

## Curriculum Vitae

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### 1. Education

Ph.D., Mathematical Engineering and Instrumentation Physics, University of Tokyo, Tokyo, Japan, 1978

M. S., Mathematical Engineering and Instrumentation Physics, University of Tokyo, Tokyo, Japan, 1970

B. S., Mathematical Engineering and Instrumentation Physics, University of Tokyo, Tokyo, Japan, 1968

### 2. Honors and Awards

- 1975 Yonezawa Prize (IEICE)
- 1985 Sato Paper Award (ASJ)
- 1987 Sato Paper Award (ASJ)
- 1988 Best Paper Award (IEICE)
- 1989 Senior Award (Best Paper Award) (IEEE)
- 1989 Achievement Award from the Japanese Minister of Science and Technology
- 1990 Book Award (IEICE)
- 1993 Best Paper Award (IEICE)
- 1993 Distinguished Lecturer (IEEE)
- 1993 Fellow (IEEE)
- 1996 Fellow (Acoustical Society of America)
- 2001 Fellow (IEICE)
- 2001 Mira Paul Memorial Award (Acoustical Foundation, India)
- 2003 Best Paper Award (IEICE)
- 2003 Achievement Award (IEICE)
- 2005 Signal Processing Society Award (IEEE)
- 2006 Achievement Award from the Japanese Minister of Education, Culture, Sports, Science and Technology
- 2006 Purple Ribbon Medal from Japanese Emperor
- 2008 Distinguished Achievement Award (IEICE)
- 2008 Fellow (ISCA)
- 2009 Medal for Scientific Achievement (ISCA)

- 2010 James L. Flanagan Speech and Audio Processing Award (IEEE)
- 2012 NHK Broadcast Cultural Award
- 2012 Distinguished Lecturer (ISCA)
- 2013 Okawa Prize
- 2016 Accredited as Person of Cultural Merit by Japanese Government

IEEE: The Institute of Electrical and Electronics Engineers

ISCA: International Speech Communication Association

IEICE: The Institute of Electronics, Information and Communication Engineers, Japan

ASJ: The Acoustical Society of Japan

NHK: Nippon Hoso Kyokai (Japan Broadcasting Corporation)

### **3. Academic and Industrial Experiences**

- 1970 – 1978 NTT (Nippon Telegraph and Telephone) Musashino Electrical Communication Labs, Researcher
- 1978 – 1979 AT&T Bell Labs, Visiting Researcher
- 1979 – 1982 NTT Basic Research Labs, Senior Researcher
- 1982 – 1984 NTT R&D Bureau, Senior Staff Engineer, Personnel and International Affairs
- 1984 – 1986 NTT Basic Research Labs, Senior Researcher
- 1986 – 1989 NTT Basic Research Labs, Head of 4<sup>th</sup> Research Section
- 1989 – 1991 NTT Human Interface Labs, Director of Speech & Acoustics Lab
- 1991 – 1997 NTT Human Interface Labs, Research Fellow, Director of Furui Research Lab
- 1994 – 1997 Tokyo Institute of Technology, Visiting Professor, Department of Computer Science
- 1997 – 2011 Tokyo Institute of Technology, Professor, Department of Computer Science
- 2007 – 2009 Tokyo Institute of Technology, Dean, Graduate School of Information Science and Engineering
- 2009 – 2011 Tokyo Institute of Technology, Director of University Library
- 2011 – 2012 Tokyo Institute of Technology, Institute Professor and Director of University Contents Utilization Center
- 2011 – 2015 Tokyo Institute of Technology, Professor at Academy for Global Leadership
- 2011 – present Tokyo Institute of Technology, Professor Emeritus
- 2013 – present Toyota Technological Institute at Chicago, President
- 2017 – present Tokyo Institute of Technology, Honorary Professor

### **4. Professional Experiences**

- 1987 – 1990 Member, IEEE Speech Technical Committee
- 1989 – 2007 Board member, Acoustical Society of Japan (ASJ)
- 1991 – 1992 Chair, IEICE and ASJ Speech Technical Committee
- 1992 – 1994 Editor, IEICE Trans. Fundamentals of Electronics, Communications and Computer Sciences

