

## **BIOGRAPHY**

**PERSONAL DATA** Kiyoharu Aizawa  
 Department of Information and Communication Eng.  
 The University of Tokyo  
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### **EDUCATION RECORD**

The University of Tokyo, Ph.D. EE. March 1988  
 The University of Tokyo, M.S. EE. March 1985  
 The University of Tokyo, B.S. EE. March 1983

### **EMPLOYMENT HISTORY**

#### **The University of Tokyo**

**Full Professor**, 2001 – present

Dept. of Information and Communication Eng. 2006 – present  
 Interfaculty Initiative for Information Studies 2009 – 2013  
 Dept. of Frontier Informatics 2001-2006

**Associate Professor**,

Dept. of Frontier Informatics, 1999 – 2001  
 Dept. of Information and Communication Eng. 1993-1999

**Lecture**

Dept. of Electrical Engineering 1989-1993

**Assistant Professor**

Dept. of Electronics Engineering 1988-1989

#### **Other Professional Appointments**

- **Executive Director**, foo.log Inc. 2010-present (A startup company which he co-founded based on the research outcome.)
- **Visiting Assistant Professor** of University of Illinois, Dept. of EECE, (on leave from the University of Tokyo), 1990-1992.

### **HONORS and AWARDS**

- **ITE Niwa Takayanagi Achievement Award 2013**, “For contributions to pioneering work and development of FoodLog based on image processing”.
- **IEICE Fellow, 2012**
- **ITE Niwa Takayanagi Best Paper Award, 2009** Journal of ITE Japan, “Motion Estimation for Time Varying Mesh and Similar Motion Retrieval”
- **Microsoft Digital Memories Award, 2005** “Life Log Platform for Continuous and Discrete Recording and Retrieval of Personal Media
- **ITE Niwa Takayanagi Best Paper Award, 2005** Journal of ITE Japan “Construction of a 3D City Model by Fusing Altimetry Data and Range Data “
- **IBM Japan Science Prize, 2002**, “For contribution to model-based coding and computational sensing”
- **ITE Niwa Takayanagi Best Paper Award, 2002** Journal of ITE Japan 2002 “Design and Implementation of Adaptive-integration-time Image Sensor”
- **IEICE Electronics Society Achievement Award, 1999** “For contribution to highly functional video processing”

- **ITE Fujio Frontier Award, 1999** “For contribution to computational sensors”
- **IEICE Best Paper Award, 1998** “Acquisition of an All-Focused Image by the Use of Multiple Differently Focused Images”
- **IEICE Achievement Award, 1992** “For contribution to pioneering research on model based coding”
- **IEICE Best Paper Award and Yonezawa Founders Medal (the Best of the Best papers), 1990** “A model-based analysis/synthesis image coding system”
- **Telecom System Technology Award, 1988**, “For the paper published in Globecom 87 Model Based Synthetic Image Coding System - Modeling A Person's Face and Synthesis of Facial Expressions”
- **IEICE Young Researcher Award 1986**
- **Niwa Memorial Medal 1986**, “For the paper published in IECE Trans. Adaptive Vector Quantization of Picture Signals in Discrete Cosine Transform Domain”

## MAJOR RESEARCH SUMMARY and SELECTED PUBLICATIONS

Kiyoharu Aizawa has been working in the area of image coding, processing, sensing and multimedia processing. He has published more than 180 journal papers and 330 international conferences. He also delivered more than 40 keynote and invited talks in international conferences, and 70 in domestic conferences.

He originally started his research in image & video coding, and he shifted his focus on smart sensing, and recently he is working on multimedia lifelog. Three major research achievements in these areas are described with his selected publications.

### (1) Model-based Coding: A Very Low Bitrate Video Compression (86 - mid 90s)

He is a pioneer of model based video coding, a very low bitrate video coding technique, which he first presented in 1986. A person's face, which is the most important element for teleconference is three-dimensionally modeled. The movement of the head and expressions of the face are encoded by the motion of the model, which is transmitted at a very low bitrate. At the decoder, the face is graphically synthesized. Making use of a photograph of the person, to which a 3D model template was deformed, the face was photorealistically synthesized. He showed less than 1kbps transmission would be enough for model-based coding. The photorealistic face animation was new even from the point of view of computer graphics of those days. Model based coding is the ultimate compression methodology.

The work was seminal and very influential to the video compression community. He spoke at a number of invited talks, and wrote several book chapters. “Model-based coding” became one of the categories of image processing. The video coding standardization activity MPEG4 of those days included a face model as its SNHC (Synthetic and Natural Hybrid Coding) component. He received various awards for this research, IEICE Best Paper Award and Yonezawa Founder's Medal, IEICE Achievement Award, IBM Japan Science prize among others.

1. K.Aizawa, H.Harashima, T.Saito, Model-Based Analysis Synthesis Image Coding (MBASIC) System, Signal Processing:Image Communication, Vol.1, No.2, pp.139-152, 1989.

2. K.Aizawa and T.S.Huang, Model-based image coding: Advanced coding techniques for very low bit rate applications, Proceedings of The IEEE, Vol.83, No.2, pp.259-271, 1995.

