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Education

PhD, Neural Computation
Carnegie Mellon University, Pittsburgh, PA
Expected: 2012

MS, Bioengineering (Neuroengineering track)
University of Pittsburgh, Pittsburgh, PA
December 2008

Bachelor of Science, Computer Science (with highest distinctions)
University of Kansas, Lawrence, KS
June 2006

Computer Science focus
Universidade Federal do Rio de Janeiro, Brazil
February 2001 - May 2002

Research Interests

Computational Neuroscience, Knowledge Representation, Machine Learning, Magnetoencephalography, Functional Imaging, Machine Learning, Pattern Recognition, Neural Networks, Bayesian Networks, Brain-machine Interfaces, Neural Prosthesis, Theoretical Neuroscience, Human Cognition, Cognitive Computing, Neural Engineering

Research Experience

Graduate Research Assistant: 01/2009 – present
Machine Learning Department – Carnegie Mellon University, PA
Supervisor: Dr. Tom Mitchell
Study how knowledge is represented in the brain by using a multi-modal imaging approach (fMRI, MEG, EEG, ECoG) paired with machine learning techniques to classify different brain states. Investigate generic models of cortical functions.

Visiting researcher: 10/2010 – 12/2010
Brain Research Unit - Low Temperature Laboratory - Aalto University of Science, Espoo, Finland
Supervisor: Dr. Riitta Salmelin
Gather further experience in MEG data acquisition and analysis. Foster collaboration between research groups. Share experiences about using machine learning techniques to analyze MEG data.

Graduate Research Assistant: 09/2006 - 12/2008
RNEL - Rehab Neural Engineering Lab – University of Pittsburgh, PA
Supervisor: Dr. Doug Weber
Study control of movement to develop new technologies for assisting and restoring motor function after

nervous system injury and limb loss. Investigate how the nervous system processes proprioception. Analyze MEG data to investigate the influence of somatosensory input in motor cortex activity. Work on a database and tools to manage the information used at RNEL. Apply information theory measures to compare neural data in representing kinematics of movement.

Student Research Assistant: 01/2005 - 08/2006
Department of Civil Engineering - University of Kansas, Lawrence, KS
Supervisor: Dr. Adolfo Matamoros
Research on metadata, data representation, and ontologies in order to explore the benefits and requirements for a taxonomy for data management at Kansas Department of Transportation. Areas of focus: Dublin Core, OWL, RDF, XML, Protege, and Semantic Web.

Departmental Honors Research: 08/2005 – 08/2006
EECS Department - University of Kansas, Lawrence, KS
Supervisor: Dr. Jerzy Grzymala-Busse
Investigate the performance of a rule-induction algorithm (LERS2) for data mining in analyzing EEG data.

Professional Experience

Residential Communications Consultant: 08/2004 - 12/2004
Networking and Telecommunications Services - University of Kansas, Lawrence, KS
Provided network support by phone, email or on-site visits to residents with Network Connection. Responded to help requests directly from a help call tracking database. Troubleshot computers, installed Ethernet cards, and removed viruses.

Integrated Test Analyst - Intern: 07/2004 - 08/2004
Sprint - Overland Park, KS
Identified data requirements and provided planned data support. Created specific test requirements, test workflow scenarios, and test cases based on specific project business and functional requirements for integrated test (Inter-Application Connectivity test, End to End Functionality test, User Acceptance test, and Regression test). Teamed with other group members to develop test execution plans for committed release testing phases. Coordinated project impacts, schedules and security with Testing Environments Operations group.

System and Network Administrator: 06/2001 - 06/2002
LabMa - Laboratório de Matemática Aplicada, UFRJ, Rio de Janeiro, Brazil
Administrated a network with Linux and Windows servers and workstations. Utilized network protocols (TCP/IP, UDP and others), Linux and Windows server applications (Samba, SSH, DNS, NFS, RAID) and programming languages (C, Delphi, Perl and HTML). Developed good understanding of network security. Explained technical concepts and usage to people with little computer knowledge. Trained staff for similar activities.

