

NICHOLAS A. DEL GROSSO

CONFERENCE PUBLICATIONS

- March 2015 *Interact Munich* Demonstrating a Freely-Moving Virtual Reality Approach for Rodent Research
- Nov 2014 *Society for Neuroscience* ratCAVE, A Novel Virtual Reality System for Freely-Moving Rodents.
- Nov. 2012 *NENA T\ "u}bingen* Interpreting (M)EEG, A First Look at Dynamic Causal Modeling.
Introduced a probabilistic nonlinear modeling framework for interpretation of MEG and EEG data, along with the results of a pilot study in which we applied the approach.
- Nov. 2011 *NENA T\ "u}bingen* The Intrinsic Bias During the Blind-Walking Task is Not Caused by an Aberrant Intrinsic Ground-Slope Model.
- April 2010 *Visual Sciences Society* DIY ERPs, Designing inexpensive EEG systems for performing auditroy and visual cognitive studies.
- March 2010 *Butler Undergraduate Research Conference* Discrimination and processing of deviant stimuli at the auditory cortex.
- Sept. 2009 *European Health Psychology Society* Discrimination of attention-related and motor-related evoked activity by hemispheric comparison over the motor cortex.
- May 2009 *Visual Sciences Society* Are Local Changes in Faces Really Local?
- May 2008 *Visual Sciences Society}* Hemispheric specialization for face processing revealed by use of thatcherized and feature-distorted faces.

RESEARCH EXPERIENCE

- May 2013 - Present *Ludwig-Maximillians Universit\ "a}t* Prof. Dr. Anton Sirota
Programmed a 3D graphics engine in Python to build virtual reality system for freely moving rats, supervised students in programming, engineering, and cognitive science projects, organized weekly journal clubs, and ordered new equipment.
- Aug 2012 - May 2013 *Universit\ "a}t T\ "u}bingen* Prof. Dr. Christoph Braun
Wrote a research grant to study the top-down and bottom-up interactions by computational modeling information propagation in early sensory pathways as measured by MEG, designed and administrated an institute wiki, organized a student lecture series, and supervised two students' EEG research projects.
- Nov 2011 - July 2012 *Universit\ "a}t T\ "u}bingen* Prof. Dr. Niels Birbaumer
Programmed in Matlab a time-frequency and evoked potential analysis on three years' worth of MEG data assessing longitudinal changes in stroke patients receiving physiotherapy.
- Oct 2012 - Nov 2012 *Universit\ "a}t T\ "u}bingen* Prof. Dr. Cornelius Schwarz

In this lab rotation, I trained rats to perform whisking in response to barrel cortex stimulation via chronically-implanted electrodes, mapping stimulation sensitivity to each cortical layer.

Nov 2010 -
March 2011

University of
Tübingen

Dr. Michael Barnett Cowan

Programmed an online EMG classifier in Matlab and Simulink to accurately detect finger movements within milliseconds for EEG coherence brain-computer interface training.

Dec. 2009 -
Aug. 2010

Wittenberg University

Prof. Dr. Josephine Wilson

Built an NI-DAQ EEG system, programmed online analysis and data acquisition in Matlab and LabView, and confirmed its functionality in three different experiments. As a senior lab assistant, also worked as an aid for rat neurosurgery and noninvasive electrophysiology (skin conductance, EMG, EKG, and EEG) laboratory course sessions, which included planning and giving demonstrations on each method above.

June-Aug 2008 -
June-Aug 2009

Duke University

Prof. Dr. Jennifer Groh

Trained Macaque monkeys to perform visual saccade tasks while mapping receptive fields in superior and inferior colliculus.

Aug 2007 -
Dec. 2009

Wittenberg University

Prof. Dr. Michael Anes

Conducted three behavioral psychophysics studies on the hemispheric lateralization of face perception. Tasks included programming stimulus sequences in SuperLab, patient recruitment and management, data collection, and conference poster preparation.

Nov 2006 -
March 2007

Wittenberg University

Prof. Dr. Jay Yoder

Measured desiccation rates in the bed bug and isolated fungal growth in three species of cockroach. These studies resulted in a publication in a peer-reviewed journal and a poster presentation at an undergraduate research conference.

JOURNAL PUBLICATIONS

Broetz D., Del Grosso, N.A., Rea M., Ramos-Murguialday, A., Soekadar S.R., Birbaumer, N. "A New Hand Assessment Instrument for Severely Affected Stroke Patients." Journal of Neurorehabilitation. 2014; 34(3)

Benoit, J.B., Del Grosso, N.A., Yoder, J.A., Denlinger, D.L. "Resistance to Dehydration between Bouts of Blood Feeding in the Bed Bug, Cimex Lectularius, is Enhanced by Water Conservation, Aggregation, and Quiescence." American Journal of Tropical Medical Hygiene. May 2007; 76(5):987-93.

INDUSTRY EXPERIENCE

Technical Consultant

UKT Psychosomatic Med. and Sports Med.

I evaluated and designed a solution for performing medical science studies in a placebo study, and taught the PhD student who carried out the study over several remote sessions and a few travel consultations.

Research Internship

The Neuromarketing Labs

I completed set-up of an EEG laboratory, including software calibration and noise measurements. Designed and ran two experiments estimating the evoked responses of semantic agreement and price agreement, then analyzed the data. The results from the second experiment are the basis of Dr. Müller's recently-published book, *Neuropricing*. Currently volunteering as an EEG consultant by giving one-day workshops on Fieldtrip, SPM, and artifact correction methods.

GOALS

- Obtain a PhD in cognitive neuroscience by studying multimodal sensory integration and sensorimotor interactions.

- Obtain teaching, project management, and laboratory experience sufficient to one day become a competent university professor.
- Build technical skills in a wide variety of fields in order to perform high-quality research at institutes with limited resources.

SKILLS

- \textbf{Languages}: English (Mother Tongue), German (Level B1), French (Level A1-2)
- \textbf{Stimulus Presentation}: Psychopy, Neurobs Presentation, Psychophysics Toolbox, OpenGL, Pyglet, SuperLab, RatCAVE
- \textbf{Wet Lab Skills}: Rat Neurosurgery, Animal Behavioral training (rats and monkeys), in vivo electrophysiology (single needle electrodes, chronically-implanted electrode arrays, noninvasive arrays of EEG electrodes and MEG sensors), Basic Electronics, Comfortable with building custom laboratory equipment
- \textbf{Graphics}: Blender, Adobe Suite (Photoshop, Illustrator, and InDesign), OpenGL, Google SketchUp, GIMP, Inkspace
- \textbf{Statistical Analysis}: Statistical Parametric Mapping (SPM), SPSS, R, Matlab Statistics Toolbox, Fieldtrip, gTec Analyze, BrainVision Analyzer
- \textbf{EEG System Experience}: BrainProducts, gTec, Grass Instruments, CTF
- \textbf{Programming}: Python, Matlab, C#, GLSL, R, LabView, C, Bash, LaTeX



December 9, 2015