1993 – 1994	Distinguished Lecturer, IEEE Signal Processing Society
1995 – 1999	Member, IEEE Press Editorial Board
1995 – 2002	Member, IEEE Multimedia Signal Processing Technical Committee
1997 – 1999	Editor, Journal of the ASJ
1997	General Chair, IEEE Workshop on Automatic Speech Recognition and Understanding
1998 – 2001	Editor, Journal of Speech Communication
2001 – 2003	President, ASJ
2001 – 2003	Chair, Steering Committee on IEEE Trans. Mobile Computing
2001 – 2003	IEEE Signal Processing Society Board of Governor
2001 – 2005	President, International Speech Communication Association (ISCA)
2001 – 2005	President, Permanent Council on International Conferences on Spoken Language Processing (PC-ICSLP)
2002 – 2004	Editor, English Journal of IEICE Trans. Information and Systems
2002 – 2005	Member, IEEE Jack Kilby Signal Processing Medal Committee
2003 – 2005	Member, IEEE James L. Flanagan Speech and Audio Processing Award Committee
2004 – 2008	Board member, IEICE
2005 – 2007	Member, IEEE Edison Medal Committee
2007	General Chair, IEEE Workshop on Automatic Speech Recognition and Understanding
2009 – 2013	Board member, ASJ
2009 – 2012	President, Asia-Pacific Signal and Information Processing Association
2010 – 2012	Chair, IEEE James L. Flanagan Speech and Audio Processing Award Committee
2011 – 2013	Member, IEEE Signal Processing Society Fellow Reference Committee
2012 – 2015	Member, IEEE Corporate Recognition Award Committee
2012 – 2015	Member, IEEE Signal Processing Society Nominations and Appointments Committee
2012 – 2015	Member, IEEE Jack S. Kilby Signal Processing Medal Committee
2012 – 2015	Board member, Asia-Pacific Signal and Information Processing Association
2013 – 2015	Member, IEEE Fourier Award for Signal Processing Committee
2014 – 2016	Chair, IEEE Signal Processing Society Fellow Reference Committee
2017 – 2020	Member, IEEE James H. Mulligan, Jr. Education Medal Committee

Editorial Board member of IEEE Signal Processing Magazine, IEEE Journal of Selected Topics in Signal Processing, Journal of Computer Speech and Language, and the Journal of Speech Communication. Guest Editor of many special issues of IEEE journals. (Past and present)

## 5. Research Interests

Analysis of speaker characterization information in speech waves and its application to speaker recognition as well as inter-speaker normalization and adaptation in speech recognition;

vector-quantization-based speech recognition algorithm; spectral dynamic features for speech recognition; speech recognition algorithms that are robust against noise and distortion; algorithms for Japanese large-vocabulary continuous-speech recognition; automatic speech summarization algorithms; multimodal human-computer interaction systems; automatic question-answering systems; and analysis of the speech perception mechanism. He has authored or coauthored over 1,000 published articles.

## **6. Selected Publications in Books and Refereed Journals**

### **Books**

1. S. Furui, "Digital Speech Processing, Synthesis, and Recognition", Marcel Dekker (1989, revised in 2000)
2. S. Furui and M. M. Sondhi (Ed.), "Advances in Speech Signal Processing", Marcel Dekker (1992)
3. S. Furui, "Digital Speech Processing", Tokai University Press (1985) (in Japanese)
4. S. Furui, "Acoustics and Speech Processing", Kindai-Kagaku-Sha (1992, revised in 2006) (in Japanese)
5. S. Furui, "Speech Information Processing", Morikita (1998) (in Japanese)
6. S. Furui and Y. Sakai, "Image and Speech Processing Technology", Denpa-Shinbun-Sha (2004) (in Japanese)
7. S. Furui, "Creating computers to converse with human", Kadokawa (2009) (in Japanese)

