

Kansai in Focus

Ark Techno-Research Inc.: Breaking new ground with fuzzy logic-based technology

Ark Techno-Research Inc., headquartered in Fushimi Ward in the city of Kyoto, is a venture business (capital: ¥10 million) that concentrates on fuzzy logic-based application systems created by its founder and president Haruhiko Arikawa. Set up in January 1990, the firm was basically a one-man operation until the latter half of 1994, when the staff was expanded to three.

Ark's R&D center is located in the Advanced Software Technology and Mechatronics Research Institute of Kyoto, a concentration of venture businesses in Shimogyo Ward.

Not so fuzzy triumphs

Arikawa first saw the importance of fuzzy logic in 1987 when he was a student at the NASA Space Academy in the U.S. While there, he heard a presentation by Takeshi Yamakawa, then an assistant professor at Kumamoto University and a leading researcher in the field.

Fuzzy theory is a type of logic applied to computer programming. It attempts to replicate the reasoning method of human beings. It is considered an effective method for handling imprecision or uncertainty.

Arikawa began working with Kaoru Hirota, then an assistant professor of Hosei University. He rose to prominence in 1988 when he presented their joint research findings on the world's first address look-up style fuzzy chip at an international academic conference. Known as the ROM/RAM system, it is one of the simplest and most low-cost control methods among fuzzy logic applications, and is currently used in most household appliances boasting fuzzy logic functions.

The ROM/RAM system, however, did have its drawbacks: slow processing speed

and weakness with regard to multi-inputs. These faults were eliminated in the memory network system Arikawa developed with Masaharu Mizumoto, professor at Osaka Electro-Communication University. Using this new system, a foreign aircraft maker was able to complete an automatic landing system long stuck in the development stage in just three months. A Japanese maker of special metals also was finally able to wrap up a five-year development project by incorporating the memory network system.

Following these triumphs, Arikawa went on to develop such products as *Hakobune* (ark), a fuzzy logic software program for research training adopted by a seminar of the Japan Society of Fuzzy Theory and Systems, personal computers and micro atmospheric pressure sensors with built-in fuzzy control software, an inverted pendulum experiment apparatus using optical devices, and laser pointers.

Philosopher turned inventor

Arikawa, who had decided as a high school student that he would major in philosophy or theoretical physics, has a philosophy degree from Ritsumeikan University. Philosophy and fuzzy logic: the two might

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seem totally unrelated to the average person, but in Arikawa's mind they are merged into a harmonious whole. His research interests currently extend to the development of energy systems that use no fossil fuels and systems for killing viruses with ultrasonic waves. To this end he will enter a doctorate course at Osaka Electro-Communication University in April.

The president's research fervor, in fact, may tend to distract him from his corporate management responsibilities. But he has recently found an effective management partner to share those responsibilities.

KIPPO NEWS® is a publication of The Kansai International Public Relations Promotion Office. Please address all inquiries to:

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