



Persian translation of this article was published by BBC Persian on September 11, 2017

*Distinguished Iranian-American Father of Fuzzy Logic passes away at age 96*

Berkeley, California – Professor Lotfi Zadeh, creator of the field of fuzzy systems and many of its branches passed away on September 6, 2017 at his home in Berkeley, CA, USA. Lotfi was born in Baku, USSR (now Azerbaijan) in 1921 from an Iranian father (Rahim Asghar-Zadeh) from Ardebil, Iran and a Russian mother from (Fanny) from Moscow. At age 10 the family moved to Tehran, where the young Lotfi went to American Missionary School and learned English and Farsi. Later after graduating from Alborz High School, he entered University of Tehran's Daneshkadeh Fanni (School of Engineering). After graduation, he worked for US Army in Tehran during WWII. In 1944, he moved to USA and attended MIT (Massachusetts Inst of Technology) in Boston and later on at Columbia University in New York for his MS and PhD in electrical engineering. In 1946 on March 20th at Nowruztime, he married Fay Sand (Daughter of a Latvian immigrant in Tehran), he had met earlier in Tehran. In 1949 he started his academic career at Columbia University and by 1959 when he left Columbia for the University of California at Berkeley, he was a well-established full professor and scientist in electrical circuits and systems engineering.

Lotfi was always thinking outside of the box and created numerous theories in his fields of expertise. In early 1960's he realized that his knowledge of systems engineering lacked a role for the human being and its brain. In 1965 he published an article called "Fuzzy Sets" where he introduced knowledge-based linguistic

mathematics, for example value “short” or “tall” for height. These words are known as “fuzzy variables”. He introduced a new way looking at uncertainty similar, but not the same as, probability theory. Naturally he was confronted with scientist and engineers who looked at systems theory in exact binary manner versus his fuzzy set which can take on infinite values between False (0) to True (1). He accepted all criticisms with a grain of salt and used to say: “I have a tick skin and take all your comments with compliments.” He is the recipient of over 35 honorary doctorate degrees, numerous honors and awards from Japan, USA, USSR, Russia, Azerbaijan, Iran, members of many academies, etc. Over 30 technical journals bears his name as the “Honorary Editor”. At the age of 90 in 2011, he published the concept of “Z-numbers” to add uncertainty degree to numerical value of fuzzy numbers. His Z-numbers concept was patented in 2013. That patent was an impetus to create a start-up company (“*Z-Advanced Computing*™”) in Maryland, USA. Perhaps, over 30,000 patents have been filled in US alone based on his theories of fuzzy systems, computing with words, Z-numbers, etc. His works, ideas and patents have penetrated in almost every aspect of our lives, from smart cameras to smooth transmission of cars, to elevators, to home appliances, to Google search, etc.

During the last few years, he suffered a lot from old age and loss of Fay 7 months back was also unbearable to him. His loss is a great loss to humanity and science of artificial intelligence, systems and control engineering. Fields like systems engineering, computer science, mathematics, etc. have lost a giant in those fields. I express my deepest condolences to all scientists around the world who have either followed his works, known him or seen him.

Mohammad “Mo” Jamshidi

Author is Lutcher Brown Endowed Distinguished Chaired Professor of Electrical Engineering at the University of Texas, San Antonio, TX, USA. He had known Lotfi for 49 years and coined his title of “Father of Fuzzy Logic” in 1992.