Teaching Experience

Teacher and creator of the MEG Data Acquisition and Analysis course (Pittsburgh, Spring 2012, freely available online: *http://www.megwiki.org/index.php?title=MEG_Basics*)
Teaching Assistant in Biological Signals and Systems (University of Pittsburgh - Fall 2007)
Teaching Assistant in Dynamic Systems (University of Pittsburgh - Spring 2008)
Instructor of EEG/MEG component of Multimodal Neuroimaging Training Fellowship (Summer 2009)

Awards and Honors

Recipient of Richard King Mellon Presidential Fellowship in Life Sciences (2010-2011, 2011-2012)
Winner of Data Analysis Competition at the 17th International Conference on Biomagnetism, Croatia, 2010

Recipient of CNBC's 2009-2010 Multimodal Neuroimaging Training Fellowship
Recipient of 2009 CMU/Intel Summer Research Fellowship
Graduated (B.S.) with Engineering Departmental Honors
Recipient of University of Kansas 2006 Engineering Everitt Award
Recipient of University of Kansas Foreign Student Scholarship (selected by the Institute of International Education committee)
Recipient of University of Kansas Dean J. Milroy Scholarship
The University of Kansas Engineering Dean's Honor Roll, listed every semester
Member of Upsilon Pi Epsilon (Computer Science Honor Society)
Member of Tau Beta Pi (Engineering Honor Society)
Member of The Honor Society of Phi Kappa Phi

Professional Affiliations

Member of ACM (Association for Computer Machinery)
Member of IEEE (Institute of Electrical & Electronics Engineers)
Member of CNBC (Center for the Neural Basis of Cognition)

Publications

BECKER JT, CUESTA P, FABRIZIO M, SUDRE G, VERGIS EN, DOUAIHY A, BAJO R, SCHUBERT A, LOPEZ OL, PARKKONEN L, MAESTU F, BAGIC A. "Brain Structural And Functional Recovery Following Initiation Of Combination Antiretroviral Therapy". J Neurovirol. 2012 Oct;18(5):423-7.

G. SUDRE, D. POMERLEAU, M. PALATUCCI, L. WEHBE, A. FYSHE, R. SALMELIN, T. MITCHELL. "Tracking Neural Coding Of Perceptual And Semantic Features Of Concrete Nouns." Neuroimage. 2012 Aug 1;62(1):451-63.

J. T. BECKER, M. FABRIZIO, G. SUDRE, A. HARIDIS, T. AMBROSE, H. J. AIZENSTEIN, W. EDDY, O. L. LOPEZ, D. WOLK, L. PARKKONEN, A. BAGIC. "Potential Utility Of Resting-State Magnetoencephalography As A Biomarker Of CNS Abnormality In HIV Disease". Journal Of Neuroscience Methods. 2012. Vol. 206. Pp 176-182.

BECKER JT, BAJO R, FABRIZIO M, SUDRE G, CUESTA P, AIZENSTEIN HJ, LOPEZ OL, WOLK D, PARKKONEN L, MAESTU F, BAGIC A. "Functional Connectivity Measured With Magnetoencephalography Identifies Persons With HIV Disease". Brain Imaging Behav. 2012 Feb 14.

J. ZHANG, G. SUDRE, X. LI, W. WANG, D. J. WEBER AND A. BAGIC, "Task-related MEG Source Localization Via Discriminant Analysis," Annual International Conference Of IEEE Engineering In Medicine And Biology Society (EMBC), Pp. 2351-2354, 2011.

W. WANG, A. D. D., G. SUDRE, D. POMERLEAU, E. C. TYLER-KABARA. "Decoding Semantic Information From Human Electrocorticographic (ECoG) Signals". Annual International Conference Of IEEE Engineering In Medicine And Biology Society (EMBC), Pp. 2351-2354, 2011.