(2) Computational Sensors and Imaging (93 – mid 00)

Apart from complete digital image processing, he worked with computational sensors which process images on the sensor focal plane by mixture of analogue and digital processing. He proposed a compression sensor, whereby images are compressed on the focal plane. It was intended for very high pixel-rate readout, which was needed for images with very high spatiotemporal resolution. It was the world-first smart sensor for compression. He built them in both pixel parallel and column parallel architectures. He also made a computational sensor with integration time adaptively controlled pixel by pixel, which could realize intra-scene high dynamic range imaging. These prototypes were very influential to the research community of image sensors.

He also worked on novel methodology to produce visual effects using two differently focused images. He demonstrated that refocused images can be produced by a linear filtering of the two images.

For these works, he was awarded ITE Best Paper Award, ITE Fujio Frontier Award and IEICE Electronics Society Award.

3. K.Aizawa, H.Ohno, Y.Egi, T.Hamamoto, M.Hatori, H.Maruyama and J.Yamazaki, On Sensor Image Compression, IEEE Trans. Circuit and Systems for Video Technology, pp.543-548 Vol.7 No.3 June 1997.
4. K.Aizawa, Y.Egi, T.Hamamoto, M.Hatori, M.Abe, H.Maruyama, H.Otake, Computational image sensor for on sensor compression, IEEE Trans. Electron Devices, Vol.44 No.10 pp.1724-1730 Oct.1997.
5. K.Aizawa, Computational Sensors - Vision VLSI, IEICE Trans. Information and Systems, Vol.E82D, No.3, pp. 580-588, March, 1999.
6. T.Hamamoto and K.Aizawa, A computational image sensor with adaptive pixel-based integration time, IEEE Journal of Solid State Circuits, Vol.36 No.4 pp.580-585 April 2001.
7. K.Aizawa, K.Kodama, A.Kubota, Producing Object Based Special Effects by Fusing Multiple Differently Focused Images, IEEE Trans. CSVT, Vol.10 No.2 pp.323-330 March 2000
8. A.Kubota, K.Aizawa, Reconstructing arbitrarily focused images from two differently focused images using linear filters, IEEE Trans. Image Processing, Vol.14, No.11, pp.1848-1859, Nov. 2005

(3) Multimedia Lifelog, Multimedia FoodLog (98 – present)

For recent 15 years he has been working on multimedia lifelog technology, which captures and retrieves data produced in daily life of a person making use of various sensors including audio, video and contextual sensors. His work was one of the earliest contributions to lifelog. Data was captured by a prototype system which contained various sensors such as video, audio, GPS location, acceleration, and brain waves. In addition to a personal wearable system, he extended it in a home environment. He presented at a number of invited talks for these works. It opened a new area for multimedia applications.

FoodLog is an extension of his lifelog research. It focuses only on daily food intake of a person, which is the most important information of healthcare. He developed and opened for public use Multimedia FoodLog, whereby the users upload photos of their meals and a food diary is constructed using image-processing functions. FoodLog is the earliest and currently the only publicly available multimedia food-recording tool making use of image processing for dietary assessment.

For these seminal works, he was awarded Microsoft Digital Memories (Memex) Award and ITE Achievement Award. He is a co-founder of a startup company, foo.log Inc., which runs multimedia FoodLog service.

9. K.Aizawa, K.Ishijima, M.Shiina, Summarizing wearable video, IEEE ICIP2001, pp. III 398-401, 2001.
10. T.Hori, K.Aizawa, Context-based video retrieval system for the life-log applications , ACM Workshop on Multimedia Information Retrieval (MIR03), pp.31-38, Nov 7. 2003, Berkeley, CA
11. K.Aizawa, S.Kawasaki, D.Tancharoen, T.Yamasaki, Efficient retrieval of life log based on context and content, ACM Multimedia Workshop on Continuous Archival of Personal Experience 2004 (CARPE2004), pp.22-31, 2004.
12. D.Tancharoen, T.Yamasaki, K.Aizawa, Practical experience recording and indexing of life log video, ACM Multimedia Workshop on Continuous Archival of Personal Experience 2005 (CARPE2005), pp.61-66, Nov.11, 2005, Singapore
13. G.C.De Silva, T.Yamasaki, K.Aizawa, An Interactive Multimedia Diary for the Home, IEEE Computer, Vol.40, Issue 5, pp.52-59, 2007.
14. K. Kitamura, T. Yamasaki, Kiyoharu Aizawa, Food Log by Analyzing Food Images, ACM Multimedia 2008, pp.999-1000, 2008.
15. K.Aizawa, Food Log and Future Prospect of Life Log, Journal of IPSJ, Vol.50 No.7, pp. 592-597, 2009 (in Japanese).
16. K.Aizawa, Multimedia FoodLog: Diverse Applications from Self-Monitoring to Social Contributions, ITE Transactions on Media Technology and Applications, Vol.1, No.3, pp.214-219, 2013.
17. K.Aizawa, Y.Maruyama, H.Li, C.Morikawa, Food Balance Estimation by Using Personal Dietary Tendencies in a Multimedia Food Log, IEEE Trans. Multimedia, Vol.15, No.8, pp. 2176-2185, Dec.2013.
18. K.Aizawa, K.Maeda, M.Ogawa, Y.Sato, M.Kasamatsu, K.Waki, H.Takimoto, Comparative Study of the Routine Daily Usability of FoodLog: A Smartphone-based Food Recording Tool Assisted by Image Retrieval, Journal of Diabetes Science and Technology, pp.1-6, March 2014.