### **Refereed Journals and Book Chapters Written in English**

1. Sadaoki Furui, Fumitada Itakura and Shuzo Saito, "Talker Recognition by Longtime Averaged Speech Spectrum", *Electronics and Communication in Japan*, Vol. 55-A, No.10, pp. 54-61, 1972
2. Sadaoki Furui, Fumitada Itakura and Shuzo Saito, "Effect of Long-term Variations on Talker Recognition by Averaged Speech Spectrum", *J. Acoustical Society of Japan*, Vol. 28, No. 8, pp. 414-415, 1972
3. Sadaoki Furui and Fumitada Itakura, "Talker Recognition by Statistical Features of Speech Sounds", *Electronics and Communication in Japan*, Vol. 56-A, No. 11, pp .62-71, 1973
4. Sadaoki Furui, "An Analysis of Long-term Variation of Feature Parameters of Speech and its Application to Talker Recognition", *Electronics and Communication in Japan*, Vol. 57-A, No. 12, pp. 34-42, 1974
5. Sadaoki Furui, "A Training Procedure for Isolated Word Recognition Systems", *IEEE Transactions on Acoustic, Speech and Signal Processing*, Vol. ASSP-28, No. 2, pp. 129-136, 1980
6. Sadaoki Furui, "Cepstral Analysis Technique for Automatic Speaker Verification", *IEEE Transactions*, Vol. ASSP-29, No. 2, pp. 254-272, 1981
7. Sadaoki Furui, "Comparison of Speaker Recognition Methods Using Statistical Features and Dynamic Features", *IEEE Transactions on Acoustic, Speech and Signal Processing*,

Vol. ASSP-29, No. 3, pp. 342-350, 1981

8. Noboru Sugamura and Sadaoki Furui, "Isolated Word Recognition Using Strings of Phoneme-Like Templates (SPLIT)", *J. Acoust. Soc. Jpn.* Vol. 5, No. 4, pp. 243-252, 1984
9. Sadaoki Furui, "Speaker Independent Isolated Word Recognition Using Dynamic Features of Speech Spectrum", *IEEE Transactions on Acoustic, Speech and Signal Processing*, Vol. ASSP-34, No. 1, pp. 52-59, 1986
10. Sadaoki Furui, "Research on Individuality Features in Speech Waves and Automatic Speaker Recognition Techniques", *Speech Communication*, Vol. 5, pp. 183-197, 1986
11. Sadaoki Furui, "On the role of Spectral Transition for Speech Perception", *J. Acoust. Soc. Am* Vol. 80, No. 4, pp. 1016-1025, 1986
12. Sadaoki Furui, "Speaker-Independent Isolated Word Recognition Based on Dynamics-Emphasized Cepstrum", *The Transactions of the IECE of Japan*, Vol. E69, No. 12, pp. 1310-1317, 1986
13. Sadaoki Furui, "A VQ-Based Preprocessor Using Cepstral Dynamic Features for Speaker-Independent Large Vocabulary Word Recognition", *IEEE Transactions on acoustic, speech and signal processing*, Vol. 36, No. 7, pp. 980-987, 1988
14. Sadaoki Furui, "Unsupervised Speaker Adaptation Based on Hierarchical Spectral Clustering", *IEEE Transactions on acoustic, speech and signal processing*, Vol. 37, No. 12, pp.1923-1930 1989
15. Sadaoki Furui, "Speaker Dependent Feature Extraction, Recognition and Processing Techniques", *Speech Communication*, Vol. 10, pp. 505-520, 1991
16. Sadaoki Furui, "Speech Recognition Using VQ-Codebooks Representing Hierarchical Spectral Dynamics", *Electronics and Communications in Japan, Part 3*, Vol. 74, No. 7, pp. 105-114, 1991
17. Shoichi Matsunaga, Shigeru Homma, Shigeki Sagayama and Sadaoki Furui, "Continuous Speech Recognition Using a Dependency Grammar and Phoneme-Based HMMS", *IEEE Transactions ASSP*, Vol. E74, No.7, pp.1826-1833, 1991
18. Sadaoki Furui, "Recent Advances in Speech Recognition Technology at NTT Laboratories", *Speech Communication*, Vol. 11, pp. 195-204, 1992
19. Fikret S. Gurgen, Shigeki Sagayama and Sadaoki Furui, "A Study of Line Spectrum Pair Frequency Representation for Speech Recognition", *IEICE Trans. Fundamentals*, Vol. E75-A, No.1 pp. 98-102, 1992
20. Tomoko Matsui and Sadaoki Furui, "Comparison of Text-Independent Speaker Recognition Methods Using VQ-Distortion and Discrete/Continuous HMMS", *IEEE Transactions on Speech and Audio Processing*, 1994
21. Kiyohiro Shikano, Tomokazu Yamada, Takeshi Kawabata, Shoichi Matsunaga, Toshiyuki Hanazawa and Sadaoki Furui, "Dictation Machine Based on Japanese Character Source Modeling", *International Journal of Pattern Recognition and Artificial Intelligence*, Vol. 8, No. 1, pp. 181-196, 1994
22. Tomoko Matsui and Sadaoki Furui, "Likelihood Normalization for Speaker Verification Using a Phoneme- and Speaker-Independent Model", *Speech Communication*, Vol. 17, pp. 109-116, 1995
23. Junichi Takahashi, Noboru Sugamura, Tomohisa Hirokawa, Shigeki Sagayama and

