

Francesco Paolo Battaglia -- Curriculum Vitae

Personal Information

Name: Francesco Paolo Battaglia

Place and Date of Birth Ferrara, June 4th, 1970

Position: Universitair Docent – Assistant Professor (tenured)

Work Address (since Jan 2006): SILS – APCN Universiteit van Amsterdam Kruislaan 320
1098SM Amsterdam, The Netherlands

e-mail: battagli@science.uva.nl

Websites: <http://www.battaglia.nl>
<http://www.sils-cns.nl/PGBattaglia.html>

Home Address: Boylestraat 11hs 1098PC Amsterdam

Phone Numbers: +31-20-525-7968 (work)
+31-20-6767273 (home)
+31-6-21888544 (cell)

Marital Status: Married with Dr. P. Gori-Giorgi

Children: Irene (born in 2007)

Citizenship: Italian

Post-doctoral research

Post-doctoral scholar at the CNRS-Laboratoire de Physiologie de la Perception et de l'Action, Collège de France, Paris (Jan.2004-Dec. 2005) in the équipe of Dr. Sidney Wiener, funded by the CNRS (Poste Rouge) and by the fondation Fyssen.

Research focus: interaction between the hippocampus and the prefrontal cortex in decision making processes.

Post-doctoral scholar at the University of Arizona, ARL -- Neural Systems Memory, and Aging Division (Feb. 1999-Dec. 2003) under the supervision of Dr. Bruce McNaughton. From May, 1999 to April, 2001, my position was funded by a Human Frontier Science Program Long-Term Fellowship.

Research focus: ensemble neurophysiology of the interactions between cortex and hippocampus. Spatial representations in the rat hippocampus

Graduate Studies

PhD *cum laude* in Cognitive Neuroscience at S.I.S.S.A. -- I.S.A.S., International School for Advanced Studies, Trieste, Italy (1995/1998). PhD Thesis "Recurrent networks in the brain and spatial memory: dynamics and storage capacity.". Advisor Dr. Alessandro Treves. During my PhD studies, I also visited ARL-NSMA (October-December, 1997) working on the analysis of data from *in vivo* parallel recording from rat hippocampus during a behavioral task.

Military obligations

Mandatory Italian civil service (Dec. 1994/Oct. 1995)

Undergraduate Studies

Laurea course in Physics at University of Rome "La Sapienza" (1988/1994). Graduation mark: 110/110 *cum laude*. *Laurea* Thesis "Learning Dynamics for the output stage of an electronic Attractor Neural Network" (in Italian). Advisor Dr. Daniel Amit.

Fellowships

Human Frontier Science Program Long-term fellowships May 1999/April 2001

Bourse Fondation Fyssen October 2004/September 2005

Invited talks:

Competitive Learning with realistic neural Elements and selective synaptic elimination" Third workshop on neural networks, EIPC, Marciana Marina, Italy, Sep. 1994. (talk)

The Neurosciences Institute, San Diego, CA 1996

University of Oxford, U.K.; 1996

University of Oxford, U.K.; 1998

University of Southampton, U.K. 1998

University of California, Davis 2001

Vrije Univeriteit Amsterdam 2002

EPFL Lausanne 2002

CNRS - Institut Alfred Fessard Gif-sur-Yvette 2002

University of Amsterdam 2005

Journée “Maths et Cerveau”, Institut Henri Poincaré, Paris 2005

Gordon Conference on Neuroethology, Oxford, UK 2005 (session co-chair)

Gatsby Computational Neuroscience Units UCL London 2006

Endo-Neuro-Psycho Meeting 2006 – Doorwerth, Netherlands

Université Paris 5, 2006

ISC – CNR Roma 2006

Workshop “Mathematical aspects of brain functions. Compositionality and Synchronization”,
Accademia dei Lincei, Roma 2006

NICI Lecture – Univ. Nijmegen, Netherlands, 2007

Society for Neuroscience Meeting San Diego, CA 2007: invited speaker in the mini-symposium “The
Upshot of Up States in the Neocortex: From Slow Oscillations to Memory Formation”

School on “Hippocampus and Navigation” Instituto Gulbenkian de Ciencia Oeiras Portugal 2008

Fridtjof Nansen conference on Neural Networks and Behaviour, Spitsbergen, Norway 2008 (Invited
session chair)

Organized Events

Symposium “The Orbitofrontal Cortex”, European Brain and Behaviour Society 2007 , Trieste, Italy,
co-organizer.

Workshop: “Network Synchronization: from dynamical systems to neuroscience”, Lorentz Center, Leiden, the Netherlands, 2008, co-organizer.

Reviewer

Nature Neuroscience, Journal of Neuroscience, J. Computational Neuroscience, Behavioral Neuroscience, Computational Neuroscience conference, Physical Review E, Journal of Integrative Neuroscience.

