



---

## **FEATURE: Getting to know...Masakazu Ejiri, IAPR Fellow**

### **Reminiscences of my Machine Vision Research and IAPR Activities**

By [Masakazu Ejiri](#), IAPR Fellow (Japan)

---

*Dr. Masakazu Ejiri, IAPR Fellow*

*ICPR 1996, Vienna, Austria*

*For contributions to the development of machine vision technology and for outstanding service to IAPR*

I would like to start this article by explaining the footprint of my young days. In 1959, I started my career as an industrial researcher at Hitachi's Central Research Laboratory in Tokyo, Japan. My major field of interest was industrial automation, and soon I was involved in the project of developing automatic assembly machines for transistors. The most difficult problem we faced was position detection of electrodes on the tiny transistors. Our approach to this problem was to scan the transistor surface with two spotlights and detect the reflected lights by photomultipliers. Soon, we noticed that this method did not capture enough information for reliable recognition, and after a two-year struggle, we had to abandon this project. It was in this instant that I learned how superior human vision is, and at the same time, how important machine vision with pattern recognition capability would be. By taking the opportunity of my overseas research at the University of Illinois in 1967, I studied physiological vision systems using cats and dogs at its Biomedical Department in Chicago. During this time, I also had the opportunity to visit MIT, Stanford, and a few other universities where computer vision research had just started and to discuss the future possibility of machine vision technologies with them.

After coming back from Chicago, I started to build a

*(Continued on page 4)*

Masakazu Ejiri received the B.E. degree in Mechanical Engineering in 1959 and the Dr. Eng. degree in Electrical Engineering in 1967, both from Osaka University, Japan. In 1959, he joined the Central Research Laboratory of Hitachi Ltd., Tokyo, Japan, and remained there until his retirement in 2003 from his position of Senior Chief Research Scientist, Corporate Technology. While at Hitachi, he spent 1967-1968 as a Visiting Professor at the University of Illinois, Chicago, and 1977-1981 as the Vice-president of Hitachi's subsidiary company, HISL Inc., California, USA. He also held visiting positions at several universities in Japan during 1982-2003. He is presently an independent R&D Consultant in Industrial Science.

He has worked primarily in the areas of Control Engineering, Robotics, Pattern Recognition, Machine Vision, and Machine Intelligence, and authored a variety of technical papers, reviews, and books. His pioneering research and developments include various vision-based machines and systems for factory automation and office automation.

Dr. Ejiri served as the IAPR Vice-president for the term 1990-1992, as an IAPR Governing Board Member for the term 1992-2002, and as the General Co-chair of ICPR in Tampa in 2008. He also served as the President of the Robotics Society of Japan for the term 2001-2003, and was designated as the Honorary President of the society in 2008. He received several awards from government and academic/industrial societies, including the Distinguished Researcher Award from the Minister of Science and Technology of Japan in 1976 and the Joseph F. Engelberger Award from the Robotics Industries Association, USA, in 2005. He is a Fellow of IAPR and a Life Fellow of IEEE. One of his recent contributions was the foundation of an allied organization of academic societies in Japan, called the Trans-disciplinary Federation of Science and Technology, and he served as the Vice-president of the Federation for the term 2005-2008.

*(Continued from page 3)*

prototype intelligent robot that assembled objects from planar drawings, and it was completed and demonstrated in 1970. After a few subsequent developments in practical machine vision systems, I started again to build the transistor assembly machines, based this time on image processing technology, by applying the newly-invented multiple local pattern matching method. This attempt succeeded in 1973, as the result of a ten-year persistent effort since the first failure, and soon expanded its use to ICs and LSIs. These fully-automatic assembly machines were favorably accepted, and the technology spread out to the worldwide semiconductor industry.

Then, my research interests in machine vision quickly expanded to various other industrial applications, and further shifted to office applications and even to social applications. I headed numerous projects including the development of a meteorological satellite image analysis system, a geographic information system, automatic teller machines, and automatic letter sorting machines.

My first connection with the IAPR was the participation in the ICPR-1978 in Kyoto as a panelist for discussing the importance of machine vision technology. Since then, my relation to the IAPR has become closer and closer, and the ICPRs became one of the main stages of my activity. At the ICPR-1984 in Montreal, I served as an invited speaker and presented the newest technologies on map and drawing recognition. At the ICPR-1990 in Atlantic City, I was appointed as a Vice-president of the IAPR, and soon I proposed several plans to improve the interface between IAPR and industries, which was one of the key issues in early 1990s. These plans (as appeared in IAPR Newsletter, Vol.13, No.4, Feb. 1991) included the creation of the Best-Industry

Related Paper Award (BIRPA) and the initiation of IAPR Fellowship Program. Increasing the number of member countries was another important concern of the IAPR at that time. Therefore I started to talk with the people of South Korea and invited them to join the IAPR. The Governing Board approved it unanimously at the 1992 meeting (during the ICPR-1992 in The Hague) and welcomed South Korea as a new member. In 1993, I had a chance to discuss IAPR membership with the people of Taiwan when I was invited as a plenary speaker at their national conference. The next year at the ICPR-1994 in Jerusalem, Taiwan became a new member of the IAPR with unanimous welcome. I am now very proud of my contribution in bridging these countries and the IAPR.

Even after finishing my Vice-presidency, I continued to be on Governing Board for the next ten years, and during this period, I was involved in a few committees. As the chair of the Industrial Liaison Committee, I had a chance to give out the BIRPA Award at the ICPR-1994 in Jerusalem. As the chair of Fellow Committee, I engaged in the selection of new Fellows that were awarded at the ICPR-1998 in Brisbane. At the ICPR-2006 in Hong Kong, I was asked to serve as the chair of the IAPR Advisory Committee. As there was a trend of increasing plagiarism and no shows in the journals and conferences of academic societies in general, it was urgent to avoid such behavior in the IAPR-related activities. Therefore, we intensively discussed a statement of ethics and proposed a draft to Executive Committee. The statement was then approved by the IAPR Governing Board, became effective, and is now posted at the IAPR website. At the ICPR-2008 in Tampa, I served as a General Co-chair with Prof. Kasturi and Dr. Sanniti di Baja, which was one of

*(Continued on page 5)*

*(Continued from page 4)*

the most exciting experiences to me.

Looking back, I feel my life as an industrial researcher was a succession of new challenges in machine vision applications. My concerns in those challenges were always with high reliability and practicability, and now I am completely satisfied with my achievements. In general, publishing papers is not the first priority for industrial people like me. However, it is true that involvement in academic activities added a comfortable flavor to my research life and enriched it greatly, and thus I would like to thank

all my friends and colleagues in the IAPR community for giving me many wonderful and enjoyable opportunities.

Though I am using R&D Consultant as my recent title, I have substantially retired from most of my jobs and duties and am enjoying the rest of my life in the countryside near Tsukuba, Japan. However, one of the exceptions remaining is the role as a member of the Advisory Committee of the ICPR-2012 in Tsukuba. The preparations are progressing well, and I hope we will have an exciting conference with many participants from all over the world. Now, let me conclude this article by saying, "Looking forward to seeing you soon in Tsukuba!"