FOLDES, S., WANG, W., COLLINGER, J., LI, X., ZHANG, J., SUDRE, G., BAGIĆ, A., AND WEBER D. J. (2011). Accessing And Processing MEG Signals In Real-Time: Emerging Applications And Enabling Technologies, Magnetoencephalography, Elizabeth W. Pang (Ed.), ISBN: 978-953-307-255-5, InTech, Available From: Http://www.intechopen.com/articles/show/title/accessing-and-processing-meg-signals-in-real-time-emerging-applications-and-enabling-technologies.

XU, Y., SUDRE, G. P., WANG, W., WEBER, D. J., & KASS, R. E. Characterizing Global Statistical Significance Of Spatiotemporal Hot Spots In Magnetoencephalography/ Electroencephalography Source Space Via Excursion Algorithms. Statistics In Medicine, 2011. DOI:10.1002/SIM.4309

G SUDRE, L PARKKONEN, E BOCK, S BAILLET, W WANG, AND D. J. WEBER. rtMEG: A Real-Time Software Interface For Magnetoencephalography. Computational Intelligence And Neuroscience, Vol. 2011, Article ID 327953, 7 Pages, 2011. Doi:10.1155/2011/327953.

E ZAMRINI, F MAESTU, E PEKKONEN, M FUNKE, J MAKELA, M RILEY, R BAJO, G SUDRE, A FERNANDEZ, N CASTELLANOS, F D POZO, C. J. STAM, B W VAN DIJK, A BAGIC, AND J T BECKER.

Magnetoencephalography as a Putative Biomarker for Alzheimer's Disease. International Journal of Alzheimer's Disease, vol. 2011, Article ID 280289, 10 pages, 2011. doi:10.4061/2011/280289.

ZHANG J, SUDRE G, LI X, WANG W, WEBER D, BAGIC A. Clustering Linear Discriminant Analysis For MEG-based Brain Computer Interfaces. IEEE Trans Neural Syst Rehabil Eng. 2011 Feb 22.

W WANG, G P SUDRE, R E KASS, Y XU, J L COLLINGER, A D DEGENHART, A I BAGIC, AND D J WEBER. Decoding and cortical source localization for intended movement direction with MEG. *Journal of Neurophysiology*, August 2010.

G SUDRE, W WANG, T SONG, M KAJOLA, R VINJAMURI, J COLLINGER, A DEGENHART, A BAGIC, AND D J. WEBER. rtMEG: A Real-time Software Toolbox for Brain-machine Interfaces Using Magnetoencephelography. *Proceedings of the International Conference in Biomagnetism* 2010.

G. SUDRE, Y. XU, R. KASS, D. WEBER, W. WANG. Cluster-based algorithm for ROI analysis and cognitive state decoding using single- trial source MEG data. *Proceedings of the International Conference in Biomagnetism* 2010.

W WANG, A D DEGENHART, J L COLLINGER, R VINJAMURI, G P SUDRE, P D ADELSON, D L HOLDER, E C LEUTHARDT, D W MORAN, M L BONINGER, A B SCHWARTZ, D J CRAMMOND, E C TYLER-KABARA AND D J WEBER. Human Motor Cortical Activity Recorded with Micro-ECoG Electrodes during Individual Finger Movements. *IEEE EMBC*. Minneapolis, MN, 2009.

R VINJAMURI, D J WEBER, A D DEGENHART, J L COLLINGER, G P SUDRE, P D ADELSON, D L HOLDER, M L BONINGER, A B SCHWARTZ, D J CRAMMOND, E C TYLER-KABARA AND W WANG. A Fuzzy Logic Model for Hand Posture Control Using Human Cortical Activity Recorded by Micro-ECoG Electrodes. *IEEE EMBC*. Minneapolis, MN, 2009.