## **KEYNOTES, INVITED TALKS, PANELS at INTERNATIONAL CONFERENCES**

1. Kiyoharu Aizawa, A Multimedia Food Recording Tool Assisted by Image Retrieval :FoodLog (Plenary/Overview Talk), APSIPA Annual Summit and Conference 2014 Asia-Pacific Signal and Information Processing Association, Dec. 9-12, 2014, Siem Reap, Cambodia
2. Kiyoharu Aizawa, FoodLog: Multimedia Food Recording Tool (invited) International Conference on Artificial Reality and Telexistence (ICAT2013), Dec. 13, 2013, Tokyo
3. Kiyoharu Aizawa, Multimedia FoodLog: Easiest Way to Capture and Archive What We Eat (Keynote), International Conference on Multimedia Modeling (MMM2013), Jan.7-9, Huangshan, China
4. Kiyoharu Aizawa, FoodLog: Multimedia Food Recording Tool for Personal Dietary Assessment (invited), 2nd Greater New York Area Multimedia and Vision Meeting, June 15, 2012, New York, USA
5. K. Aizawa, Life log for specific needs, Next Generation of Virtual Reality, Todai Forum 2011, Oct. 18, 2011, IRCAM, Paris, France

6. Kiyoharu Aizawa, Next generation innovation and invention in Japan, Foodlog: Image retrieval for specific needs (invited), Student Forum ICME 2011, July 11, 2011 Barcelona, Spain
7. K.Aizawa, Foodlog: Image Retrieval for Specific Needs (invited), APSIPA Annual Summit and Conference 2010 Asia-Pacific Signal and Information Processing Association, Panel Session Towards Web-Scale Media Content Analysis and Retrieval - What has University Research Contributed to Commercial Systems and Social Network Services, Dec.14-17, 2010 Singapore
8. K.Aizawa, Panel :on Image and Retrieval (invited) , ACM Conference on Image and Video Retrieval CIVR 2010, July 5-7, 2010, Xian China
9. Kiyoharu Aizawa, Life Log : Where are We Now, and Where Can we Go? (keynote), ACM Conference on Image and Video Retrieval CIVR 2010, July 5-7, 2010, Xian China
10. Kiyoharu Aizawa, Life Log Technology (invited), Japan-Taiwan Microelectronics International Symposium -Innovations of Sensing Technologies-, 3-3, Oct.28-29, 2009, Tokyo
11. Kiyoharu Aizawa, Interactive Art Using Image Analysis (invited), JSPS-DFG Round Table on 'Cooperative Technology in future: Cognitive Technical Systems', Feb. 8-10, 2010, Tokyo
12. Kiyoharu Aizawa, Non-Conventional Media Interaction Paradigm: Content-centric or Human-centric ? (invited), ACM Multimedia Brave New Session (Panel), Oct. 19-24, 2009 Beijing, China
13. Kiyoharu Aizawa, Life Log: Generic Purposes or Specific Applications? (Invited), Int. Workshop on Advanced Multimedia Computing, Oct. 18, Huangshan, 2009, China
14. Kiyoharu Aizawa, R&D strategies of Industry in Asia Pacific Area, Panel Session Organizer, APSIPA Summit and Conference 2009, Oct. 4-7, Sapporo
15. Kiyoharu Aizawa, Compression of 3D Video: Various Approaches to Compress Time Varying Meshes (invited), 3DSA(3D Systems and Applications), Tue S08-02, Taiwan, Apr.27-30, 2009
16. K.Aizawa, 3D Video Processing: Compression and Retrieval of Time Varying Mesh (invited), Multi-View Image and Geometry Processing for 3D Cinematography, July 13-18, 2008, Banff, Canada
17. K.Aizawa, 3D Video: Compression and Retrieval of Time Varying Mesh (invited), Todai Week at Tsinghua University: Joint Workshop on New Generation Network Architecture, May,20, 2008
18. K.Aizawa, Life Log : Capture and Processing of Personal Experiences (keynote talk), International Conference on Computational Intelligence, Robotics and Autonomous Systems (CIRAS2007), p.1, 28-30 November 2007, Palmerston North, New Zealand
19. K.Aizawa, Panel, International Symposium on Digital Public Art 2007, Oct.14, 2007 Akihabara, Tokyo
20. K.Aizawa, Emerging Issues for Multimedia Analysis and Applications (invited), International Workshop on Multimedia Content Analysis and Mining (MCAM'07) (Multimedia Content Analysis, Management and Mining, Springer LNCS 4577), pp..14-15, June 30-July 1 2007, Shandong University, WeiHai, China
21. K.Aizawa, Capture and retrieval of life log (invited), IEEE ISWC Workshop on Ubiquitous Experience Media, pp.9-10, Oct.18 2005, Osaka
22. K.Aizawa, Digitizing Personal Experiences: Capture and Retrieval of Life Log (Keynote Talk), 11th Conference on Multi-Media Modeling (MMM2005), pp.10-15, 12-14 Jan. 2005, Melbourne

