

Shun-ichi Amari, D. Eng.



CURRENT POSITION

Senior Advisor, RIKEN Brain Science Institute (RIKEN BSI), Wako City, JAPAN

Additional posts

Senior Team Leader, Laboratory for Mathematical Neuroscience, RIKEN BSI

EDUCATIONAL BACKGROUND

Doctor of Engineering (1963)

Graduate School of Mathematical Engineering, Department of Applied Physics, University of Tokyo, Tokyo, Japan. Dissertation: "Diakoptics of Information Spaces"

Master of Engineering (1960)

Graduate School of Mathematical Engineering, Department of Applied Physics, University of Tokyo, Tokyo, Japan. Dissertation: "Topological and Information-Theoretical Foundation of Diakoptics and Codiakoptics"

Bachelor of Mathematical Engineering (1958)

University of Tokyo, Tokyo, Japan

PROFESSIONAL EXPERIENCE

- *Senior Advisor*, RIKEN Brain Science Institute (RIKEN BSI), Wako, Japan 2008 -
- *Director*, RIKEN Brain Science Institute (RIKEN BSI), Wako, Japan 2003 - 2008
- *Group Director*, Brain Information Systems Research Group, RIKEN Frontier Research Program 1994 - 1997
- *Professor*, Department of Mathematical Engineering and Information Physics, University of Tokyo 1981 - 1996
- *Associate Professor*, Department of Mathematical Engineering and Instrumentation Physics, University of Tokyo 1967 - 1981
- *Associate Professor*, Department of Communication Engineering, Kyushu University 1963 - 1967
- *Visiting Professor*, Neural Network Chair, Catholic University of Leuven, Belgium 1997 - 1998
- *Visiting Professor*, University of Paris, I (Pantheon-Sorbonne) 1997, 1994
- *Wei Lun Professor*, Chinese University of Hong Kong 1995

- *Visiting Professor*, University of Paris, IX (Dauphine) 1992

Awards

- Order of Cultural Merit 2012
- Gabor Award (International Neural Networks Society) 2010
- APNNA Excellent Service Award (Asian Pacific Neural Networks Assembly) 2008
- Bosom Friend Award (China Neural Networks Council) 2005
- APNNA Achievement Award (Asia Pacific Neural Networks Assembly) 2004
- C&C Award (Foundation for C&C Promotion) 2003
- APNNA Special Award (Asian Pacific Neural Networks Assembly) 2002
- Special Award of Japanese Statistical Society 2002
- Best Paper Award (IEEE Signal Processing Society) 2000
- Best Paper Award (Japanese Neural Network Society) 2001
- Caianiello Memorial Award 1998
- Best Paper Award (IEEE Transactions on Signal Processing) 1988
- IEEE Emanuel R. Piore Award 1997
- Japan Academy Award 1995
- INNS Neural Networks Leadership Award 1994
- Best Paper Award (Neurocomputing) 1994
- Best Research Achievement Award (Japanese Neural Network Society) 1993
- Best Paper Award (Japanese Neural Network Society) 1993
- Neurocomputing Best Paper Award 1993
- IEEE Neural Networks Pioneer Award 1992
- Academic Research Award, International Foundation for Artificial Intelligence 1990
- Kodansha Best Scientific Publication Award for "Biocomputer" published by Iwanami (1986) 1987
- Yonezawa Special Award, Institute of Electrical and Electronics Engineers (IEEE) 1987
- Best Paper Award, Institute of Electronics Communication Engineers (IECE) Japan 1965, 1987
- Inada Award from IECE, Japan 1964

SELECTED PROFESSIONAL AFFILIATIONS AND HONORS

- President, Institute of Electronics, Information and Communication Engineers (IEICE) 2004 - 2005
- Chair of Kyoto Prize Committee 2004 - 2009

- Polish Academy of Science, Foreign Member 2009 -
- Fellow of Japanese Society for Industrial Mathematics 2008 -
- IEEE Fellow 1994 -
- Fellow of Institute of Electronics, Information and Communication Engineers, Japan 2005 -
- Chair, Japan Prize Committee 2004
- Member of Science Council of Japan 1997 - 2000
- Professor Emeritus, University of Tokyo 1996 -
- Council Member, Bernoulli Society for Mathematical Statistics and Probability Theory 1995 - 1999
- President, International Neural Network Society 1996
- Founding President of Asian-Pacific Neural Network Assembly 1993
- Founding Board Member of Japanese Neural Network Society 1989
- Founding Governing Board Member of International Neural Network Society 1987

SELECTED JOURNAL PUBLICATIONS (over 200 citations)

- S. Amari, "Natural Gradient Works Efficiently in Learning", *Neural Computation*, No.10, pp. 251-276, 1998.
- S. Amari, "Dynamics of Pattern Formation in Lateral-Inhibition Type Neural Fields", *Biological Cybernetics*, Vol.27, pp. 77-78, 1977.
- S. Amari, "Neural Theory of Association and Concept: Formation", *Biological Cybernetics*, Vol.26, pp.175-185, 1977.
- S. Amari and K. Maginu, "Statistical Neurodynamics of Associative Memory", *Neural Networks*, Vol.1, No.1, pp. 63-73, 1988.
- N. Murata, S. Yoshizawa, and S. Amari, "Network Information Criterion: Determining the number of Hidden Units for an Artificial Neural Network Model", *IEEE Transactions on Neural Networks*, Vol.5, No.6, pp. 865-872, 1994.

*Over 300 articles published. Full list available upon request.

SELECTED BOOK PUBLICATIONS

- A. Cichocki, R. Zdunek, A. H. Phan and S. Amari, *Nonnegative Matrix and Tensor Factorizations*, John Wiley & Sons (2009)
- A. Cichocki and S. Amari, *Adaptive Blind Signal and Image Processing: Learning Algorithms and Applications*, John Wiley & Sons (2002)
- S. Amari and H. Nagaoka, *Methods of Information Geometry*, American Mathematical Society and Oxford University Press- (2000)
- S. Amari, *Differential Geometrical Methods in Statistics*, Springer Lecture Notes in Statistics, Vol. 28,

(1985)

- S. Amari, Mathematical Theory of Nerve Nets (in Japanese,) Sangyotosho (1978)