

Whither Speech Recognition? - Deep Learning to Deep Thinking Professor Sadaoki Furui

Toyota Technological Institute at Chicago, USA

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Abstract

“Whither speech recognition?” is the title of a well-known paper written by J. R. Pierce in 1969 which unfortunately stopped Bell Labs from continuing speech recognition research for several years at the beginning of the 1970s. Even though 45 years have passed since then and we have actually observed various successes in speech recognition research, the paper is still worthwhile to read. Pierce wrote “Speech recognition has glamor. Funds have been available. Results have been less glamorous. ¶K General-purpose speech recognition seems far away. Special-purpose speech recognition is severely limited. It would seem appropriate for people to ask themselves why they are working in the field and what they can expect to accomplish.” It is still true that what we can do with speech recognition technology is very limited, and even though DNNs (Deep Neural Networks) using “deep learning” have significantly raised the performance since several years ago, we still have many challenges that cannot be solved simply by relying on their capability. We definitely need to deeply think about and analyze how human beings are recognizing/understanding speech, and implement various knowledge sources in speech recognition systems using advanced machine learning techniques to achieve innovations. This talk focuses on my personal perspectives for future speech recognition research.

Biography

Professor Sadaoki Furui Received the B.S., M.S., and Ph.D. degrees from the University of Tokyo, Japan in 1968, 1970, and 1978, respectively. After joining the Nippon Telegraph and Telephone Corporation (NTT) Labs in 1970, he has worked on speech analysis, speech recognition, speaker recognition, speech synthesis, speech perception, and multimodal human-computer interaction. From 1978 to 1979, he was a visiting researcher at AT&T Bell Laboratories, Murray Hill, New Jersey. He was a Research Fellow and the Director of Furui Research Laboratory at NTT Labs. He became a Professor at Tokyo Institute of Technology in 1997. He was Dean of Graduate School of Information Science and Engineering, and Director of University Library. He was given the title of Professor Emeritus and became Professor at Academy for Global Leadership in 2011. He is now serving as President of Toyota Technological Institute at Chicago (TTI-C). He has authored or coauthored over 990 published papers and books. He was elected a Fellow of the IEEE, the Acoustical Society of America (ASA), the Institute of Electronics, Information and Communication Engineers of Japan (IEICE) and the International Speech Communication Association (ISCA). He received the Paper Award and the Achievement Award from the IEEE SP Society, the IEICE, and the Acoustical Society of Japan (ASJ). He received the ISCA Medal for Scientific Achievement, and the IEEE James L. Flanagan Speech and Audio Processing Award. He received the NHK (Japan Broadcasting Corporation) Broadcast Cultural Award and the Okawa Prize. He also received the Achievement

Award from the Minister of Science and Technology and the Minister of Education, Japan, and the Purple Ribbon Medal from Japanese Emperor.