23. K.Aizawa, S.Kawasaki, T.Ishikawa, T.Yamasaki, Capture and retrieval of life log (invited), International Conference on Artificial Reality and Telexistence (ICAT2004), pp.49-55, Nov.30-Dec.2, 2004, Coex, Korea
24. K.Aizawa, Introduction of the University of Tokyo, new development of new campus and programs (keynote talk), Microsoft Research Asia Faculty Summit , Nov.8 2004 Beijing
25. K. Aizawa, Context-based video retrieval for life-log applications (invited), ATR Workshop on Ubiquitous Experience Media (UEM), pp.77-81, Sept.9-10, 2003
26. K.Aizawa, Video coding: present and future (invited), Int. Workshop Very Low Bitrate Video (VLBV2003), Visual Content Processing and Representation, Springer LNCS 2849 N.Garcia, J.M.Martinez, L.Salgado (eds), p.19, September 18,19, 2003, Madrid, Spain
27. K.Aizawa, Panel on Image Representation, Analysis and Coding, (invited), Int. Workshop on Very Low Bitrate Video, Oct.11-12, 2001 Athens Greece
28. K.Aizawa, Panel Discussion, Picture Coding Symposium, Apr.25-27, 2001, Korea, Seoul
29. K. Aizawa, Implicit 3D approach to image generation (invited), 10th workshop on Theoretical Foundations of Computer Vision, Multi-Image Search, Filtering, Reasoning and Visualization, Shloss Dagstuhl, Wadern, Germany, March 2000
30. K. Aizawa, K.Kodama, A.Kubota, Producing Object-based special effects by integrating multiple differently focused images: implicit 3D approach to image content manipulation (invited), IEEE International conference on image processing(ICIP99), Vol.2,pp.515-519, Oct. 24-28, 1999, Kobe, Japan
31. K. Aizawa, Image Processing: Past, Present and Future (invited), Panel Discussion, IEEE Int. Conf. Image Processing (ICIP98), Oct.4-7,1998, Chicago
32. K.Aizawa and K.Kodama, Generation of arbitrarily focused images and its application to object enhanced coding,(plenary), International Workshop on Synthetic-Natural Hybrid Coding and Three Dimensional Imaging, pp.1-2, Sep. 97, Rhodes, Greece
33. K. Aizawa, Y. Egi, T. Hamamoto, A. Motoki, M. Hatori, H. Maruyama and J. Yamazaki, Computational Image Sensors for Focal Plane Compression (invited), 4th Int. Conference on Soft Computing, pp.121-124 (IIZUKA96) Oct.96
34. K.Aizawa, Compression for Very High Pixel Rate Imaging & Processing (invited), MPEG4 and Virtual Reality Object Coding Symposium, July, 1995, Tokyo
35. K.Aizawa, Model based image coding (invited), SPIE Visual Communication and Image Processing (VCIP), Short Course, May 1995, Taipei
36. K.Aizawa, Model-based Image Coding (invited), Asilomar Conference on Signals, Systems and Computers, Nov. 1994
37. K.Aizawa, Model-based image coding (invited), SPIE Visual Communication and Image Processing, SPIE Vol.2308, pp.1035-1049, Oct. 1994, Chicago, USA
38. K.Aizawa, Model-Based Image Coding (invited), IEEE ISCAS, Circuit and Systems Tutorials, Vol.1 pp.180-194 (1994.5) London, UK
39. K.Aizawa, Model-Based Coding for Future Multimedia Communications (invited), First International Workshop on Mobile Multimedia Communications, P.3, Dec.7-10, 1993
40. K.Aizawa, Model Based Image Coding (invited), Korean Telecom Workshop on Very Low Bit Rate Video Compression, Nov. 1993

41. K.Aizawa, Model-Based Image Coding (invited), MPEG4 Seminar at Columbia University, N.Y., July, 1993
42. K.Aizawa, Box Lunch Panel: Future Image of Mobile Multimedia Communications (invited), The Fourth International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Yokohama, Sep.9-11,1993, Japan
43. K.Aizawa, Panel on Model-based and Fractal Image Coding (invited), IEEE Workshop on Very Low bitrate Video Compression, Urbana, IL, May 1993
44. K.Aizawa and T.S.Huang, Model-based image coding (invited), IJCAI Workshop, W-7 Aug.1991 Sydney Australia

### **KEYNOTES, INVITED TALKS at DOMESTIC CONFERENCES**

70 keynotes and invited talks at domestic conferences.  
In addition, a lot of talks at panels and seminars.

