publications:

- [1] N. **Correa**, T. Adali, Y. Li, and V. D. Calhoun, "Comparison of blind source separation algorithms for fMRI using a new matlab toolbox: GIFT," in Proc. IEEE Int. Conf. Acoustics, Speech, Signal Processing (ICASSP), Philadelphia, PA, 2005.
- [2] N. **Correa**, T. Adali, Y. Li, and V. D. Calhoun, "Examining associations between fMRI and EEG data using canonical correlation analysis," in Proc. ISBI, Washington, D.C., 2008, pp. 1251-1254.
- [3] N. **Correa**, Y. Li, T. Adali, and V. D. Calhoun, "Fusion of fMRI, sMRI, and EEG Data Using Canonical Correlation Analysis," in Proc. IEEE Int. Conf. Acoustics, Speech, Signal Processing (ICASSP), Taiwan, 2009.
- [4] N. **Correa**, Y. Li, T. Adali, and V. D. Calhoun, "Investigating associations across fMRI, sMRI, and EEG data for the auditory oddball task using canonical correlation analysis," in Proc. HBM, San Francisco, CA, 2009.

- [5] P. Rodriguez, N. M. **Correa**, T. Adali, and V. D. Calhoun, "Quality map thresholding for de-Noiseing of complex-valued fMRI data and its application to ICA of fMRI," in Proc. MLSP, Grenoble, France, 2009.
- [6] N. **Correa**, T. Eichele, T. Adali, Y. Li, and V. D. Calhoun, "Fusion of Concurrent single Trial EEG Data and FMRI Data Using Multi-set Canonical Correlation Analysis," in Proc. ICASSP, Dallas, TX, 2010.
- [7] H. Li, T. Adali, N. **Correa**, P. Rodriguez, and V. D. Calhoun, "Flexible Complex ICA of fMRI Data," in Proc. ICASSP, Dallas, TX, 2010.
- [8] S. Ma, X. Li, N. **Correa**, T. Adali, and V. D. Calhoun, "Independent Subspace Analysis with Prior Information for fMRI Data," in Proc. ICASSP, Dallas, TX, 2010.
- [9] P. Rodriguez, T. Adali, H. Li, N. **Correa**, and V. D. Calhoun, "Phase Correction and Denoising for ICA of Complex fMRI Data," in Proc. ICASSP, Dallas, TX, 2010.
- [10] N. **Correa**, T. Adali, and V. D. Calhoun, "Performance of Blind Source Separation Algorithms for fMRI Analysis," *Mag.Res.Imag.*, vol. 25, p. 684, 2007, PMC2358930.
- [11] N. **Correa**, Y. Li, T. Adali, and V. D. Calhoun, "Canonical correlation analysis for feature-based fusion of biomedical imaging modalities to detect associative networks in Schizophrenia," *IEEE JSTSP*, vol. 2, pp. 998-1007, 2008, PMC2761661.
- [12] N. **Correa**, T. Eichele, T. Adali, Y. Li, and V. D. Calhoun, "Multi-set canonical correlation analysis for the fusion of concurrent single trial ERP and functional MRI," *NeuroImage*, In Press, PMC pending #180189.
- [13] P. Rodriguez, N. **Correa**, T. Adali, T. Eichele, and V. D. Calhoun, "Quality Map Thresholding for De-Noiseing of Complex-Valued fMRI Data and its Applplication to ICA of fMRI," *Journal of Signal Processing Systems*, Submitted.
- [14] W. Xiong, N. **Correa**, T. Adali, and V. D. Calhoun, "Order Selection of the Linear Mixing Model for Complex-valued fMRI Data," *IEEE JSTSP*, Submitted.

Yiou Li

PhD, University of Maryland Baltimore County, Dept. of CSEE (defended 2008)

Role: co-advisor (with Tülay Adalı) for PhD thesis

Dr. Li was funded from an NIH R01 grant. This training occurred via e-mail, phone conferences, and monthly travel between Baltimore and Hartford and Albuquerque.

