



## Tatsuya YAMAZAKI, Ph. D.

Professor

Program: Electrical and Information Engineering

Area: Information Engineering

Undergraduate: Dept. of Information Engineering

### Professional Expertise

His professional expertise encompasses Quality of Service (QoS) control, Quality of Experience (QoE) management, sensor networks, facial image processing and human behavior understanding. He applies those knowledge and skills to several real-life issues and provides solutions to the issues.

### Research Fields of Interest

#### QoS/QoE

- Design of user utility functions
- Mapping between QoS and QoE

#### Sensor Networks and their Application

- SmartAgri (smart agriculture): environmental sensing aiming at quality improvement of pear products
- Human behavior understanding in a daily life using various sensor networks

#### Distributed and Cooperative Networks

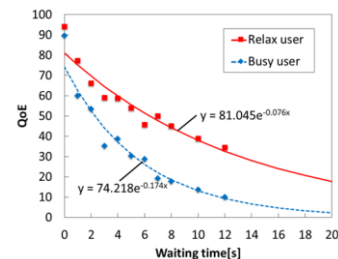
- P2P network to deliver user mental status
- Digital flash mob

#### Facial Image Processing

- First impression improver: advising first impression improving by facial image analysis
- Recognition of basic emotions from facial expression analysis

#### Human Behavior Understanding

- Development of disaster evacuation simulators including human psychology modeling



Mapping functions between QoE and user waiting time (QoS) for two different user types: the relaxed user type and the busy user type.



Environmental sensing by a micro sensor installed in a pear sack.

### Education

2002: Ph.D., Graduate School of Science and Technology, Niigata University, Japan

1989: M.E., Graduate School of Science and Technology, Niigata University, Japan

1987: B.E., Faculty of Engineering, Niigata University, Japan

### Professional Societies and Activities

1. Fellow, Institute of Electronics, Information and Communication Engineers (IEICE)
2. Members, the Institute of Electrical and Electronics Engineering (IEEE), USA
3. Members, Information Processing Society of Japan
4. Members, the Institute of Image Information and Television Engineers, Japan
5. Members, Japanese Academy of Facial Studies
6. Associate Editor, Journal of Circuits, Systems and Computers, World Scientific, 2008-Present

7. Member, IEICE Technical Committee on Information and Communication Systems for Safe and Secure Life, 2011-Present
8. Adviser, IEICE Technical Committee on Communication Quality, 2013-Present

## Awards

1. CTRQ2014 Best Paper Award, 2014
2. 2010 Research Award of IEICE Technical Committee on Communication Quality, 2011
3. IEEE Computer Society Certificate of Appreciation Award, 2002
4. 1995 Young Engineer Award of IEICE, 1996