## **PUBLICATION**

### **Journal Papers**

1. Zhipeng Wu, Kiyoharu Aizawa, Very Fast Generation of Content-Preserved Photo Collage Under Canvas Size Constraint, *Multimedia Tools and Applications*, Springer, Nov. 22, 2014.
2. Toshihiko Yamasaki, Andrew Gallagher, Tsuhan Chen, Kiyoharu Aizawa, Geeotag-Based Travel Route Recommendation Featuring Seasonal and Temporal Popularity, *IEICE Trans. Information and Systems*, Vol.J97-D No.9 pp.1437-1444, 2014, (in Japanese)
3. Kiyoharu Aizawa, Kazuki Maeda, Makoto Ogawa, Yohei Sato, Mayumi Kasamatsu, Kayo Waki, Hidemi Takimoto, Comparative Study of the Routine Daily Usability of FoodLog: A Smartphone-based Food Recording Tool Assisted by Image Retrieval *Journal of Diabetes Science and Technology*, March 2014
4. Satoshi Ikehata, David Wipf, Yasuyuki Matsushita, Kiyoharu Aizawa, Photometric Stereo using Sparse Bayesian Regression for General Diffuse Surfaces, *IEEE Trans. Pattern Analysis and Machine Intelligence* Vol.36, Issue 9, pp.1816 - 1831, Sep. 2014.
5. Zhipeng Wu, Kiyoharu Aizawa Building Friend Wall for Local Photo Repository by Using Social Attribute Annotation *Journal of Multimedia*, Vol. 9, No. 1, pp.4-12, Jan. 2014
6. Zhipeng Wu, Kiyoharu Aizawa Self-Similarity-Based Partial Near-Duplicate Video Retrieval and Alignment, *International Journal of Multimedia Information Retrieval*, DOI 10.1007/s13735-013-0049-1, Dec. 2013
7. Rajib kumar jha, Rajlaxmi Chouhan, K. Aizawa Dark and Low Contrast Image Enhancement Using Dynamic Stochastic Resonance in DCT Domain, *APSIPA Transactions on Signal and Information Processing* (Cambridge University Press), Vol.2, pp.1-18, 2013  
doi:10.1017/ATSIP.2013.7"
8. Kiyoharu Aizawa, Yuto Maruyama, He Li, Chamin Morikawa, Food Balance Estimation by Using Personal Dietary Tendencies in a

- Multimedia Food Log, IEEE Trans. Multimedia , Vol.15, No.8, pp. 2176-2185, Dec.2013
9. Weilan Luo, Toshihiko Yamasaki, Kiyoharu Aizawa, Cooperative Estimation of Human Motion and Surfaces using Multiview Videos, Computer Vision and Image Understanding, Volume 117, Issue 11, pp.1560-1574, Nov. 2013
  10. Rajib kumar jha, Badal Soni, K. Aizawa., Logo Extraction from Audio Signals by Utilization of Internal Noise, IETE Journal of Research, Vol.59, No.3,pp.274-282, 2013,
  11. T. Yamasaki, K. Aizawa , SIFT-Based Non-blind Watermarking Robust to Non-linear Geometrical Distortions, IEICE TRANSACTIONS on Information and Systems , Vol.E96-D No.6 pp.1368-1375, June, 2013,
  12. Kiyoharu Aizawa, Multimedia FoodLog: Diverse Applications from Self-Monitoring to Social Contributions, ITE Transactions on Media Technology and Applications, Vol. 1, No. 3, pp.214-219, 2013,
  13. S.Kawamura, K.Aizawa, Estimation of Museum Visitors' Path from Sparse Location Information, IEICE Trans. Information and Systems, Vol.J96-D,No.4,.1083-1084, Apr. 2013, (in Japanese)
  14. Chamin Morikawa, Kiyoharu Aizawa, Iconic Visual Queries for Face Image Retrieval, Journal of Convergence, Volume 3, Number 3, pp.39-45, Sep. 2012,
  15. Rajib Kumar Jha, Badal Soni, Rajlaxmi Chouhan and Kiyoharu Aizawa, Improved Watermark Extraction from Audio Signals by Scaling of Internal Noise in DCT Domain, Advances in Computer Science, Engineering & Applications,, Vol. 166, pp. 235-243, 2012,
  16. Ji-Ho Cho, Kwan H. Lee, Kiyoharu Aizawa, Enhancement of Depth Maps with Alpha Channel Estimation for 3D Video, IEEE Journal of Selected Topics in Signal Processing, Vol. 6, No.5, 483-494 (2012) 10.1109/JSTSP.2012.2195156,
  17. H.Sugiyama, C.Morikawa, K.Aizawa, Segmentation of Food Images by Local Extrema and GrabCut, Journal of ITE, Vol.66, No.5, pp.J179-J181, May 2012,
  18. K.Aizawa, M.Ogawa, Multimedia Food Record for Dietary Assessment by Image Processing, Journal of IPSJ, Vol.52, No.11, pp.1382-1387, Nov. 2011 , (in Japanese)
  19. Gamhewage Chaminda de Silva, Kiyoharu Aizawa, Makoto Ogawa, Yohei Sato, FoodLog: Using Computer Vision and Social Networking to Support Dietary Assessment , The Journal of the Federation of Societies for Experimental Biology, FASEB J March 17, 2011 25:341.4,
  20. Ovgu Ozturk, Toshihiko Yamasaki, Kiyoharu Aizawa, Real-time tracking of multiple humans and visualization of their future footsteps in public indoor environments, Multimedia Tools and Applications, Special Issue on Intelligent Interactive Multimedia Systems and Services, Springer, Vol. 59 pp. 65-88 (2012) (DOI 10.1007/s11042-010-0691-z, Jan. 6 2011),
  21. Ren ´e M A Teixeira, Toshihiko Yamasaki, Kiyoharu Aizawa, Affective Determination of Video Clips by Low Level Audiovisual Features, Multimedia Tools and Applications, Springer, Vol. 61, No.1,pp.21-49 (2012) (DOI 10.1007/s11042-010-0702-0 Jan.11 2011),
  22. Go Irie, Takashi Satou, Akira Kojima, Toshihiko Yamasaki, Kiyoharu Aizawa, , Affective Audio-Visual Words and Latent Topic Driving Model for Realizing Movie Affective Scene Classification,, IEEE Trans. Multimedia, Vol.12, No.6, pp.523-535, Oct. 2010,
  23. K.Yamada, T.Yamasaki, K.Aizawa, Time-Varying Mesh Generation Based on Iterative Feedback between Silhouette Extraction and Geometry Modeling, IEICE Trans. Information and Systems, vol. J93-D, no, 8, pp.1533-1543, Aug. 2010, (In Japanese)



