Curriculum Vitae - Peter Bremen

Personal Information

Name: Peter Bremen
Birth Date: November 29th, 1979
Place of Birth: Stolberg, Rhld., Germany
Citizenship: German

Contact Information

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Education

Degree Programs
- 2005-present: PhD Program in Neuroscience, Radboud University Nijmegen, Dept. of Biophysics
- 2002-05: Diploma (M.Sc.) in biology, RWTH Aachen, Germany
- 2000-02: Pre-Diploma (B.Sc.) in biology, RWTH Aachen, Germany

Scholarship
- 2005-2008: Early Stage Research Training Program (EST) “SensoPrim” (sensory information processing in non-human primates) (MEST CT 2004 007825)

Thesis
- 2005: Diploma (Master’s) Thesis, “Importance of interaural time difference in coding the azimuth in the central nucleus of the inferior colliculus in the barn owl (*Tyto alba*)”, Lehrstuhl fuer Zoologie/Tierphysiologie, RWTH Aachen, Germany

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Research Experience

September 2005 - present
PhD student at the Radboud University Nijmegen, Dept. of Biophysics

Supervisor: Prof. Dr. A. John Van Opstal

- Conducted a behavioral experiment and modeling experiments dealing with spectral cue processing of double stimuli in human sound localization.
- Measured head-related transfer functions of human subjects.
- Extended an eye-orientation measurement method based on double magnetic induction to head-unrestrained conditions for both human and animal subjects
- Designed a monkey chair that allowed the monkey to climb in from the rear without manipulation of the experimenter
- Designed a head-fixation system inspired by the one in use in the Brosch lab (Magdeburg, Germany)
- Assisted in several operations to implant head-holders and recording chambers
- Trained monkeys to perform a simple fixation task

September 2004 - July 2005
Undergraduate student: at the RWTH-Aachen, Lehrstuhl fuer Zoologie/Tierphysiologie

Supervisor: Prof. Dr. Hermann Wagner, Dr. Marc Von Campenhausen

- Measured head-related transfer functions of barn owls.
- Conducted electrophysiological experiments concerned with the representation of azimuth & interaural time differences in the inferior colliculus of the barn owl.
- Wrote DLLs in C++ for Tucker Davis Technologies System II
- Wrote Matlab scripts for analysis of owl head-related transfer functions and of electrophysiological data

2002 - August 2004
Student Research Assistant (Hilfs-Wissenschaftler): Lehrstuhl fuer Zoologie/ Tierphysiologie, RWTH-Aachen
Supervisors: Prof. Dr. Hermann Wagner, Dr. Dennis T.T. Plachta, Dr. Robert F. Van der Willigen

- Raised barn owl hatchlings from the Institute's breeding colony
- Conducted behavioral experiments with barn owls in a free-flight chamber
- Setup design free-flight chamber
- Hardware installation electrical wiring with switches for a speaker array, two IR cameras, automatic feeder
- Generation of acoustic stimuli with Tucker Davis Technologies System 3
- Installation of a 3D IR tracking device (Origin Instruments DynaSight IR tracker)
- Owl training and data collection
- Data analysis (Wavemetrics IGOR Pro)

Publications and Presentations

Publications

- Bremen P, Van der Willigen RF, Van Opstal AJ. Applying double magnetic indcution to measure two-dimensional head-unrestrained gaze shifts in human subjects. *J Neurophysiol. 2007 Dec;98(6):3759-69.*
- Wagner H, Asadollahi A, Bremen P, Endler F, Vonderschen K, Von Campenhausen M. Distribution of interaural time difference in the barn owl's inferior colliculus in the low- and high-frequency ranges. *J Neurosci. 2007 Apr 11;27(15):4191-200.*
- Bremen P, Van der Willigen RF, Van Opstal AJ. Using double-magnetic induction to measure head-unrestrained gaze shifts. I. Theory and validation. *J Neurosci Methods. 2007 Feb 15;160(1):75-84.*
- Bremen P, Poganiatz I, Von Campenhausen M, Wagner H. Sensitivity to interaural time difference and representation of azimuth in central nucleus of inferior colliculus in the barn owl. *J Comp Physiol A Neuroethol Sens Neural Behav Physiol. 2007 Jan;193(1): 99-112.*

