

BIJAN PESARAN

General Information

Nationality: British Citizen
US Permanent Resident

Date of Birth: 12 October, 1973

Marital Status: Married, one child.

Contact Information

Address: 4 Washington Pl. Rm 809
Center for Neural Science
New York University
New York, NY 10003
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Research Interests

Investigating brain networks underlying behavior. Developing techniques to analyze neural activity and behavior. Developing new technologies to treat brain disorders.

Education

1996 – 2002 Ph.D. Physics. Caltech. Pasadena, CA.
Advisor: Partha P. Mitra
Analysis of neuronal dynamics in behaving animals

1992 – 1995 BA (Hons.) Physics and Theoretical Physics.
Cambridge University. Cambridge, UK

Professional Experience

2006 - present Assistant Professor of Neural Science
Center for Neural Science. New York University. New York, NY

2002 - 2005 Postdoctoral Research Fellow. Division of Biology. Caltech. Pasadena, CA.
Advisor: Richard A. Andersen
Cortical mechanisms of hand-eye coordination

1995 - 1999 Senior Technical Associate. Theoretical Physics Research.
Bell Labs, Lucent Technologies. Murray Hill, NJ.

Honors and Awards

2007 Alfred P. Sloan Research Fellowship
2006 James D. Watson Program Investigator Award
2004 Burroughs Wellcome Fund Career Award in the Biomedical Sciences
1997 National Science Foundation Graduate Research Fellowship
1997 Sloan Center for Theoretical Neurobiology Fellowship
1995 Royal Society Summer Research Fellowship
1994 Nuffield Foundation Summer Research Fellowship
1993 Elected Scholar Clare College, Cambridge University, UK.
1991 National Merit Scholar

Publications

Journal articles

- Pesaran, B.**, Nelson., M.J. and Andersen, R.A. (2008). Free choice activates a decision circuit between frontal and parietal cortex. *Nature*. In press
- Lee, B., **Pesaran, B.** and Andersen, R.A. (2007). Translation speed compensation in MSTd. *J. Neurosci.* 27(10):2582-91
- Pesaran, B.**, Nelson., M.J. and Andersen, R.A. (2006). Dorsal premotor cortex encodes the relative position of the hand, eye and goal before reaches. *Neuron* 51:125-134
- Bokil, H., **Pesaran, B.**, Andersen, R.A. and Mitra, P.P. (2006). A framework for the detection and classification of events in neural activity. *IEEE Trans. Biomed. Eng.* 53(8):1678-1688
- Pesaran, B.**, Musallam, S. and Andersen, R.A. (2006). Cognitive neural prosthetics. *Curr. Biol.* 16: R77-R80
- Andersen, R.A., Musallam, S. and **Pesaran, B.** (2004). Selecting signals for neural prosthetics. *Curr. Op. Neurobiol.*
- Andersen, R.A., Burdick J.W., Musallam, S., **Pesaran, B.**, and Cham, J.G. (2004). Cognitive neural prosthetics. *Trends Cog. Sci.* 8:486-493
- Scherberger, H., Fineman, I., Musallam, S., Dubowitz, D.J., Bernheim, K.A., **Pesaran, B.**, Corneil, B.D., Gillikan, B., and Andersen, R.A. (2003). Magnetic resonance image-guided implantation of chronic recording electrodes in the macaque intraparietal sulcus. *J. Neurosci. Methods* 130:1-8
- Shenoy, K.V., Meeker, D., Cao, S., Kureishi, S., **Pesaran, B.**, Buneo, C., Batista, A.P., Mitra, P.P., Burdick, J.W., and Andersen, R.A. (2003). Neural prosthetic control signals from plan activity. *Neuroreport.* 14:591-596.
- Pesaran, B.**, Pezaris, J., Sahani, M., Mitra, P.P., and Andersen, R.A. (2002). Temporal structure in neuronal activity during working memory in macaque parietal cortex. *Nature Neurosci.* 5:805-811.
- Tchernikovski, O., Nottebohm, F., Ho, C.E., **Pesaran, B.**, and Mitra, P.P. (2000). A procedure for an automated measurement of song similarity. *Animal Behaviour* 59:1167-1176.
- Mitra, P.P. and **Pesaran, B.** (1999). Analysis of dynamic brain imaging data. *Biophys. J.* 76:691-708.
- Fee, M.S., Shraiman, B., **Pesaran, B.**, and Mitra, P.P. (1998). The role of nonlinear dynamics of the syrinx in the vocalizations of a songbird. *Nature* 395:67-71.
- Prechtl, J., Cohen, L.B., **Pesaran, B.**, Mitra, P.P., and Kleinfeld, D. (1997). Visual stimuli induce waves of electrical activity in turtle cortex. *Proc. Natl. Acad. Sci.* 94(14):7621-7626.