24. K.Hatada, H.Kawaji, T.Yamasaki, K.Aizawa, Summarization of LifeLog Data Based on Implicit Feedback from Personal Browsing History, *Journal of ITE*, Vol.64, No.2, pp.237-240, Feb. 2010, (in Japanese)
25. T.Yamasaki, T.Maeda, S.Nakagawa, K.Aizawa, Model-Based Analysis and Synthesis of Time-Varying Meshes by Extracting Skeleton Structure, *Journal of ITE*, Vol.63, No.10, pp.1459-1466, Oct. 2009, (in Japanese)
26. K.Aizawa, Food log and future prospect of life log, *Journal of IPSJ*, Vol.50 No.7, pp. 592-597, July 2009, (in Japanese)
27. G.C.De Silva, T.Yamasaki, K.Aiazawa, Sketch Based Spatial Queries for Retrieving Human Locomotion Patterns from Continuously Archived GPS Data, *IEEE Trans. Multimedia*, Vol. 11, No.7, pp.1240-1253, 2009
28. G.C.De Silva, T.Yamasaki, K.Aiazawa, Sketch-based Spatial Queries for the Retrieval of Human Locomotion Patterns in Smart Environments, *Advances in Multimedia*, Vol. 2009, Article ID 486465, 13 pages, 2009. doi:10.1155/2009/486465, Sep. 2009,
29. K.Aizawa, Life log for Practical Use, *Journal of ITE*, Vol.63, No.4, pp.445-448, Apr., 2009, (In Japanese)
30. T.Yamasaki, Y.,Hamazaki, K.Aizawa, Topology Change Detection and Interactive Mesh Editing for Time Varying Meshes, *Journal of ITE*, Vol.63, No.4, pp.516-523, Apr., 2009, (in Japanese)
31. Jianfeng Xu, Toshihiko Yamasaki, Kiyoharu Aizawa, Temporal Segmentation of 3D Video By Histogram-Based Feature Vectors, *IEEE Trans.CSVT*, Volume 19, Issue 6, Pages 870 - 881 June 2009
32. T.Yamasaki, K.Aizawa, Error Evaluation Model for 3Dc-Based Normal Map Compression and Its Application to Non-Linear Quantization, *Journal of ITE*, Vol.62, No.9 pp. 1427-1434 (2008.09) (in Japanese)
33. Y.Nishioka, T.Yamasaki, K.Aizawa, Human-tracking and Efficient Browsing for Outdoor Multi-Camera Surveillance Systems, *Journal of ITE*, Vol.62, No.7 pp. 997-1002 (2008.07) , (in Japanese)
34. Y.Nishioka, T.Yamasaki, K.Aizawa, Study on Human Tracking for Surveillance Video on Wide Area and Distributed Multi-Camera System, *IEICE Trans. Information and Systems*, Vol. J91-D No. 8 pp. 2029-2031 (2008.08), (in Japanese)
35. Pham Viet Quoc, T. Miyaki, T. Yamasaki, and K. Aizawa, Robust Object-Based Watermarking using Feature Matching, *IEICE Trans. Information and Systems*, Vol.E91, No.7 pp.2027-2034, July 2008
36. Jianfeng Xu, Toshihiko Yamasaki and Kiyoharu Aizawa, Motion Editing for Time-Varying Mesh, *EURASIP Journal on Advances in Signal Processing*, Volume 2009, Article ID 592812, 9 pages, doi:10.1155/2009/592812
37. R.Tadano, T.Yamasaki, K.Aizawa, Motion Estimation for Time-Varying Mesh and Similar Motion Retrieval, *Journal of ITE*, Vol.62, No.5 pp. 729-742 (2008.05), (in Japanese)
38. T. Yamasaki and K. Aizawa, Motion Segmentation for Time-Varying Mesh Sequences Based on Spherical Registration, *EURASIP Journal on Advances in Signal Processing*, Volume 2009, Article ID 346425, 9 pages doi:10.1155/2009/346425
39. W. Puangpakisiri, T. Yamasaki, and K. Aizawa, Environmental Change Detection in Wearble Video, *Journal of ITE*, pp.442-446, Vol.62, No.3, 2008,
40. T.Furusawa, Y. Watai, T.Yamasaki, K.Aizawa, Example-based Search Refining for View-based Web Page Retrieval, *Journal of ITE*, pp.209-215 Vol.62, No.2, 2008, (in Japanese)
41. M.S.Oh, K.Aizawa, Large scale image sensing by a group of smart image sensors, *Parallel Computing*, Volume 34 Issue 12, pp.710-717 ,December, 2008