Publications:

- [1] V. D. Calhoun, T. Adali, and Y. **Li**, "Independent component anlaysis of complex-valued functional magnetic resonance imaging data by complex nonlinearities," in Proc.ISBI, 2004, pp. 984-987.
- [2] Y. **Li**, T. Adali, and V. D. Calhoun, "Independent component analysis with feature selective filtering," in Proc.MLSP, 2004.
- [3] N. Correa, T. Adali, Y. **Li**, and V. D. Calhoun, "Comparison of blind source separation algorithms for fMRI using a new matlab toolbox: GIFT," in Proc.IEEE Int.Conf.Acoustics, Speech, Signal Processing (ICASSP), Philadelphia, PA, 2005.
- [4] Y. **Li**, T. Adali, and V. D. Calhoun, "Feature-selective ICA and its convergence properties," in Proc.IEEE Int.Conf.Acoustics, Speech, Signal Processing (ICASSP), 2005.
- [5] Y. **Li**, T. Adali, and V. D. Calhoun, "Sample Dependence Correction For Order Selection In fMRI Analysis," in Proc.ISBI, 2006.
- [6] Y. **Li**, T. Adali, and V. D. Calhoun, "A Model For Comparison Of Two Functional MRI Datasets By Canonical Correlation Analysis And Independent Component Analysis," in Proc.MLSP, 2007.
- [7] Y. **Li**, W. Wang, T. Adali, and V. D. Calhoun, "CCA for Joint Blind Source Separation of Multiple Datasets with Application to Group fMRI Analysis," in Proc.MLSP, 2007.
- [8] Y. **Li**, T. Adali, and V. Calhoun, "A multivariate model for comparison of two datasets and its application to fMRI analysis," in Proc.MLSP, 2007.
- [9] N. Correa, T. Adali, Y. **Li**, and V. D. Calhoun, "Examining associations between fMRI and EEG data using canonical correlation analysis," in Proc. ISBI, Washington, D.C., 2008, pp. 1251-1254.
- [10] Y. **Li**, W. Wang, T. Adali, and V. D. Calhoun, "CCA for Joint Blind Source Separation of Multiple Datasets with Application to Group fMRI Analysis," in Proc. ICASSP, 2008.
- [11] W. Wang, Y. **Li**, H. Li, T. Adali, and V. D. Calhoun, "On ICA of Complex-Valued fMRI: Advantages and Order Selection," in Proc. ICASSP, 2008.
- [12] N. Correa, Y. **Li**, T. Adali, and V. D. Calhoun, "Fusion of fMRI, sMRI, and EEG Data Using Canonical Correlation Analysis," in Proc.IEEE Int.Conf.Acoustics, Speech, Signal Processing (ICASSP), Taiwan, 2009.
- [13] N. Correa, Y. **Li**, T. Adali, and V. D. Calhoun, "Investigating associations across fMRI, sMRI, and EEG data for the auditory oddball task using canonical correlation analysis," in Proc. HBM, San Francisco, CA,

- 2009.
- [14] Y. Li, T. Adali, and V. D. Calhoun, "A group study of simulated driving fMRI data by multi-set canonical correlation analysis," in Proc. HBM, San Francisco, CA, 2009.
 - [15] J. Sui, Y. Li, T. Adali, and V. D. Calhoun, "A New Joint Blind Source Separation Model for Two Datasets and Its Application to Second-level FMRI Group Analysis," in Proc. HBM, San Francisco, CA, 2009.
 - [16] J. Sui, T. Adali, Y. Li, H. Yang, and V. D. Calhoun, "A review of multivariate methods in brain imaging data fusion," in Proc. SPIE, San Diego, CA, 2009.
 - [17] N. Correa, T. Eichele, T. Adali, Y. Li, and V. D. Calhoun, "Fusion of Concurrent single Trial EEG Data and FMRI Data Using Multi-set Canonical Correlation Analysis," in Proc. ICASSP, Dallas, TX, 2010.
 - [18] Y. Li, T. Adali, and V. D. Calhoun, "Estimating the number of independent components for fMRI data," *Hum. Brain Map.*, vol. 28, pp. 1251-1266, 2007.
 - [19] Y. Li, T. Adali, and V. D. Calhoun, "A Feature-selective Independent Component Analysis Method for Functional MRI," *Int. J. Biomed. Imaging*, 2007.
 - [20] N. Correa, Y. Li, T. Adali, and V. D. Calhoun, "Canonical correlation analysis for feature-based fusion of biomedical imaging modalities to detect associative networks in Schizophrenia," *IEEE JSTSP*, vol. 2, pp. 998-1007, 2008, PMC2761661.
 - [21] N. Correa, T. Eichele, T. Adali, Y. Li, and V. D. Calhoun, "Multi-set canonical correlation analysis for the fusion of concurrent single trial ERP and functional MRI," *NeuroImage*, In Press, PMC pending #180189.
 - [22] Y. Li, T. Adali, W. Wang, and V. D. Calhoun, "Joint Blind Source Separation by Multi-set Canonical Correlation Analysis," *IEEE Trans. Signal Processing*, In Press, PMC pending #110331.
 - [23] W. Xiong, T. Adali, Y. Li, and V. D. Calhoun, "On entropy rate for the complex domain and its application to i.i.d. sampling," *IEEE Transactions on Signal Processing*, In Press, PMC pending #184519.