- Sadaoki Furui, "Interactive Voice Technology Development for Telecommunications Applications", *Speech Communication*, Vol. 17, pp. 287-301, 1995
24. Yasuhiro Minami, Kiyohiro Shikano, Satoshi Takahashi, Tomokazu Yamada, Osamu Yoshioka and Sadaoki Furui, "Large-Vocabulary Continuous Speech Recognition Algorithm Applied to a Multi-Modal Telephone Directory Assistance System", Vol. 15, pp. 301-310, *Speech Communication*, 1995
  25. Tomoko Matsui, Tomohito Kannno and Sadaoki Furui, "Speaker Recognition Using HMM Composition in Noisy Environments", *Computer Speech and Language*, Vol. 10, pp. 107-116, 1996
  26. Sadaoki Furui, "Recent Advances in Speaker Recognition", *Pattern Recognition Letters*, Vol. 18, pp. 859-872, 1997
  27. Sadaoki Furui, "The Past, Present, and Future of Speech Processing", *IEEE Signal Processing Magazine*, pp. 24-48, 1998
  28. Tomoko Matsui and Sadaoki Furui, "N-Best-Based Unsupervised Speaker Adaptation for Speech Recognition", *Computer Speech and Language*, Vol. 12, pp. 41-50, 1998
  29. Katsutoshi Ohtsuki, Tatsuo Matsuoka, Takeshi Mori, Kotaro Yoshida, Yuichi Taguchi, Sadaoki Furui and Katsuhiko Shirai, "Japanese Large-Vocabulary Continuous-Speech Recognition Using A Newspaper Corpus And Broadcast News", *Speech Communication*, Vol. 28, pp. 155-166, 1999
  30. Toru Imai, Yohei Saito, Akio Ando and Sadaoki Furui, "A Language Model for Recognition of Continuous Uttered Sentences", *J. Acoust. Soc. JPN*, (E)21, 2(2000), pp. 111-113, 2000
  31. Biing-Hwang Juang, and Sadaoki Furui, "Automatic Recognition and Understanding of Spoken Language –A First Step Toward Natural Human-Machine Communication", *IEEE* Vol. 88, No. 8, pp. 1142-1165, 2000
  32. William J.J. Roberts and Sadaoki Furui, "Maximum Likelihood Estimation of K-Distribution Parameters via the Expectation-Maximization Algorithm", *IEEE Transaction on Signal Processing*, Vol. 48, No. 12, pp. 3303-3306, 2000
  33. Zhipeng Zhang, Sadaoki Furui and Katsutoshi Ohtsuki, "On-Line Incremental Speaker Adaptation For Broadcast News Transcription", *Speech Communications*, Vol. 37, pp. 271-281, 2002
  34. Katsutoshi Ohtsuki, Tatsuo Matsuoka, Shoichi Matsunaga, and Sadaoki Furui, "Topic Extraction Based on Continuous Speech Recognition in Broadcast News Speech", *IEICE TRANS INF & SYST*, Vol. E85-D, No. 7, pp. 1138-1144, 2002
  35. Sadaoki Furui, "Toward Spontaneous Speech Recognition and Understanding", *Pattern Recognition in Speech and Language Processing*, Wu Chou, Biing Hwang Juang (Eds.), pp. 191-227, 2003
  36. Sadaoki Furui, "Toward Robust Speech recognition and Understanding", *Proc.TSD2003*, [Springer-Verlag], V.Matousek, P.Mautner (Eds.) pp. 2-11, 2003
  37. Chiori Hori, Sadaoki Furui, Rob Malkin, Hua Yu and Alex Waibel, "A Statistical Approach to Automatic Speech Summarization", *EURASIP Journal on Applied Signal Processing*, pp. 128-139, 2003
  38. Chiori Hori, and Sadaoki Furui, "A New Approach to Automatic Speech Summarization",