Collinger JL, Wang W, Degenhart AD, Vinjamuri R, Sudre GP, Tyler-Kabara EC, Weber DJ (2009) Towards a direct brain interface for controlling assistive devices. *International Symposium on Quality of Life Technologies*. Pittsburgh, PA.

SUDRE, G., HANSON, S., MATAMOROS, A., GRAHAM, S. "Ontology Engineering for Management of Data in the Transportation Domain". *Proc. of Transportation Research Board 86th Annual Meeting. 2007* Paper #07-1549.

SUDRE, G., KRITIKOS, W. V., MATAMOROS, A., AND WOOD, S. "Development of a Model for Data Exchange of Experimental Results", *Proceedings of the 2006 National Conference in Earthquake Engineering*.

JERZY W. GRZYMALA-BUSSE AND GUSTAVO P. SUDRE. "A comparison of two partial matching strategies for classification of unseen cases". *Proc. of the IEEE GrC'2006, IEEE International Conference on Granular Computing*, Atlanta, GA, May 10-12, 2006, 800-805.

Invited talks

G. SUDRE, D. POMERLEAU, L. WEHBE, A. FYSHE, M. PALATUCCI, T. MITCHELL. Tracking Neural Coding of Perceptual and Semantic Attributes during Word Comprehension. *CFIN/MindLab Retreat, University of Aarhus, Denmark, August 2012.*

Conference Abstracts

J. B. WAGENAAR, G. P. SUDRE, V. VENTURA, D. J. WEBER. Quantifying somatosensory neuronal responses using conditional mutual information. *Society for Neuroscience, 2007 (Poster)*

G. SUDRE, A. DEGENHART, J. COLLINGER, D. WEBER, W. WANG. Modulation of MEG signals during overt and imagined wrist movement for brain-computer interfaces. *Society for Neuroscience, 2008. (Poster)*

A. D. DEGENHART, G. SUDRE, J. COLLINGER, C.-L. CHANG, A. SCHWARTZ, E. TYLER-KABARA, D. WEBER, W. WANG. Comparison of ECoG signal modulation between hand and brain-controlled cursor movement tasks. *Society for Neuroscience, 2008 (Poster)*

J. ZHANG, G. SUDRE, X. LI, W. WANG, D. WEBER, J. PARAMESH, G. FEDDER. A doubly regularized support vector machine for automatic channel selection of brain computer interface. *Society for Neuroscience, 2008 (Poster)*

SUDRE, G., DEGENHART, A., COLLINGER, J., WEBER, D., WANG, W. MEG analysis of motor-related brain activity during overt and imagined wrist movement. *Biomedical Engineering Society, 2008. (Poster)*

SA ZIVKOVIC, R HENDRICKSON, G SUDRE, A BAGIC. Profiles of neuromagnetic activity and cognitive function in amyotrophic lateral sclerosis. *American Academy of Neurology, 2009 (Poster).*

J. L. COLLINGER, A. D. DEGENHART, M. L. BONINGER, R. VINJAMURI, G. P. SUDRE, E. C. TYLER-KABARA, D. J. WEBER, AND W. WANG. Directional response of micro-ECoG recordings during a non-structured center-out task. *Biomedical Engineering Society, 2009. (Poster)*

R VINJAMURI, A D DEGENHART, J L COLLINGER, G P SUDRE, E C LEUTHARDT, D W MORAN, M L BONINGER, A B SCHWARTZ, D J CRAMMOND, E C TYLER-KABARA, D J WEBER AND W WANG. Human Micro-Electrocorticographic Signals Recorded During Action Execution and Observation. *Biomedical Engineering Society, 2009. (Poster)*

J. PAN, G. SUDRE, M. PALATUCCI, R. GAUNT, W. WANG, D. POMERLEAU, AND T. MITCHELL. Decoding Cognitive State using Magnetoencephalography. *Biomedical Engineering Society, 2009. (Poster)*