Eduardo Castro

PhD Student, University of New Mexico, post-qualifying.

Role: Advisor for PhD

Publications:

- [1] E. Castro, M. Martinez-Ramon, A. Caprihan, K. A. Kiehl, and V. D. Calhoun, "Complex fMRI data classification using composite kernels: application to schizophrenia," in Proc. HBM, Quebec City, Canada, 2011.
- [2] E. Castro, M. Martinez-Ramon, G. L. Heileman, and V. D. Calhoun, "Characterization of groups using composite kernels and multi-source fMRI analysis data: Application to Schizophrenia," *NeuroImage*, vol. 58, pp. 526-536, 2011, PMC Pending #313196.
- [3] J. Sui, H. He, G. D. Pearlson, T. Adali, K. A. Kiehl, Q. Yu, V. P. Clark, E. Castro, T. White, B. Mueller, B. C. Ho, N. C. Andreasen, and V. D. Calhoun, "Three-Way (N-way) Fusion of Brain Imaging Data Based on mCCA+jICA and Its Application to Discriminating Schizophrenia," *NeuroImage*, in press.

Guilherme Machado

Undergraduate Exchange Student, University of New Mexico, Dept. of ECE

Role: Advisor for senior project

Guilherme was an undergraduate student from Brazil who spent the semester at UNM. He worked with me on a project which resulting in a publication.

Publications:

- [1] G. Machado, V. P. Clark, R. L. Gollub, V. Magnotta, T. White, and V. D. Calhoun, "Probing Schizophrenia with a Sensorimotor Task: Large-Scale (N=273) Independent Component Analysis of First Episode and Chronic Schizophrenia Patients," in *Proc. Society for Neuroscience* San Diego, CA, 2007.

Michael Benevidez

Medical Student, University of New Mexico

Michael worked with me in 2007 on a research project.

Publications:

- [1] **M. Benevidez**, V. P. Clark, G. Kuperberg, K. Lim, and V. D. Calhoun, "Functional Networks Identified in an Auditory Oddball Task of Chronic and First Episode Schizophrenia Patients (N=261) Collected from the Mind Clinical Imaging Consortium," in *Proc. Society for Neuroscience* San Diego, CA, 2007.

Madiha Jafri

PhD Student, University of Virginia (defended 2008)

Madiha worked with me as a PhD student and has now graduated. Madiha has published multiple conference papers and a journal article.

Publications:

- [1] M. **Jafri** and V. D. Calhoun, "Functional Classification of Schizophrenia Using Feed Forward Neural Networks," in *Proc.EMBS*, 2006.
- [2] M. **Jafri** and V. D. Calhoun, "Interdependencies among Resting-State networks in Schizophrenia using Independent Component Analysis," in *Proc.ISMRM*, 2007.
- [3] M. **Jafri**, G. D. Pearlson, and V. D. Calhoun, "A maximal-correlation approach using ICA for testing functional network connectivity applied to Schizophrenia," in *Proc.ISBI*, 2007.
- [4] M. **Jafri**, G. D. Pearlson, and V. D. Calhoun, "Resting State Functional Network Connectivity among ICA Components using Bayesian Networks," in *Proc.HBM*, 2007.
- [5] M. **Jafri**, G. D. Pearlson, M. Stevens, and V. D. Calhoun, "A Method for Functional Network Connectivity Among Spatially Independent Resting-State Components in Schizophrenia," *NeuroImage*, vol. 39, pp. 1666-1681, 2008, PMC pending #40720.
- [6] C. I. Rzepecki, S. A. Meda, V. D. Calhoun, M. J. **Jafri**, R. S. Astur, and G. D. Pearlson, "Disruptions in Functional Network Connectivity during Alcohol Intoxicated Driving," *Alcoholism: Clinical and Experimental Research*, vol. 34, pp. 479-487, 2010, PMC pending #161788.

