

Hideo Yamashita

Born May 21, 1899, Kanda, Tokyo- died May 25, 1993, Bunkyo-ku, Tokyo, one of japons' earliest computing pioneers, and founder of the Information Processing Society of Japan.



1961.

Education: BS, electrical engineering, Tokyo Imperial University, 1923; DEng, Tokyo Imperial University, 1938.

Professional Experience: lecturer and associate professor, Tokyo Imperial University, 1924-1938; professor, Tokyo Imperial University, which later became the University of Tokyo, 1938-1960; professor, Tokyo University, 1960-1975; president of the Institute of Electron Microscope of Japan, 1954-1955; president of the Institute of Electrical Engineers of Japan, 1956-1957; founder of the Information Processing Society of Japan and its first president, 1960-

Honors and Awards: Japan Academy Award; honorary member of the Information Processing Society of Japan, the Institute of Electrical Engineers of Japan, the Institute of Applied Physics of Japan, and the Institute of Electrical and Electronic Engineers; member of the Japan Academy.

Born in Kanda, Tokyo, on May 21, 1899, Yamashita graduated from Tokyo Imperial University (now the University of Tokyo) with a BS degree in electrical engineering in 1923. Immediately after the graduation, he was appointed as a lecturer of the faculty of electrical engineering of the university. He became an associate professor in 1924. Yamashita's specialty was electric machinery.

In February 1938, he received a doctor's degree in engineering from the university, and two months later became a professor there. Prior to this, Yamashita spent one and half years in Europe and the US, mostly at MIT. His research interest changed after this to calculating machines, spurred by the need for them at the Bureau of Statistics of the Japanese government.

IBM punched-card machines were used in Japan for statistical calculations, and the demand for them had been rapidly increasing before 1940 when the US government banned exportation of these machines to Japan as war material.

Yamashita and his colleagues, Katsuji Ono and Ryosaku Sato, conceived a calculating machine based upon binary logic, and launched its development with the use of electric relays in 1940. The shortage of parts and materials during the war hampered the development, and it was 1948 before they completed the machine using relays and counters released from military use.

The machine used 4,000 relays and 2,000 counters, had 20 sets of keyboards for data input, and a dual arithmetic unit for statistical calculations. Input was made simultaneously through both keyboards of each pair. For verification purposes, they had to accept identical input, and, if not, the input was discarded and had to be reentered. The arithmetic unit was shared by 20 sets of inputs, and added them up one by one. The dual results of each addition were compared with each other, and, if not identical, they were discarded and the addition was automatically repeated.

This machine was used by Chuohkouei-sha, a not-for-profit organization located in an annex building of the Ministry of Finance, Kasumigaseki, Tokyo, for statistical calculation services, which was the first attempt to provide computation services in Japan. It was eight years before the first commercial computation service bureau using a relay computer was offered in Tokyo by Fujitsu Ltd.

NEC and Fujitsu, following Yamashita's design, produced one machine each in 1951. They were put into practical use at the Bureau of Statistics of the Japanese government and the Department of Statistics of the metropolitan government of Tokyo, respectively. Unfortunately, Yamashita did not give any particular name to the machines. Several machines built following his design were generally called "statistical machines of the Yamashita type."

Yamashita became involved in the international aspects of computing in 1951, when UNESCO developed a plan to install a large-scale computer to be shared by all the nations of the world. At that time, computers were extremely expensive, and the plan was thought to be worth putting forward to provide computing power for the less prosperous nations. UNESCO held an international meeting to reach a treaty for this purpose in Paris in November 1951. Japan was invited, although she was not quite independent, being still under occupation. The Japanese government appointed Tohru Hagiwara of the Foreign Office as its representative, and named Yamashita as his adviser.

The meeting agreed to establish an International Computation Centre in Rome. The treaty needed endorsements by at least 10 nations to be effective, and Japan was the first to endorse it. While awaiting other endorsements, UNESCO started the Center, qualified as "Provisional." Yamashita was appointed to represent Japan on the board of trustees of the PICC (Provisional International Computation Centre).

After the meeting in Paris in 1951, Yamashita visited the universities and laboratories working on computers in Europe and the US as the very first Japanese ever to have such an opportunity. The information he brought back to Japan and the news of PICC spurred interest in computers at the Academic Congress of Japan, which resulted in its launching the Tokyo Automatic Computer (TAC) Project at the University of Tokyo in 1952.

TAC, a vacuum tube computer, was finally completed in 1959. By then several digital electronic computers had already been developed in Japan.^{1 2} While the TAC project was not regarded as a success, as the first attempt to develop an electronic digital computer in the country, it stimulated interest in computers and increased the number of computer scientists and engineers in Japan. Yamashita was involved in this project from its beginning through its completion.

Yamashita was also active in the managing committee for the first international conference on information processing sponsored by UNESCO and held in Paris in June 1959. This conference was first proposed by Isaac L. Auerbach of the US at one of the board meetings of the PICC.³ UNESCO accepted this proposal and

¹ Takahashi Sigeru, "Early Transistor Computers in Japan," *Ann. Hist. Comp.*, Vol. 8, No. 2, 1986, pp. 144-154.

² Takahashi, Hidetosi, "Some Important Computers of Japanese Design," *Ann. Hist. Comp.*, Vol. 2, No. 4, 1980, pp. 330-337.

³ Auerbach, Isaac L., "The Start of IMP-Personal Recollections," *Ann. Hist. Comp.*, Vol. 8, No. 2, 1986, pp. 180-192.

appointed Jean A. Mussard, secretary general of the PICC, to run the managing committee in which Yamashita participated, representing Japan.

The conference was a success. It was UNESCO's policy to only trigger something, and if it was found worth continuing, somebody else had to run it. Auerbach proposed to establish the International Federation of Information Processing (IFIP), an international society of societies, to hold international conferences. This proposal was accepted by 12 nations including Japan, which Yamashita represented, and the IFIP came into existence on January 1, 1960. It has been holding a congress every two to three years since 1959.

Yamashita had a problem, since Japan did not then have any appropriate national society to participate in the IFIP. In collaboration with Hiroshi Wada, then the head of the Electronics Division of the Electrotechnical Laboratory of the Japanese government (now professor emeritus of Seikei University), Yamashita founded the Information Processing Society of Japan in 1960, and was elected its first president.

Yamashita published many distinguished papers in the field of electric machinery in his early days. In the field of computing he published a very informative 20-page survey paper in 1954 (Yamashita 1954) based on his visits to various universities and laboratories in Europe and the US after the Paris meeting of 1951 for the ICC treaty. He was the editor-in-chief for *Handbook of Electronic Computers* published by Corona-sha in 1960 (Yamashita 1960). It should be also noted that he introduced into Europe the status of computing in Japan as early as 1956 and 1958 (Yamashita 1956, 1957).

After his retirement from the University of Tokyo in 1960, Yamashita taught at Toyo University until 1975. He was a professor emeritus of both the University of Tokyo and Toyo University, and an honorary member of the Information Processing Society of Japan, the Institute of Electrical Engineers of Japan, the Institute of Applied Physics of Japan, and the IEEE. He was also a member of the Japan Academy.¹

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