Published Abstracts/Conference Presentations

- Bremen P, Hovingh R, Van Opstal AJ. Orienting towards Auditory Double Stimuli in Elevation. *32nd Annual Association for Research in Otolaryngology MidWinter Meeting, Baltimore, MD, February 2009.*
- Bremen P, Van der Willigen RF, Van Opstal AJ. Head-unrestrained 2D Gaze Shifts Measured With Double Magnetic Induction (DMI): A Direct Comparison with The Scleral Search Coil (SSC). *Proceedings of the 17th Annual Meeting of the Society for the Neural Control of Movement (NCM), Sevilla, Spain, March 2007.*
- Van der Willigen RF, Bremen P, Van Opstal AJ. Head-unrestrained 2D Gaze Shifts Measured With Double Magnetic Induction (DMI): Theory and Validation. *Proceedings of the 17th Annual Meeting of the Society for the Neural Control of Movement (NCM), Sevilla, Spain, March 2007.*
- Bremen P, Singheiser M, Plachta DTT, Van der Willigen RF, Wagner H. Barn owls do not depend on high frequency auditory signals to approach a distant target. *Proceedings of the 6th Meeting of the German Neuroscience Society/30th Goettingen Neurobiology Conference [CD_ROM], supplement to Neuroforum 2005, Febuary; ISSN 0947-0875, 2005.*

Seminar Presentations

- Orienting Towards Auditory Double Stimuli in Elevation - Target Selection by the Auditory System. *Talk given at the Perception, Action and Control Meeting; Theme 2 within the Donders Institute for Brain, Cognition and Behaviour, Nijmegen; 16th April 2009*
- Application of the double-magnetic induction method to measure head-unrestrained gaze shifts. *Talk given at the Nijmegen Institute for Cognition and Information (NICI) Junior Day 2007*

Teaching Experience

2005 - present

- **Assistant:** Practical course “Introduction to Sensory Systems for medical students“
- **Assistant:** Practical course “Introduction to the Somatosensory System” for medical students
- **Assistant:** Practical course “Introduction to the Vestibular System” for biology students”
- **Assistant:** Practical course “Linear Systems Theory & The Saccadic System”
- **Co-Supervisor:** Bachelor thesis project in Natural Sciences
- **Co-Supervisor:** Bachelor thesis in biology
- **Co-Supervisor:** Master thesis in biology

2003 - 2004

- **Student Assistant:** Practical course “Animal physiology: Olfaction & Gustation” for biology students

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Other Professional Activities

Academic Service

- 2008: Reviewer of manuscript for Journal of Neuroscience Methods

Professional Memberships

- Association for Research in Otolaryngology
- Society for Neuroscience

Conferences Attended

- International Symposium on the Neural Basis of Decision Making; Groesbeek, The Netherlands, 2009
- 32nd Annual Association for Research in Otolaryngology MidWinter Meeting; Baltimore, MD, 2009
- Meeting of the Society for the Neural Control of Movement; Sevilla, Spain, 2007
- 6th Meeting of the German Neuroscience Society/30th Goettingen Neurobiology Conference; Goettingen, Germany, 2005

Computer Proficiency

Programming Languages

MatLab, IGOR Pro, C/C++

Operating systems

MAC OS X, Microsoft Windows 2000/XP

Specialized Hardware

- Tucker-Davis Technologies system II & system 3
- Remmel Labs Eye Movement Monitors
- Princeton Applied Research Lock-in Amplifiers
- Origin Instruments DynaSight IR tracker

Summary of Experience

- Research experience in magnetic eye movement measurement techniques, psychoacoustics, digital signal processing and neurophysiology.
- Diploma (M.Sc.) in biology with a concentration on neurobiology
- Pre-Diploma. (B.Sc.) in biology
- Teaching experience in biology

References

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