- IEEE Transaction on Multimedia, Vol. 5, No. 3, pp. 368-378, 2003
39. Sadaoki Furui, Daisuke Itoh and Zhipeng Zhang, "Neural-Network-Based on HMM for Noisy Speech Recognition", *Acoust. Sci. & Tech.* Vol.24, 2, pp. 69-75, 2003
  40. Chiori Hori and Sadaoki Furui, "Speech Summarization: An Approach through Word Extraction and a Method for Evaluation", *IEICE TRANS. INF & SYST*, Vol. E87-D, No. 1, pp.15-25, 2004
  41. Sadaoki Furui, Tomonori Kikuchi, Yousuke Shinnaka and Chiori Hori, "Speech-to-Text and Speech-to-Speech Summarization of Spontaneous Speech", *IEEE Transactions on Speech and Audio Processing*, Vol. 12, No. 4, pp. 401-408, 2004
  42. Zhiheng Zhang and Sadaoki Furui, "Piecewise-Linear Transformation Based HMM Adaptation for Noisy Speech", *Speech Communication*, Vol. 42, pp. 43-58, 2004
  43. Koji Iwano, Takahiro Seki, and Sadaoki Furui, "Noise Robust Speech Recognition Using  $F_0$  Contour Information", *IEICE Transactions on Inf. & Syst.*, Vol.E-87-D, No.5, pp.1102-1109, 2004
  44. Takahiro Shinozaki and Sadaoki Furui, "Dynamic Bayesian Network-Based Acoustic Model Incorporating Speaking Rate Effects", *IEICE Transactions on Inf. & Syst.*, Vol.E-87-D, No .10, pp. 2339-2347, 2004
  45. Mate Szarvas and Sadaoki Furui, "Phonology and Morphology Modeling in a very Large Vocabulary Hungarian Dictation System", *IEICE Transactions on Information and Systems*, Vol. E87-D, No. 12, pp. 2791-2800, 2004
  46. Satoshi Tamura, Koji Iwano and Sadaoki Furui, "Multi-Modal Speech Recognition Using Optical-Flow Analysis for Lip Images", *Journal of VLSI Signal Processing* 36, pp. 117-124, 2004
  47. Koji Iwano, Masahiro Yamada, Taro Togawa and Sadaoki Furui, "Prosody Control for HMM-Based Japanese TTS", *Text to Speech Synthesis - New Paradigms and Advances -*, Shrikanth Narayanan and Abeer Alwan (Eds.), Prentice Hall PTR, New Jersey, ISBN 0-13-145661-X, pp. 155-173, 2004
  48. Sadaoki Furui, "Speech Recognition Technology in Multimodal/Ubiquitous Computing Environments", *Spoken Multimodal Human-Computer Dialogue in Mobile Environments* [Springer-Verlag], ISBN 1-4020-3073-8, W.Minker, D. Bühler and L. Dybkjær (eds.), pp. 13-36, 2005
  49. Sadaoki Furui, "Recent Progress in Corpus-Based Spontaneous Speech Recognition", *IEICE Transactions on Information and Systems*, Vol.E88-D, No.3, pp. 366-375, 2005
  50. Sadaoki Furui, "Automatic Speaker Recognition and Verification", *Encyclopedia of Language and Linguistics* [Keith Brown Elsevier], ISBN 0-08-044299-4, 2nd Ed., pp. 619-629, 2005
  51. Koji Iwano, Takahiro Seki and Sadaoki Furui, "Noise Robust Speech Recognition Using Prosodic Information", *DSP for In-Vehicle and Mobile Systems* [Springer-Verlag], H. Abut, J.H.L. Hansen and K. Takeda (Eds.), pp. 139-152, 2005
  52. Satoshi Tamura, Koji Iwano and Sadaoki Furui, "A Robust Multimodal Speech Recognition Method Using Optical Flow Analysis", *Spoken Multimodal Human-Computer Dialogue in Mobile Environments* [Springer-Verlag], W. Minker, D. Bühler and L. Dybkjær (eds.). pp. 13-36, 2005