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  327. K.Aizawa, H.Harashima and T.Saito, Model-Based Analysis Synthesis Image Coding System For Very Low-Rate Image Transmission, Picture Coding Symposium, pp.4.3-1-4.3-2 (Sep.1988)
  328. K.Aizawa, H.Morikawa, H.Harashima and T.Saito, Model-Based Analysis Synthesis Image Coding System for a Person's Face, International Workshop on 64 kbit/s Coding of Moving Video, 8-4 (Jun.1988)
  329. K.Aizawa, Y.Yamada, H.Harashima and T.Saito, Model Based Synthetic Image Coding System -Modeling A Person's Face and Synthesis of Facial Expressions, IEEE GLOBECOM'87, pp.2.3-1-2.3-5 (Nov. 1987)
  330. K.Aizawa, H.Harashima and T.Saito, Model Based Synthetic Image Coding System -Construction of 3d Model of Person's Face , Picture Coding Sympoisum, pp.50-51 June 1987
  331. T.Saito, H.Takeo, K.Aizawa, H.Harashima and H.Miyakawa, Adaptive Discrete Cosine Transform Image Coding Using Gain/Shape Vector Quantizers, IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP), pp.129-132 April 1986
  332. T.Saito, H.Takeo, K.Aizawa, H.Harashima and H.Miyakawa, Discrete Cosine Transform Coding Using Gain/Shape Vector Quantizers and Its Application to Color Image Coding , Picture Coding Sympoisum, pp.225-226 April 1986
  333. K.Aizawa, H.Harashima and H.Miyakawa, Adaptive Discrete Cosine Transform Coding with Vector Quantization for Color Images, IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP), pp.985-988 April 1986



334. K.Aizawa, H.Harashima and H.Miyakawa, Adaptive Discrete Cosine Transform Coding with Vector Quantization, Picture Coding Symposium, pp.239-240 April 1986

### **Papers presented in Domestic Conferences, Symposiums and Workshops**

1186 papers in total.

### **Books Authored, Book Chapters Authored, Books Edited**

1. Toshihiko Yamasaki and Kiyoharu Aizawa, Refinement of Visual Hulls for Human Performance Capture, Modeling and Simulation in Engineering (ISBN 978-953-307-959-2), Editor Catalin Alexandru, InTech Open Access Publisher, 2012
2. Tao Mei, Kiyoharu Aizawa, Video Recommendation , Internet Multimedia Search and Mining, Edited by. Xian-Sheng Hua, Marcel Worring, and Tat-Seng Chua, Bentham Science Publishers, 2010
3. K.Aizawa and T.Hori, Context-based Video Retrieval for Life-Log Applications (Multimedia Content and Semantic Web: Standard, Methods, Tools, Edited by G.Stamou and S.Kollias), Jon Wiley & Sons, Ltd pp.373-387, 2005
4. K.Aizawa, Computational Sensors (Chap 6) Image Processing; Algorithms, Sensors and Applications, Marcel Dekker, 2004
5. K. Aizawa, K.Sakaue, Y.Suehiro (Editors), Image Processing; Algorithms, Sensors and Applications, Marcel Dekker, 296pages, 2004
6. T.Ichikawa, S.Iwasawa, K.Yamada, T.Kanamaru, T.Naemura, K..Aizawa, S.Morishima, T.Saito, Three-Dimensional Image Capturing and Representation for Multimedia Ambiance Communications (Chap.10), Three-Dimensional Television, Video, and Display Technologies, Editors :B.Javidi and F.Okano Springer, 2002
7. T.Komatsu, T.Saito, K.Aizawa,, Super-resolution from multiple aperture (Chap.9), Super-Resolution Imaging, S. Chaudhuri Editor, Kluwer Academic, 2001
8. K.Aizawa, A.Kubota, K.Kodama,, Implicit 3D approach to image generation: Object based visual effects by linear processing of multiple differently focused images,, Multi-Image Search and Analysis, R. Klette, Th. Huang, G. Gimel'farb (eds.), LNCS 2032, pp.226-237, Springer, 2001
9. K.Aizawa, Model-Based Video Coding (Chap. 8) Video Coding: A Second Generation Approach, Edited by L.Torres, Kluwer Academic Publishers, 1996
10. K.Aizawa, Model-Based Coding (Chap. 10), Handbook of Visual Communications, Edited by J.W.Woods and M.Hang Editor, Academic Press, 1995
11. K.Aizawa, C.S.Choi, H.Harashima and T.S.Huang, Human Facial Motion Analysis and Synthesis with Application to Model-Based Image Coding (Chap. 10),,, Motion Analysis and Image Sequence Processing, M.I.Sezan and J.L.Lagendijk Editor, Kluwer Academic Publishers, 1993

In addition to the above, books and chapters authored in Japanese.

- 2 Japanese books authored,
- 1 Japanese book edited,
- 15 Japanese book chapters authored.