Book Chapters

- Pesaran, B.**, Sornborger, A.T., Nishimura, N. Kleinfeld, D.K., and Mitra, P.P. (2005). Analysis of dynamic optical imaging data. In: *Imaging living cells*. Eds. Konnerth, A. and Yuste, R. CSHL Press.
- Andersen, R.A., Meeker, D., **Pesaran, B.**, Breznen, B. Buneo, C., and Scherberger, H. (2003). Sensory-motor transformations in the posterior parietal cortex. In *The new cognitive neurosciences*. Ed. Gazzaniga, M.S. MIT Press.

Invited Talks

- 2007 NIPS Workshop “Large Scale Brain Dynamics”, Whistler, Canada
- 2007 Mathematics Seminar, New Jersey Institute of Technology, Newark, NJ
- 2007 Graduate School of Neurosciences, Autumn School, Wildbad Kreuth, Germany
- 2007 Department of Mathematics, Indian Institute of Science, Bangalore, India
- 2007 School of Cognitive Sciences, IPM, Tehran, Iran
- 2007 Center for Vision Research Conference, York University, York, Canada
- 2006 Center for Theoretical Neuroscience, Columbia University, New York, NY
- 2006 Dynamical Neuroscience Symposium, Society for Neuroscience Meeting, Atlanta GA

2006 Neuroscience Seminar, Princeton University, Princeton, NJ
 2006 Computational and Systems Neuroscience (COSYNE) Meeting, Park City UT
 2005 Neuroeconomics Seminar, New York University, NY
 2005 Gatsby Computational Neuroscience Unit, London, UK
 2005 Gordon Research Conference on Neuroethology, Oxford University, Oxford, UK
 2005 Center for Neural Science, New York University, New York, NY
 2005 Department of Physiology and Biophysics, University of Washington, Seattle, WA
 2005 Picower Center for Learning and Memory, Massachusetts Institute of Technology, MA
 2004 Computational and Systems Neuroscience (COSYNE) Meeting, Cold Spring Harbor, NY
 2004 Institute of Neurology, University College, University of London, UK
 2003 Brain-Computer Interface Symposium, Society for Neuroscience Meeting, New Orleans, LA
 2003 Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, MA
 2003 Sloan-Swartz Center for Theoretical Neurobiology Meeting, Salk Institute, CA
 2003 Psychology Seminar, Princeton University, Princeton NJ
 2003 Center for Learning and Memory, University of California, Irvine
 2001 Neyman Seminar, Department of Statistics, University of California, Berkeley, CA

Teaching Experience

2008 Behavioral Integrative Neuroscience, Center for Neural Science, New York University
 2007 Statistical Analysis and Modeling of Neural Data, Center for Neural Science, New York University
 2006 - 2007 Lecturer, Sensory and Motor Systems, Center for Neural Science, New York University
 1997 - 2007 Course Lecturer. Neuroinformatics. Marine Biology Laboratories. Woods Hole, MA.
 2002 Course Lecturer. Biology 15. Topics in Biology. Caltech, Pasadena, CA.
 1998 - 99 Teaching Assistant. Applied Physics 77. Applied Physics Lab. Caltech, Pasadena, CA
 1997 - 99 Teaching Assistant. Physics 2. Quantum Mechanics. Caltech. Pasadena, CA

Patents

Pesaran, B. and Andersen, R.A. (2005) Prosthetic devices and methods and system related thereto. (Pending)
Pesaran, B., Mitra, P.P and Andersen, R.A. (2005). A neural prosthetic using temporal structure in the local field potential.
Pesaran, B., Andersen, R.A., Shenoy, K.V., Meeker, D., Cao, S., Burdick, J.W., and Mitra, P.P. (2005) Cognitive state machine for prosthetic systems.
Pesaran, B., Mitra, P.P and Andersen, R.A. (2002). A neural prosthetic using temporal structure in the local field potential.
Pesaran, B., Fee, M.S., Ho, C.E. and Mitra, P.P. (2001) Speech processing technique for use in speech recognition and speech coding.

Current and pending research support

Burroughs-Wellcome Fund Career Award (P.I., Pesaran) 9/1/04-9/1/09
 "Cortical mechanisms for hand-eye coordination"

Understand the cortical mechanisms for hand-eye coordination and their organization across frontal and parietal cortex using multiple area, multiple electrode recordings in the behaving monkey.

James D. Watson Program Investigator Award (P.I., Pesaran) 3/1/07-2/28/09
 "Optimizing brain-computer interfaces for clinical applications"

To develop and test novel prosthetic devices which record different neural signals from brain areas to assist paralyzed patients.

Alfred P. Sloan Research Fellowship (P.I., Pesaran)

9/1/07-8/31/09