**Fumio Uchikoba**

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Birth date: November 30, 1959

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**Education**

Doctor of Engineering, February 1996.

Waseda University, Tokyo, Japan.

Master of Engineering, March 1985.

The University of Electro-Communications, Tokyo, Japan

Bachelor of Engineering, March 1983

Waseda University, Tokyo, Japan.

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**Academic Position**

Professor, Nihon University, April 2007.

Associate Professor, Nihon University, April 2003.

Visiting Scientist, Massachusetts Institute of Technology,

December 1988 to November 1990

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**Job History**

Research Scientist, TDK Corporation

April 1985 to March 2003

**Current Research Interest**

Artificial life

Biomimetics

Micro-Robot

MEMS

Neural Networks

Analog IC

Functional Material

I am interested in artificial lives such as creating artificial infects. Particularly, the millimeter size micro robot with silicon body and silicon neural networks is the main target. Making use of MEMS (Micro Electro Mechanical System) technology, the silicon micro parts is fabricated by the similar process of IC production. Also, hardware neural networks is produced by CMOS IC. Combining these technology, the a kind of artificial life is researched by me. The CMOS circuit of the neural networks is describe on the silicon frame directory. Therefore, both of the mechanical system and the control system are obtained on the same silicon structure, and the millimeter size silicon micro robot similar to the artificial life is realized.

Also, I am a director of the MEMS facility, "Research Center for Micro-Functional Devices at Nihon university. Silicon parts and silicon mechanisms of micro meter size are produced in this center. In the center, designing tools for the neural networks are equipped, such as circuit simulators, structural analysis tools and evaluation devices.

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2) Kazuto Okazaki, Tatsuya Ogiwara, Dongshin Yang Kentaro Sakata, Ken Saito, Yoshifumi Sekine and Fumio Uchikoba, "Development of pulse control type MEMS micro robot with hardware neural network", Artificial Life and Robotics vol.16, No. 2, pp. 229-233 2011.

3) Ken Saito, Kazuto Okazaki, Kentaro Sakata, Tatsuya Ogiwara, Yoshifumi Sekine and Fumio Uchikoba, "Pulse-Type Hardware Inhibitory Neural Networks for MEMS Micro Robot Using CMOS Technology", Proceedings of 2011 International Joint Conference on Neural Networks pp. 1606-1611, 2011.

4) Kazuto Okazaki, Tatsuya Ogiwara, Dongshin Yang, Kentaro Sakata, Ken Saito, Yoshifumi Sekine and Fumio Uchikoba, "Development of pulse control type MEMS micro robot with hardware neural network", Proc. of The Sixteenth International Symposium on Artificial Life and Robotics 2011, pp. 938-941, 2011

5) Ken Saito, Akihiro Matsuda, Katsutoshi Saeki, Fumio Uchikoba, and Yoshifumi Sekine, "The relevance of the time domain to neural network models", Springer Verlag, Chapter7, pp. 117-133, 2011

6) Ken Saito, K. Okazaki, T. Kawakami, A. Matsuda, F. Uchikoba and Y. Sekine, "Pulse-Type Hardware CPG Model for MEMS Type Micro Robot", Proceeding of 2010 IEEJ International Analog VLSI Workshop, pp. 219-223, 2010.