R. VINJAMURI, A. DEGENHART, J. COLLINGER, G. SUDRE, E. TYLER-KABARA, D. WEBER, W. WANG. Decoding hand posture based on human micro-electrocorticographic signals recorded during action observation. *Society for Neuroscience, 2009 (Poster)*

G. SUDRE, D. POMERLEAU, R. GAUNT, D. WEBER, W. WANG, T. MITCHELL. MEG analysis of spatiotemporal activation in semantic-representation task. *Society for Neuroscience, 2009 (Poster).*

A. D. DEGENHART, D. A. POMERLEAU, T. MITCHELL, R. GAUNT, G. P. SUDRE, J. L. COLLINGER, R. VINJAMURI, D. J. WEBER, W. WANG, E. C. TYLER-KABARA. Cortical representations of conceptual knowledge recorded using electrocorticography. *Society for Neuroscience, 2009 (Poster).*

M VOORTMAN, D DASH, M J DRUZDZEL, D POMERLEAU, G SUDRE. Difference-Based Causal Models: Bridging the gap between Granger causality and DCMs. *NIPS 2009 Workshop on Connectivity Inference in Neuroimaging. (Poster).*

G SUDRE, D POMERLEAU, M PALATUCCI, A BAGIC, T MITCHELL. Decoding object representation using magnetoencephalography. *Proceedings of the International Conference in Biomagnetism* 2010. *(Poster)*

J BECKER, G SUDRE, M FABRIZIO, L PARKKONEN, A HARIDIS, D WOLK, A BAGIC. Utilization of Magnetoencephalography for the Detection of Central Nervous System Dysfunction in HIV Disease. *Proceedings of the International Conference in Biomagnetism* 2010. *(Poster)*

S ZIVKOVIC, G SUDRE, R HENDRICKSON, A BAGIC. Motor performance of ALS patients during isometric contraction. *Proceedings of the International Conference in Biomagnetism* 2010. *(Poster)*

BAGIĆ AI, SUDRE G, HARIDIS A, SCHNEEBERGER S, BRANDACHER G, LEE WPA, GORANTLA VS, LOSEE JE. Reemergence of Somatosensory Responses after Human Upper Extremity Allotransplantation Revealed by Magnetoencephalography (MEG). *American Academy of Neurology, 2011 (Poster).*

G. SUDRE, D. POMERLEAU, L. WEHBE, A. FYSHE, M. PALATUCCI, T. MITCHELL. Tracking Neural Coding of Perceptual and Semantic Attributes during Word Comprehension. *Human Brain Mapping Conference 2011 (Poster and invited oral presentation).*

J. T. BECKER, P. CUESTA, M. FABRIZIO, G. SUDRE, E. N. VERGIS, A. DOUAIHY, R. BAJO, A. SCHUBERT, O. L. LOPEZ, L. PARKKONEN, F. MAESTU, A. BAGIC. MEG-identified Recovery of CNS Functional Connectivity in HIV Disease after HAART. *International Society for NeuroVirology, 2012 (Poster and invited oral presentation).*

R RANDALL, G SUDRE, Y XU, A BAGIC. Using MEG to Investigate Habituation in Musical Contexts. *Proceedings of the International Conference in Biomagnetism* 2012. *(Poster)*

M. FABRIZIO, R. BAJO, G. SUDRE, P. CUESTA, O. L. LOPEZ, L. PARKKONEN, F. MAESTU, A. BAGIC, J. T. BECKER. Potential Utility of Resting-State Magnetoencephalography as a Biomarker of CNS Abnormality in HIV Disease. *Proceedings of the International Conference in Biomagnetism* 2012. *(Poster)*

G. SUDRE, D. POMERLEAU, L. WEHBE, A. FYSHE, M. PALATUCCI, T. MITCHELL. Tracking Neural Coding of Perceptual and Semantic Attributes during Word Comprehension. *Statistical Analysis of Neural Data 2012 (Invited oral presentation).*

References

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