53. Satoshi Tamura, Koji Iwano and Sadaoki Furui, "A Robust Multimodal Speech Recognition Method Using Optical Flow Analysis", *Spoken Multimodal Human-Computer Dialogue in Mobile Environments* [Springer-Verlag], W.Minker, D. Böhler and L. Dybkjær (eds.). pp. 37-53, 2005
54. Jen-Tzung Chien and Sadaoki Furui, "Predictive Hidden Markov Model Selection for Speech Recognition", *IEEE Transactions on speech and audio processing*, Vol.13, No.4, pp.377-387, 2005
55. Koji Iwano, Taro Miyazaki and Sadaoki Furui, "Multimodal Speaker Verification Using Ear Image Features Extracted by PCA and ICA", *Audio- and Video-Based Biometric Person Authentication* [Springer-Verlag], ISBN 3-540-27887-7, Takeo Kanade, Anil Jain, Nalini K. Ratha (Eds.). pp. 588-596, 2005
56. Sadaoki Furui, Masanobu Nakamura, Tomohisa Ichiba and Koji Iwano, "Analysis and Recognition of Spontaneous Speech Using Corpus of Spontaneous Japanese", *Speech Communication*, Vol.47, pp.208-219, 2005
57. Zhipeng Zhang, Toshiaki Sugimura and Sadaoki Furui, "Tree-Structured Clustering Methods for Piecewise Linear-Transformation-Based Noise Adaptation", *IEICE Transactions on Information and Systems*, Vol.E88-D, No.9, pp.2168-2176, 2005
58. Sadaoki Furui, "Automatic Speaker Recognition and Verification", *Encyclopedia of Language and Linguistics*, 2nd Ed., Edited by Keith Brown, Elsevier: Oxford, pp. 619-629, 2006 (ISBN 0-08-044299-4)
59. Chai Wutiwiwatchai and Sadaoki Furui, "A Multi-Stage Approach for Thai Spoken Language Understanding", *Speech Communication*, Vol.48, iss.3-4, pp. 305-320, 2006
60. Makoto Hirohata, Yousuke Shinnaka, Koji Iwano and Sadaoki Furui, "Sentence-extractive Automatic Speech Summarization and Evaluation Techniques", *Speech Communication*, Vol. 48, iss.9, pp. 1151-1161, 2006
61. Nguyen Huu Bach, Koichi Shinoda and Sadaoki Furui, "Robust Scene Extraction Using Multi-Stream HMMs for Baseball Broadcast", *IEICE Transactions on Information and Systems*, Vol. E89-D, No. 9, pp. 2553-2561, 2006
62. Sadaoki Furui, "Speech Analysis", J. Webster (ed.), *Wiley Encyclopedia of Electrical and Electronics Engineering*. Copyright, 1999 John Wiley & Sons, Inc., pp. 111-125, 2006
63. Javier Latorre, Koji Iwano and Sadaoki Furui, "New Approach to the Polyglot Speech Generation by Means of an HMM-Based Speaker Adaptable Synthesizer", *Speech Communication*, Vol. 48, iss. 10, pp. 1227-1242, 2006
64. Sadaoki Furui, "Speech-Based Interfaces", *Text Entry Systems: Mobility, Accessibility, Universality*, I. Scott MacKenzie and Kumiko Tanaka-Ishii(Eds.), Morgan Kaufmann Publishers, San Francisco, ISBN 0-12-373591-2, pp.159-173, 2007
65. Koji Iwano, Tomoaki Yoshinaga, Satoshi Tamura, and Sadaoki Furui, "Audio-visual speech recognition using lip information extracted from side-face images", *EURASIP Journal on Audio, Speech, and Music Processing*, Vol. 2007, Article ID 64506, 9 pages, doi:10.1155/2007/64506, 2007
66. Sadaoki Furui, "Speech and Speaker Recognition Evaluation", *Evaluation of Text and Speech Systems*, L. Dybkjaer et al (Eds.) Springer, pp. 1-27, 2007
67. Agnieszka Betkowska, Koichi Shinoda, and Sadaoki Furui, "Robust Speech Recognition