Matt Sutherland

PhD Student, University of New Mexico, Dept. of Psychology

Role: Served on dissertation committee (defended 2007)

Tom Eichele

PhD, University of Bergen, Norway

Role: Served on PhD committee

Currently: Faculty member at University of Bergen

Mr Eichele defended his PhD in 2007. He visited me for three weeks in 2005 and Aug 2007 and summer 2009 and since then we have been collaborating closely and also I regularly visit

Norway to give an educational course.

Publications:

- [1] N. Swanson, T. **Eichele**, G. D. Pearlson, and V. D. Calhoun, "Lateral Differences in the Default Mode Network in Schizophrenia," in *The two halves of the brain: Information processing in the cerebral hemispheres*: MIT Press, 2009.
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- [9] E. Allen, E. Erhardt, T. **Eichele**, A. R. Mayer, and V. D. Calhoun, "Comparison of pre-normalization methods on the accuracy of group ICA results," in Proc. HBM, Barcelona, Spain, 2010.
- [10] N. Correa, T. **Eichele**, T. Adali, Y. Li, and V. D. Calhoun, "Fusion of Concurrent single Trial EEG Data and fMRI Data Using Multi-set Canonical Correlation Analysis," in Proc. ICASSP, Dallas, TX, 2010.
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- [13] T. **Eichele**, V. D. Calhoun, M. Moosmann, K. Specht, M. Jongsma, R. Quiroga, H. Nordby, and K. Hugdahl, "Unmixing concurrent EEG-fMRI with parallel independent component analysis," *Int. J. Psych.*, vol. 67, pp. 222-234, 2008, PMC2649878.
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Nicole Giuliani

Role: Primary supervisor of post-graduate training period, 2003-2005

Graduated with PhD from Stanford University and current doing post-doc in Oregon.

Publications:

- [1] V. D. Calhoun, T. Adali, N. **Giuliani**, J. J. Pekar, G. D. Pearlson, and K. A. Kiehl "A Method for Multimodal Analysis of Independent Source Differences in Schizophrenia: Combining Gray Matter Structural and Auditory Oddball Functional Data," *Hum.Brain Map.*, 2005 (in press).
- [2] N. **Giuliani**, G. D. Pearlson, and V. D. Calhoun, "Alcohol Versus Marinol Intoxication Effects on Visual Perception: An fMRI Study," in Proc. ICANA, New Haven, CT, 2004.
- [3] N. **Giuliani**, V. D. Calhoun, G. D. Pearlson, A. Francis, and R. W. Buchanan, "Voxel-Based Morphometry Versus Regions of Interest: A Comparison of Two Methods for Analyzing Gray Matter Disturbances in Schizophrenia," *Schizophr. Res.*, vol. 74, pp. 135-147, 2005.
- [4] K. Groth, T. Benios, N. **Giuliani**, V. D. Calhoun, and G. D. Pearlson, "General Intelligence Correlates to Brain Structure Differently in Men and Women," in Proc. SAGE IV, Winston-Salem, NC, 2005.

Matthais Moosman

PhD, University of Bergen, Norway

Role: Member of PhD committee

Mr Moosman completed his PhD dissertation in medical physics.

Publications:

- [1] T. Eichele, **M. Moosmann**, V. D. Calhoun, K. Specht, H. Nordby, and K. Hugdahl, "Joint ICA of Simultaneous Single Trial ERP-fMRI," in Proc.HBM, 2006.
- [2] T. Eichele, V. Calhoun, **M. Moosmann**, K. Specht, L. A. Jongsma, R. Quiroga, H. Nordby, and K. Hugdahl, "Unmixing concurrent EEG-fMRI with parallel independent component analysis," in Proc.HBM, 2008.
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David Schneider:

