Yoshinobu MAEDA, Ph.D.

Professor
Program: Electrical and Information Engineering
Area: Human Sciences and Assistive Technology
Undergraduate: Dept. of Biocybernetics

Professional Expertise

He has professional expertise in sociological and biological simulation, electronic design based on cybernetics, assistive technology for visual impairment, and human interface technology, etc. These are chiefly classified into three research fields; Biophysical Engineering (BE), Assistive Engineering (AE), and Social Engineering (SE).

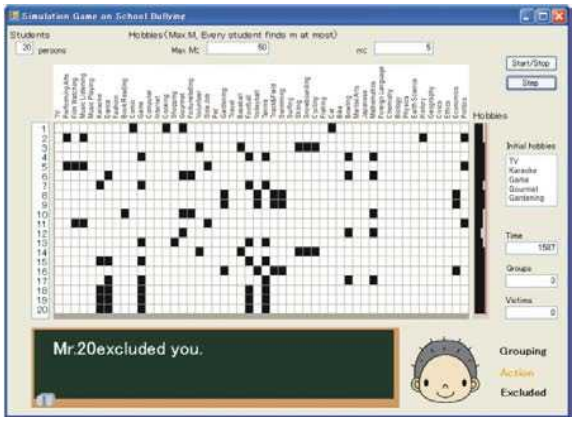


Fig. 1: Serious game of multi-agent bullying simulation. A player can interact with the other machine agents in artificial school, to learn to make friends with those who have similar interests, hobbies and tastes.

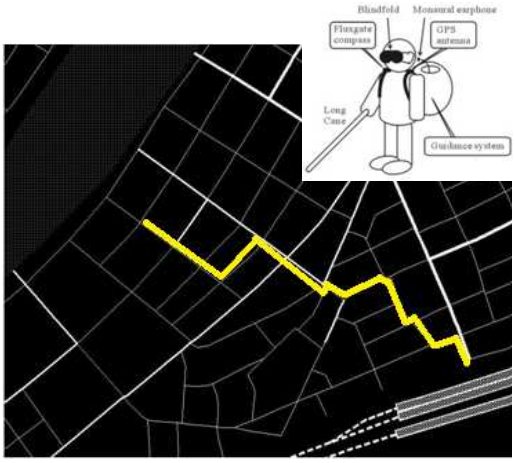


Fig. 2: Speech-guided gaming software virtually enabling us to walk around "*Bandai City*" in Niigata, to upgrade user's cognitive map. It would be effective for the visually impaired persons.

Research Fields of Interest

We aim to understand a lot of phenomena on social welfare and biological systems, such as dynamical mechanisms of bursting neuron, accelerative synchronization of cardiac cell firings, out-going behavior of the visually impaired, emergences of a school bullying and volunteer activity, through the modeling and its analyses. We now grope for an applicability of their models to assistive technology and biomedical engineering fields.

Education

1998: Ph.D., from Graduate School of Engineering Science, Osaka University, Japan
1993: Bachelor Eng. Degree, from Dept. of Biophysical Engineering, Osaka University, Japan

Professional Societies and Activities

1. Institute of Electronics, Information and Communication Engineers (IEICE)
2. Japanese Society for Medical and Biological Engineering (JSMBE)
3. Japanese Society for Wellbeing Science and Assistive Technology (JSWSAT)
4. Information Processing Society of Japan (IPSJ)
5. Institute of Electrical Engineers of Japan (IEEJ)

Awards

1. 2012 Best Research Award, Japanese BioMedical Engineering Symposium, September 2012.
2. 6th Human Communication Award, IEICE Human Communication Group, March 2009.
3. 5th Intelligent Cosmos Incentive Award, Intelligent Cosmos Academic Foundation, May 2006.

Major Publications

Papers (including conference papers)

*** Biophysical Engineering (BE)**

[1] A. Maruyama, T. Ichimura and Y. Maeda, "Hard-wired central pattern generator hardware network for quadrupedal locomotion based on neuron and synapse models," Adv. Biomed. Eng., vol.4, pp.48-54, 2015.

[2] H. Kojima, Y. Maeda and T. Nomrua, "Reproduction of four-leg animal gaits using a coupled system of simple hardware CPG models," IEICE Trans., Fundamentals, vol.E98-A, no.2, pp.508-509, 2015.

[3] Y. Maeda, M. Kubota, S. Kaneko, N. Ito, K. Tani and M. Miyakawa, "An effect of afferent stimulation using a hardware model of a central pattern generator based on neuronal networks," IEEE, CIBEC 2010, pp.171-174, 2010.

[4] Y. Maeda, "A hardware neuronal network model of a two-level central pattern generator," Trans. Jpn Soc. Med. Biol. Eng., vol.46, no.5, pp.496-504, 2008.

[5] Y. Maeda, E. Yagi and H. Makino, "Synchronization with low power consumption of hardware models of cardiac cells," BioSystems, vol.79, pp.125-131, 2005.

*** Assistive Engineering (AE)**

[6] Y. Maeda and T. Konishi, "Assist systems for traveling and planning for the visually impaired," Assistive Technology Research Series, vol.28, pp.132-138, 2011.

[7] Y. Maeda, K. Tani, N. Ito and M. Miyakawa, "Quantitative analysis on usability of button-input interfaces," IEICE Trans., Fundamentals, vol.E94-A, no.2, pp.789-794, 2011.

[8] Y. Maeda, T. Miyaji and M. Miyakawa, "Evaluation of the preset travel routes in a self-determination support system," 28th IEEE EMBS Annual International Conference, pp.5920-5923, 2006.

*** Social Engineering (SE)**

[9] K. Yamamoto and Y. Maeda, "Study on designing agent's behaviors using artificial school class game," 3rd Global Conference on Consumer Electronics, pp.202-203, 2014.

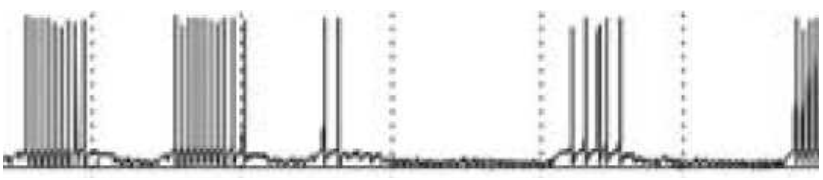
[10] K. Tani, Y. Maeda and N. Ito, "A study of the evacuation behavior simulation to investigate the effect of concessions and obstacles," IEEE SMC IWCIA 2013, pp.63-67, 2013.

[11] Y. Maeda, K. Tani, N. Ito and K. Kato, "Bullying phenomena reproduced by an artificial school class model," Proc. World Congress on Social Simulation 2012.

[12] N. Itou, Y. Maeda and T. Hayashi, "Evaluation of an economic model composed of producer agents," IEEE, 5th IWCIA, pp.122-126, 2009.

[13] Y. Maeda, N. Ito and M. Miyakawa, "An agent model and its gaming simulation reproducing the emergence of a minority," IEEE SMC 2008, pp.2413-2418, 2008.

[14] Y. Maeda, K. Anezaki and Y. Takeuchi, "An agent-based model for simulating the group dynamics involved in excluding a minority," Proc. 1st World Congress on Social Simulation, vol.1, pp.79-86, 2006.



Reconstruction of neuronal excitation (bio-information) using electronic circuits