## Major Publications

### Papers

- [1] "A Power Consumption Activity Based Heterogeneous SOA Framework for Context-Aware Home Services," H.-S. Cho, T. Kato, Tatsuya Yamazaki, and M. Hahn, *Journal of Circuits, Systems, and Computers*, Vol.20, No.7, pp.1211-1230, Nov. 2011.
- [2] "Construction and Experimental Evaluations of User-Centered Power Consumption Management Systems in Home Environments," Teng and T. Yamazaki, *International Journal of Energy, Information and Communications*, Vol.2, No.1, pp.1-15, Feb. 2011.
- [3] "AERO: Activity Extraction of a Home for Advance Context-Aware Home Service," H.-S. Cho, T. Yamazaki, and M. Hahn, *IEEE Transactions on Consumer Electronics*, Vol.56, No.3, pp.2011-2018, Aug. 2010.
- [3] "Appliance Recognition from Electric Current Signals for Information-Energy Integrated Network in Home Environments," T. Kato, H.-S. Cho, D. Lee, T. Toyomura, and T. Yamazaki, *International Journal of Assistive Robotics and Systems*, Vol.10, No.4, pp.51-60, Dec. 2009.
- [4] "Determining Location of Appliances from Multi-hop Tree Structures of Power Strip Type Smart Meters," H.-S. Cho, T. Yamazaki, and M. Hahn, *IEEE Transactions on Consumer Electronics*, Vol.55, No.4, pp.2314-2322, Nov. 2009.
- [5] "Robotic Companions for Smart Space Interactions," D. Lee, T. Yamazaki, and S. Helal, *IEEE PERVASIVE COMPUTING*, Vol.8, No.2, pp.78-84, April 2009.
- [6] "Real-life Experimental Data Acquisition in Smart Home and Data Analysis Tool Development," T. Yamazaki and T. Toyomura, *International Journal of Assistive Robotics and Systems*, Vol.9, No.4, pp.55-62, Dec. 2008.
- [7] "Moving Object Detection and Tracking in Open-air Test Bed," T. Yamazaki, T. Toyomura, K. Kayama, and S. Igi, *COMPUTING AND INFORMATICS*, Vol.27, No.5, pp.719-730, Sept. 2008.
- [8] "The Ubiquitous Home," T. Yamazaki, *International Journal on Smart Homes*, Vol.1, No.1, pp.17-22, Jan. 2007.
- [9] "A Reinforcement Learning Scheme for a Partially-Observable Multi-Agent Game," S. Ishii, H. Fujita, M. Mitsutake, T. Yamazaki, J. Matsuda, and Y. Matsuno, *Machine Learning*, Vol.59, No.1/2, pp.31-54, May 2005.
- [10] "QoS-Based Media Retrieval for Networked Digital Archives," T. Yamazaki, *Journal of Network and Computer Applications*, Vol. 25, Issue 4, pp.309-317, Oct. 2002.
- [11] "A Multimedia Service Composition Scheme for Ubiquitous Network," M. Kosuga, N. Kirimoto, T. Yamazaki, T. Nakanishi, M. Masuzaki, and K. Hasuike, *Journal of Network and Computer Applications*, Vol. 25, Issue 4, pp.279-293, Oct. 2002.
- [12] "Spline-based QoS Mapping Mechanisms for Hierarchical Multilevel QoS Models," T. Yamazaki, *IEICE Transaction on Fundamentals*, Vol.E85-A, No.6, pp.1349-1351, June 2002.
- [13] "A Scalable Resource Allocation Scheme over DiffServ towards End-to-end QoS Assurance," A. Alexelis, T. Yamazaki, and K. Hasuike, *IEICE Transaction on Communication*, Vol.E84-B, No.12, pp.3113-3123, Dec. 2001.
- [14] "MARM: An Agent-Based Adaptive QoS Management Framework," T. Yamazaki, M. Kosuga, N. Ogino, and J. Matsuda, *IEICE Transaction on Communication*, Vol.E84-B, No.1, pp.63-70, Jan. 2001.
- [15] "Adaptive QoS Management for Multimedia Applications in Heterogeneous Environments: A Case Study with Video QoS Mediation," T. Yamazaki and J. Matsuda, *IEICE Transaction on Communication*, Vol.E82-B, No.11, pp.1801-1807, Nov. 1999.
- [16] "Unsupervised Multispectral Image Classification Using MRF Models and VQ Method," T. Yamazaki and D. Gingras, *IEEE Transaction on Geoscience and Remote Sensing*, Vol.37, No.2, pp.1173-1176, March 1999.
- [17] "Image Classification Using Spectral and Spatial Information based on MRF Models," T. Yamazaki and D. Gingras, *IEEE Transaction on Image Processing*, Vol.4, No.9, pp.1333-1339, Sept. 1995.
- [18] "Adaptive Restoration of Degraded Binary MRF Images Using EM Method," T. Yamazaki, M.-N. Shirazi, and H. Noda, *IEICE Transaction on Information and Systems*, Vol.E76D, No.2, pp.259-268, Feb. 1993.

### Book Chapters

- [1] N.-Y. Chong and F. Mastrogiorganni Eds., July 2011, *Handbook of Research on Ambient Intelligence and Smart Environments: Trends and Perspectives*: Tatsuya Yamazaki, Assistive Technologies in Smart Homes, Information Science Reference, pp.165-181.
- [2] Vedran Kordic Ed., Oct. 2010, *Cutting Edge Robotics 2010*: Shuichi Nishio, Norihiro Hagita, Takehiro Miyashita, Takayuki Kanda, Noriaki Mitsunaga, Masahiro Shiomi and Tatsuya Yamazaki, Sensor network for structuring people and environmental information, In-Tech, Vukovar, Croatia, pp.367-378.
- [3] Kazuki Nishi Ed., Feb. 2010, *Multimedia*: Tatsuya Yamazaki, Study on Data-driven Methods for Image and Video Understanding, In-Tech, Vukovar, Croatia, pp.37-50.