- Using Factorial HMMs for Home Environments”, *EURASIP Journal on Advances in Signal Processing* Vol. 2007, Article ID 20593, 9pages doi:10.1155/2007/20593, 2007
68. Chai Wutiwiwatchai and Sadaoki Furui, “Thai speech processing technology: a review”, *Speech Communication*, Vol.49.iss.1, pp8-27, 2007
  69. Edward Whittaker, Josef Novak, Pierre Chatain, Paul Dixon, Matthias Heie, Sadaoki Furui, “CLEF2006 Question Answering Experiments at Tokyo Institute of Technology”, C. Peter et al. (Eds.): *CLEF 2006, LNCS 4730*, pp.351-361, 2007 Springer -Verlag Berlin Heidelberg 2007
  70. Masanobu Nakamura, Koji Iwano, and Sadaoki Furui, “Differences between acoustic characteristics of spontaneous and read speech and their effects on speech recognition performance”, *Computer Speech & Language*, Vol. 22/2, pp.171-184, doi:10.1016/j.csl.2007
  71. Edward Whittaker, Josef Novak, Matthias Heie, Shunichiro Imai and Sadaoki Furui, “Using Singular Value Decomposition to Compute Answer Similarity in a Language Independent Approach to Question Answering”, Springer-Verlag Berlin Heidelberg 2008, T.Tokunaga and A.Ortega (Eds.):*LKR 2008, LNAI 4938*, pp 267-279, 2008
  72. Koichi Shinoda, Kazuki Ishihara, Sadaoki Furui, and Takahiro Mochizuki, “Automatic Score Scene Detection for Baseball Video”, Springer-Verlag Berlin Heidelberg 2008, T.Tokunaga and A.Ortega (Eds.):*LKR 2008, LNAI 4938*, pp 226-240, 2008
  73. Taichi Aasami, Koji Iwano and Sadaoki Furui, “Evaluation of a Noise-Robust Multi-Stream Speaker Verification Method Using  $F_0$  Information”, *IEICE TRANS INF. & SYST.*, Vol. E91-D, No.3, pp549-557, 2008
  74. Sadaoki Furui and Tatsuya Kawahara, “Transcription and Distillation of Spontaneous Speech”, Benesty, Sondhi, Huang (Eds.), *Springer Handbook of Speech Processing*, Springer, pp. 627-651, 2008
  75. Markpong Jongtaveesataporn, Issara Thienlikit, Chai Wutiwiwatchai and Sadaoki Furui, "Lexical Units for Thai LVCSR", *Speech Communication*, Vol. 51, pp. 369-389, 2009
  76. Paul R.Dixon, Tasuku Oonishi and Sadaoki Furui, "Harnessing Graphics Processors for the Fast Computation of Acoustic Likelihoods in Speech Recognition", *Computer Speech and Language*, Vol. 23, pp.510-526, 2009
  77. Nazrul Effendy, Koichi Shinoda, Sadaoki Furui and Somchai Jitapunkul: "Automatic Recognition of Indonesian Declarative Questions and Statements Using Polynomial Coefficients of the Pitch Contours", *Acoust. Sci. & Tech.*, Vol. 30, pp.249-256, 2009
  78. Sadaoki Furui, "Speaker Recognition in Smart Environments", *Human-Centric Interfaces for Ambient Intelligence*, Academic Press, ISBN 978-0-12-374708-2 pp.163-184, 2009
  79. Takahiro Shinozaki, Sadaoki Furui and Tatsuya Kawahara, "Gaussian Mixture Optimization Based on Efficient Cross-Validation", *IEEE Journal of Selected Topics in Signal Processing*, Vol.4, No.3, pp.540-547, 2010
  80. Josafa de Jesus Aguiar Pontes and Sadaoki Furui, "Predicting the Phonetic Realizations of Word-Final Consonants in Context - A challenge for French Grapheme-to-Phoneme Converters", *Speech Communication*, Vol. 52, pp.847-862, 2010
  81. Dessi Puji Lestari and Sadaoki Furui, "Adaptation to Pronunciation Variation in Indonesian Spoken Query-Based Information Retrieval", *IEICE Trans. Inf. & Syst.*, Vol.E93-D, No.9,