Masters Graduate Student in Biomedical Engineering, University of Connecticut

Role: co-advisor, 2004-2005

Accepted to Columbia PhD Graduate Program, Fall 2006

Abbie Garrity:

Undergraduate Student, Trinity College

Role: Advisor for volunteer project, 2005-

Differences in the default mode network in schizophrenia, Fall/Spring 2004

2006 Brain Dance Research Award

Publications:

- [1] A. **Garrity**, G. D. Pearlson, K. McKiernan, D. Lloyd, K. A. Kiehl, and V. D. Calhoun, "Aberrant functional connectivity of the 'default mode' in schizophrenia," in Trinity Papers, 2006.
- [2] A. **Garrity**, G. D. Pearlson, K. McKiernan, D. Lloyd, K. A. Kiehl, and V. D. Calhoun, "Aberrant functional connectivity of the 'default mode' in schizophrenia," in Neuron, 2006.
- [3] A. **Garrity**, G. D. Pearlson, K. McKiernan, D. Lloyd, K. A. Kiehl, and V. D. Calhoun, "Aberrant 'default mode' functional connectivity in schizophrenia," Am.J.Psychiatry, vol. 164, pp. 450-457, 2007.

Samara Reynolds:

Undergraduate Student, Trinity College

Role: Advisor for senior project, 2004-2005

Publications:

- [1] **M. Assaf**, S. Reynolds, V. Calhoun "Laterality changes in verbal binding associated with schizophrenia" Biol. Psych., 2006.

Hichem Snoussi

Post-doctoral fellow

Role: Primary mentor

Publications:

- [1] **H. Snoussi** and V. D. Calhoun, "Bayesian Blind Source Separation for Brain Imaging," in Proc. SETIT, Susa, Tunisia, 2005.
- [2] **H.Snoussi** and V. D. Calhoun, "Regularized Spectral Matching for Blind Source Separation. Application to FMRI Imaging," IEEE Trans. Signal Proc., 2005.
- [3] **H. Snoussi** and V. D. Calhoun, "Bayesian Blind Source Separation for Brain Imaging," in Proc. ICIP, Genova, Italy, 2005.

Michael Stevens, Ph.D.

Appointed junior faculty in the Olin Neuropsychiatry Research Center, 2002-2004

Role: co-advisor 2002-2004; co-mentor on K-Award (2005-2009).

Currently an independent investigator

Publications:

- [1] V. D. Calhoun, **M. Stevens**, G. D. Pearlson, and K. A. Kiehl, "Fmri Analysis with the General Linear Model: Removal of Latency-Induced Amplitude Bias by Incorporation of Hemodynamic Derivative Terms," *NeuroImage*, vol. 22, pp. 252-257, 2004.
- [2] K. A. Kiehl, **M. Stevens**, K. R. Laurens, G. D. Pearlson, V. D. Calhoun, and P. F. Liddle, "The Amygdala as a Salience Detector: Evidence from a Large-Scale Study (N=100) of Auditory Target Detection " in *Proc.HBM*, Budapest, Hungary, 2004.
- [3] V. D. Calhoun, T. Adali, **M. Stevens**, K. A. Kiehl, and J. J. Pekar, "Semi-Blind Ica of Fmri: A Method for Utilizing Hypothesis-Derived Time Courses in a Spatial Ica Analysis," *NeuroImage*, vol. 25, pp. 527-538, 2005.
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- [5] **M. Stevens**, V. D. Calhoun, and K. A. Kiehl, "Hemispheric Differences in Hemodynamics Elicited by Auditory Oddball Stimuli," *NeuroImage*, vol. 26, pp. 782-792, 2005.
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- [8] G. D. Pearlson, D. A. Wallace, V. D. Calhoun, M. Assaf, M. C. Stevens, S. Meda, and J. Gelernter, "Alpha7 Nicotinic Cholinergic Receptor (Chrna7)Polymorphisms Discriminate Figural Memory Abilities in Healthy Adults and Influence Related Structural and Functional Mri Patterns," in *Proc.ACNP*, 2006.
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- [15] **M. Stevens**, G. D. Pearlson, V. D. Calhoun, and K. A. Kiehl, "Are Separate Neural Networks Specialized for Regular Movement Timing? An Examination of Brain Hemodynamics During Regularly-Paced Finger Tapping," *Neuropsychologia*, Submitted.