Teaching Experiences:

Course “Cognitive Neuroscience” Graduate School in Neuroscience Amsterdam 2009 Co-coordinator

Course “Mechanism and Models Cognitive Neuroscience” Bachelor program in Psychobiology - Universiteit van Amsterdam 2009 Coordinator

Course “Cognitive Neurophysiology and Programming”, Master Program in Brain and Cognitive Science Universiteit van Amsterdam 2008 - Coordinator

Course “Advanced Neuroimaging and Cognitive Neuroscience”, Master Program in Cognitive Neuroscience Universiteit van Amsterdam 2007 - Coordinator

Invited lecturer in the “Mechanism and Models Cognitive Neuroscience” course directed by Prof. C. Pennartz, Universiteit van Amsterdam 2006-2008

Faculty at the EU Course in Computational Neuroscience, in the 1999 and 2001 editions in Trieste, Italy, and in the 2002 edition in Obidos, Portugal.

Languages: Italian native speaker. French spoken fluently and written at an intermediate level (I lived in France Sep. 2003-Dec. 2005) English spoken and written at a professional level, with experience in writing scientific papers international publications (I lived in the U.S. for 5 years). Spanish written and spoken at an intermediate level. Dutch spoken and written at an intermediate level.

Publications

Papers published:

Hoffman K.L., Battaglia F.P., Harris K., MacLean J.N., Marshall L., Mehta M.R. (2007)
The upshot of up states in the neocortex: from slow oscillations to memory formation.
J. Neuroscience **27** 11838-41

K.M. Gothard, F.P. Battaglia, C.A. Erickson, K.M. Spitler, and D.G. Amaral
(2007) Conjunctive Encoding of Facial Expression and Identity in the Monkey Amygdala
J. Neurophysiology **97** 1671-83.

B.L. McNaughton, F.P. Battaglia, O. Jensen, E.I. Moser and M.B. Moser
Path-integration and the neural basis of the 'cognitive map'
Nature Reviews Neuroscience **7** 663-678

F.P. Battaglia, G.R. Sutherland, S.L. Cowen, B.L. McNaughton, and K.D. Harris (2005)
Firing rate modulation: a simple statistical view of memory trace reactivation
Neural Networks **18** 1280-1291

F.P. Battaglia, G.R. Sutherland and B.L. McNaughton (2004)
Hippocampal sharp wave bursts coincide with neocortical "up-state" transitions.
Learning and Memory **11** 697-704.

F.P. Battaglia, G.R. Sutherland and B.L. McNaughton (2004)
Local sensory cues and place cell directionality: additional evidence of prospective coding in the hippocampus.
Journal of Neuroscience **24** 4541-4550.

S. Panzeri, E.T. Rolls, F.P. Battaglia, and R. Lavis (2001)
Simulation studies of the speed of recurrent processing
Lecture notes in artificial intelligence **2036** 320-332

S. Panzeri, E.T. Rolls, F.P. Battaglia and R. Lavis (2001)
Speed of feedforward and recurrent processing in multilayer networks of integrate-and-fire neurons.
Network **12** 423-440

K.M. Gothard, K.L. Hoffman, F.P. Battaglia and B.L. McNaughton (2001)
Dentate Gyrus and CA1 ensemble activity during spatial reference frame shifts in the presence and absence of visual input.

Journal of Neuroscience **21** 7284-7292

A.D. Redish, F.P. Battaglia, M.K. Chawla, A.D. Ekstrom, J.L. Gerrard, P. Lipa, E.S. Rosenzweig, P.F. Worley, J.F. Guzowski, B.L. McNaughton, and C.A. Barnes (2001)

Independence of Firing Correlates of Anatomically Proximate Hippocampal Pyramidal Cells.

Journal of Neuroscience **21** RC134

F.P. Battaglia and A. Treves (1998)

Attractor neural networks storing multiple space representations: a model for hippocampal place fields.

Physical Review E **58** 7738-7753

F.P. Battaglia and A. Treves (1998)

Stable and rapid recurrent processing in realistic autossociative memories.

Neural Computation **10** 431-450.

F.P. Battaglia and S. Fusi (1995)

Learning in neural networks with partially structured synapses.

Network **6** 261-270.

Peer reviewed conference proceedings:

A. Tapus, F.P. Battaglia, R. Siegwart (2006)

The Hippocampus Place Cells and Fingerprints of Places: Spatial Representation Animals, Animals and Robots *IAS-9 Conference*, Accepted

F.P. Battaglia (1995)

Competitive Learning with Selective Synaptic Elimination

International Journal of Neural Systems, Vol. **6 (Suppl. 1995)**, Proceedings of the Third Neural Networks Workshop: From Biology to High Energy Physics, 39-43.

Book chapters:

Battaglia F.P., A Peyrache A., Khamassi^{M.} and Wiener S.I. (2008)

Spatial decisions and neuronal activity in hippocampal projection zones in prefrontal cortex and striatum

In: *Hippocampal Place Fields: Relevance to Learning and Memory* (Mizumori SY ed.) Oxford University Press

McNaughton BL, Barnes CA, Battaglia FP, Bower MR, Cowen SL, Ekstrom AD, Gerrard JI, Hoffman KL, Houston FP, Karten Y, Lipa P, Pennartz CM, Sutherland GR (2002)

Off-line reprocessing of recent memory and its role in memory consolidation: A progress report. In: *Sleep and brain plasticity* (Maquet P, Stickgold B, Smith C, eds).