## SCHOLARLY ACTIVITY

### **BoG, Director, Chair (Selected)**

- APSIPA BoG at Large (2009- present )
- VRSJ, Director (2012-present)
- ITE Japan , Director (1999-2001, 2003-2005, 2014-present)
- IEEE Japan Chapter, Student Activity Committee Chairman (2001-2002)
- IEICE Human Communication Group, Chair (2006)
- IEICE Image Engineering Technical Committee, Chair (2005-2006)

### **Editorial Board (Selected)**

- IEEE Trans. Image Processing, Associate Editor (Dec.2014-present)
- IEEE Trans. Image Processing, Associate Editor (2008-2013)
- IEEE Trans. Multimedia, Associate Editor (2005-2008)
- IEEE Trans. CSVT, Associate Editor (1995-2005)
- ACM Trans. Multimedia Computing Communications and Applications  
Associate Editor (2008.11- present )
- Journal of Visual Communication and Image Representation,  
Editorial Board (1996-present)
- International Journal of Multimedia Retrieval , Editor (2011.Oct- present)
- APSIPA Trans. Signal and Information Processing Editor (2012-present)
- ITE Trans. Media Technology and Applications,  
Associate Editor (2012-present)
- ITE Journal Editor in Chief (2008-2010)

### **Conference Chair (Selected)**

- APSIPA ASC 2013 General Co-Chair
- ACM Workshop CEA 2013 General Chair
- IEEE VCIP2012 General Co-Chair
- ACM Multimedia 2012 General Co-Chair
- VSMM2010 Program Co-Chair
- PCS2010 Program Vice Chair
- MMM 2008 General co-Chair
- ACM CIVR 2007 Program Co-Chair 2007
- ACM Multimedia 2005 Short Paper Track Co-Chair
- PCM2004 Technical Program Co-Chair
- SPIE VCIP 1999 General co-Chair
- Int. Workshop on Very Low Bitrate Video 1999, Program co-Chair
- PCS Japan, Conference Chair (1997-98), General Chair (2009- Present)
- Digital Content Symposium, Japan Chair (2004-2009)

### **Organization Committee Member (Selected)**

- IEEE IVMS2013 Liaison, Special session organizer

- ACM Multimedia 2013 Tutorial Co-Chair
- IEEE ICASSP 2012 Tutorial Co-Chair
- IEEE ICME 2010 Demo Session Co-Chair
- ACM CIVR2010 Special Session Co-Chair
- IEEE ICASSP 2009 Tutorial Chair
- ACM Multimedia 2009 Workshop Co-Chair
- IEEE ICIP2008 Asia Liason
- IEEE ICME 2008 Special Session Co-Chair & Track Chair
- IEEE ICASSP2007 Publicity co-Chair
- IEEE ICIP2006 Organizing Committee Member: Far East Liaison
- IEEE ICME 2004 Publicity Chair (2004)
- IEEE ICIP 2003, Organizing Committee Membe: Far East Liaison
- IEEE ICIP 2002, Organizing Committee Member: Far East Liaison
- IEEE ICIP 1999 Special Session Chair
- IEEE ICIP 1998 , Organizing Committee Member: Far East Liaison

### **Technical Program Committee (Selected)**

- IEEE ICIP 2014
- IEEE ICME 2014
- IEEE ICASSP 2014
- IEEE ICIP 2013
- IEEE ICASSP 2013
- IEEE ICME2013 Theme track "Multimedia for Humanity" Area Chair
- International Workshop on Lifelogging for Pervasive Health 2013
- ACM Multimedia 2011 Program Area co-Chair
- IEEE ICIP2011
- ACM Multimedia 2010
- 3D Systems and Applications 2010
- MMM2010
- ACM Multimedia 2009 Program Committee Member
- IEEE ICME2009
- IEEE ICIP2009
- ACM MIR2008
- IEEE ICME2008
- IEEE ICIP2008
- IEEE ICASSP2008
- ACM Multimedia 2008 Program Committee Member
- ACM Multimedia 2007 Program Committee Member
- IEEE ICIP2007 Program Committee Member
- IEEE ICME2007 Program Committee Member
- IEEE ICASSP2007
- ACM Multimedia Workshop CARPE2006, Program Committee Member
- ACM Multimedia 2006 Program Committee member
- IEEE ICME 2006 Program Committee Member
- IEEE ICIP 2006 Program Committee Member
- IEEE ICASSP 2006
- IEEE ICME2005 Program Committee Member
- IEEE ICIP2005 Program Committee Member
- ACM Multiledia Workshop, CARPE2005, Program Committee Member
- ACM Multimedia 2004, Program Committee member
- CIVR2004
- CIVR2003
- ICPR 2002
- IEEE ICME2001

- SPIE VCIP 1997 Program Committee Member
- IEEE ICIP 1996
- IEEE ISCAS 1996
- SPIE VCIP 1996
- IEEE Workshop on Face and Gesture Automatic Recognition 1995
- IEEE Workshop on Motion of Nonrigid and Articulated Objects 1994
- Picture Coding Symposium 1991

### **Steering Committee Members, and Others (Selected)**

- MMM Steering Committee Member (2014.1-present)
- ACM SIGMM Best PhD Thesis Award Committee Chair (2014)
- Picture Coding Symposium , Steering Committee Member (2006 – present)
- IEEE SP Society, IMDSP Technical Committee Member (Image and Multi-Dimensional Signal Processing, currently IVMSP ) (2000~2005)
- Science Council of Japan, Member (2011 – present)

## **SERVICE**

### **School Affairs (Selected from the recent ones)**

- Department Chair of Dept. of Information and Communication Eng., 2014-2016
- Adviser to the President, 2013.

### **Government (Ommitted)**