Mona Noureldin Mohamed, M.D.

Postdoc, Johns Hopkins University

Role: co-advisor for post graduate training period, primary mentor for fMRI training.

Publications:

- [1] **M. A. Mohamed**, D. M. Yousem, A. Tekes, N. M. Browner, and V. D. Calhoun, "Timing of Cortical Activation: a Latency-Resolved Event-Related Functional MR Imaging Study," *AJNR Am. J. Neuroradiol.*, vol. 24, pp. 1967-1974, 2003.
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- [5] **M. A. Mohamed**, D. M. Yousem, I. Kusevic, V. D. Calhoun, C. Cristinzio, N. A. Honeycutt, A. El-Deib, M. Yassa, B. Caffo, and S. Basset, "Lack of Education Effect on Brain Activity in a Memory Based Functional MRI Experiment," in *Proc. ASNR*, 2004.
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Kim Celone

Role: tutor for post-graduate training period, 2003-2005

Accepted to PhD Program, Boston College

Publications:

- [1] **K. Celone**, V. D. Calhoun, A. Driscoll, E. Rand-Giovannetti, E. Chua, B. Dickerson, M. Albert, D. Blacker, and R. Sperling "ICA of fMRI Associative Memory Networks in Normal Aging, MCI and Mild AD," 2005. (in preparation).
- [2] R. Sperling, E. Chua, B. Dickerson, D. Blacker, M. Albert, V. D. Calhoun, and **K. Celone**, "Compensatory Recruitment of Memory and Attentional Networks in Mild Cognitive Impairment," in Proc. Amer. Acad. of Neur., San Diego, CA, 2005.
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Martin Hejnar

Role: Primary supervisor of post-graduate training period, 2003-2004

Publications:

- [1] **M. P. Hejnar**, M. M. Kurtz, K. A. Keihl, G. D. Pearlson, and V. D. Calhoun, "Performance on the Penn Conditional Exclusion Task (PCET) in Patients With Schizophrenia (SZ) and Healthy Controls: An FMRI Analysis," in Proc. SBP, 2004.
- [2] D. Kim, **M. P. Hejnar**, K. A. Kiehl, E. Bedrick, and V. D. Calhoun "Interparticipant Correlations: A Model Free FMRI Analysis Technique," Hum. Brain Map., 2007 (in press).

Eric Egolf:

Role: co-advisor senior project

Publications:

- [1] **E. Egolf** and V. D. Calhoun, "Group ICA of FMRI Toolbox," in *Proc. Biomedical Engineering Alliance and Consortium*, 2003.
- [2] **E. Egolf**, K. A. Kiehl, and V. D. Calhoun, "Group ICA of FMRI Toolbox (GIFT)," in *Proc. HBM*, Budapest, Hungary, 2004.
- [3] B. Hong, G. D. Pearlson, **E. Egolf**, and V. D. Calhoun, "Identification of Brain Activity in a Visual Stimulation Task - An Adaptive ICA Approach for FMRI Data," in *Proc. HBM*, 2004.

Jinsuh Kim, M.D.:

Post doctoral fellow

Role: primary supervisor 2002-2004

Joined faculty at University of Wisconsin

Publications:

- [1] **J. Kim**, R. Kanaan, V. D. Calhoun, S. Mori, and G. D. Pearlson, "More Averages Vs. More Gradients: Which Is Right for Reliable Diffusion Tensor MRI?," in Proc. RSNA, Chicago, IL, 2002.
- [2] V. D. Calhoun, **J. Kim**, and G. D. Pearlson, "FMRI Connectivity Measured by Mutual Information and Correlation: Linear Dependence Vs. General Dependence," in Proc. ISMRM, Toronto, Canada, 2003.
- [3] **J. Kim**, V. D. Calhoun, and G. D. Pearlson, "DTI of Huntington Disease," in Proc. ISMRM, Toronto, Canada, 2003.
- [4] **J. Kim**, V. D. Calhoun, and G. D. Pearlson, "3D Visualization of White Matter Tracts Using LIC," in Proc. ASNR, Washington, D.C., 2003.
- [5] **J. Kim** and V. D. Calhoun, "Evaluation of Quantization Error in DICOM Images for FMRI Application," in Proc. RSNA, Chicago, IL, 2003.