pp. 2388-2396, 2010

82. Dong Yang, Paul Dixon and Sadaoki Furui, "A New Hybrid Method for Machine Transliteration", *IEICE Trans. Inf.&Syst.*, Vol.E93-D, No.12, pp.3377-3383, 2010
83. Takahiro Shinozaki, Yu Kubota and Sadaoki Furui, "Unsupervised Acoustic Model Adaptation Based on Ensemble Methods", *IEEE Journ. Selected Topics in Signal Process.*, Vol. 4, No. 6, pp. 1007-1015, 2010
84. Sadaoki Furui, "History and Development of Speech Recognition", F. Chen and K. Jokinen (Eds.): *Speech Technology*, pp. 1-18, Springer Science + Business Media, 2010
85. Sadaoki Furui, "Speaker Verification", V. K. Madiseti (Ed.): *The Digital Signal Processing Handbook*, 2nd Edition, - Video, Speech, and Audio Signal Processing and Associated Standards, pp. 10.1-10.23, CRC Press, 2010
86. Koichi Shinoda, Yasushi Watanabe, Kenji Iwata, Yuan Liang, Ryuta Nakagawa and Sadaoki Furui, "Semi-synchronous Speech and Pen Input for Mobile User Interfaces", *Speech Communication*, Vol. 53, pp. 283-291, 2011
87. Agnieszka Betkowska Cavalcante, Koichi Shinoda and Sadaoki Furui, "Robust Speech Recognition in the Car Environment", LTC 2009, LNAI 6562, Springer, pp. 24-34, 2011.
88. Yuzo Hamanaka, Koichi Shinoda, Takuya Tsutaoka, Sadaoki Furui, Tadashi Emori and Takafumi Koshinaka, "Committee-Based Active Learning for Speech Recognition", *IEICE Trans. Inf. & Syst*, Vol. E94-D, No. 10, pp. 2015-2023, 2011.
89. Takahiro Shinozaki, Toshinao Iwaki, Shiqiao Du, Masakazu Sekijima and Sadaoki Furui, "Distance-Based Factor Graph Linearization and Sampled Max-Sum Algorithm for Efficient 3D Potential Decoding of Macromolecules", *IPSI Trans. Bioinformatics*. Vol. 4. pp. 34-44, 2011.
90. Muhammad Rasyid Aqmar, Koichi Shinoda and Sadaoki Furui, "Robust Gait-Based Person Identification against Walking Speed Variations", *IEICE Trans. Inf. & Syst*, Vol. E95-D, No. 2, pp. 668-676, 2012.
91. Sadaoki Furui, "Selected Topics from LVCSR Research for Asian Languages at Tokyo Tech", *IEICE Trans. Inf. & Syst*, Vol. E95-D, No. 5, pp. 1182-1194, 2012.
92. Matthias H. Heie, Edward W. D. Whittaker and Sadaoki Furui, "Question Answering Using Statistical Language Modelling", *Computer Speech and Language*, Vol. 26, pp. 193-209, 2012.
93. Hiroko Murakami, Koichi Shinoda and Sadaoki Furui, "Active Learning Using Phone-Error Distribution for Speech Modeling", *IEICE Trans. Inf. & Syst*, Vol. E95-D, No. 10, pp. 2486-2494, 2012.
94. Dong Yang, Yi-Cheng Pan and Sadaoki Furui, "Vocabulary Expansion through Automatic Abbreviation Generation for Chinese Voice Search", *Computer Speech and Language*, Vol. 26, pp. 321-335, 2012.
95. Tasuku Oonishi, Koji Iwano and Sadaoki Furui, "A Noise-robust Speech Recognition Approach Incorporating Normalized Speech/Non-speech Likelihood into Hypothesis Scores", *Speech Communication*, Vol. 55, pp.377-386, 2013.
96. Felipe Gomez-Caballero, Takahiro Shinozaki, Sadaoki Furui and Koichi Shinoda, "A Statistical Approach for Person Verification Using Human Behavioral Patterns", *EURASIP Journal on Image and Video Processing*, No. 2013:44, pp. 1-11, 2013.

97. Fuming Fang, Takahiro Shinozaki, Yasuo Horiuchi, Shingo Kuroiwa, Sadaoki Furui and Toshimitsu Musha, "Improving Eye Motion Sequence Recognition Using Electrooculography Based on Context-Dependent HMM," Computational Intelligence and Neuroscience, Vol. 2016, Article ID 6898031, 2016.