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In memoriam of Elie Sanchez

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Figure 1: Elie and Enric Trillas at the *BBVA foundation Frontiers of Award 2012*.
Photo: R. Seising.

To talk about Elie Sanchez, is to talk about one of the bests human beings that I have ever met. He died on March 6th, 2014 in Marseille, on leukemia, after fighting during 4 years with the illness.

I met Elie during the summer of 2009, when I had to study for three months in an European University for my Ph.D., and Elie accepted me like one member of his family. To say an example, as I had no financing for the staying, he got me a fellowship to pay my housing expenses there, that without knowing me. Very few people do that.

Once there, we soon realized of our common hobbies, like football. He was a supporter of Olympic of Marseille and I support Real Madrid. We had long talks about football, and one thing I miss the most is when an important match reached minute 90, my phone was already ringing, and I knew it was Elie to comment the game.

As a scientist, I chose him for his huge knowledge and expertise on Fuzzy Logic and the semantic Web.

Affiliated to the LIF, 'Laboratoire d'Informatique Fondamentale de

Marseille', after high school he studied Mathematics, and in 1972 he acquired a Ph.D. in Mathematics from the Faculty of Sciences of the Laboratoire de Biomathématiques, Statistique et Informatique Médicale of the Faculté de Médecine in Marseille.

He completed his PdD with another one in human biology from the Faculty of Medicine at the University of Méditerranée (University of Aix-Marseille II, 1974). After this second Ph.D, Elie moved to medical environments as he later wrote in [1]: “We plan to investigate medical aspects of fuzzy relations at some future time.”, for that he assumed that a doctor translates his knowledge and his experience into degrees of association between symptoms and diagnoses.

Considered one of the fuzzy pioneers, and being one of the responsible to introduce fuzzy logic in Europe, since the early seventies he proposed several biomedical applications using fuzzy logic and published multiple works in fuzzy set theory and Soft Computing, including two volumes co-authored with Lotfi Zadeh [2] [3], with whom spent several years in Berkeley. During this period, some of his most relevant works are:

- Sanchez E. Medical diagnosis and composite fuzzy relations. In: Gupta MM, Ragade RK, Yager RR, editors. *Advances in fuzzy set theory and applications*. Amsterdam: North-Holland; 1979. p. 437–44.
- Sanchez, E. Truth-qualification and fuzzy relations in natural languages, application to medical diagnosis. *Fuzzy Sets and Systems* 84(2):155-167 December 1996.
- Sanchez, E. Inflammatory Protein Variations: Medical Knowledge Representation and Approximate Reasoning. *Proc. Of the Uncertainty and Intelligent Systems, 2nd International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, IPMU '88, Urbino, Italy, July 4-7, 1988*.
- Sanchez E, Pierre Ph. Intelligent decision making systems: from medical diagnosis to vocational guidance. In: Szczepaniak PS, Lisboa PJG, Kacprzyk J, editors. *Fuzzy systems in medicine*. Heidelberg: Physica-Verlag; 2000. p. 204–23.
- Sanchez E. Fuzzy logic knowledge systems and artificial neural networks in medicine and biology. In: Yager RR, Zadeh LA, editors. *An introduction to fuzzy logic applications in intelligent systems*. Boston, MA: Kluwer Academic Publishers; 1992. p. 235–51.
- Sanchez E. *Matrices et Fonctions en Logique Symbolique, Thèse de 3e cycle: Mathématiques appliquées: Université Aix-Marseille 2*.

Faculté des Sciences; 1972.

- Sanchez E. Equations de Relations Floues, Thèse Biologie Humaine. Marseille:Faculté de Médecine de Marseille; 1974.

In recent years, Elie focused his interest in the Semantic Web. In his own words “*Most of today’s Web content is suitable for human consumption. The Semantic Web is presented as an extension of the current web in which information is given well-defined meaning, better enabling computers and people to work in cooperation*”. In this area he was the editor of a book related “Fuzzy Logic and the Semantic Web” [4], and organized several seminars and courses related [5]. His most cited works on this area are:

- Calegari S, Sanchez E. “A fuzzy ontology-approach to improve semantic information retrieval”. In: Bobillo F, da Costa PCG, D’Amato C, Fanizzi N, FungF, Lukasiewicz T, et al., editors. Proceedings of the Third ISWC Workshop on uncertainty reasoning for the Semantic Web (URSW’07), Vol. 327. Nov. 12, 2007, Busan, Korea; 2007.
- S. Calegari, E. Sanchez, "Object-Fuzzy Concept Network: an enrichment of Ontologies in Semantic Information Retrieval", JASIST Journal, J. Wiley, 59(13), 2171-2185, Nov. 2008
- Sanchez, E. Fuzzy logic e-motion. in: M. Nikraves, B. Azvine (Eds.) FLINT 2001—New directions in enhancing the power of internet. Proceedings of the 2001 BISC international workshop on fuzzy logic and the internet, Berkeley, California UC Berkeley Electronics Research Laboratory Memorandum No. UCB/ERL M01/28. ; 2001:10–14.
- Sanchez, E., Yamanoi, T. D’Amico fuzzy ontologies for the Semantic Web. in: H.L. Larsen, G. Pasi, T. Ortiz-Arroyo, T. Andreasen, H. Christiansen (Eds.) Flexible query answering systems, proceedings of the 7th International conference FQAS 2006. Springer, Berlin; 2006:691–699.

President of the International Fuzzy Systems Association (IFSA) for two years, awarded with the International Grigore MOISIL Gold Medal and Award for “Capital contributions to Computer and Information Sciences, namely in the fields of Fuzzy Systems and Artificial Intelligence”, affiliated to the editorial board of more than 20 journals, including Fuzzy Sets and Systems, .Despite of all his merits, the best of Elie was his personality, the huge quality as human being, and the impact that caused to those who had the great luck to meet him. In our hearts remains, our dear Elie.



Figure 2: Elie and the author. Marseille 2012.

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2. Sanchez E., Zadeh L. A. Eds., “**Approximate Reasoning in Intelligent Systems, Decision, and Control**”, edited by E. Sanchez and L. E. Zadeh. Pergamon Press, Oxford, 1987, ix + 195 pp.
3. Sanchez E., Shibata T., and Zadeh L. A., Eds., **Genetic Algorithms and Fuzzy Logic Systems: Soft Computing Perspectives**, Advances in Fuzzy Systems - Applications and Theory, Vol. 7, River Edge, NJ: World Scientific, 1997.
4. E. Sanchez (Ed.) **Fuzzy logic and the Semantic Web**. Elsevier, Amsterdam; 2006 (Capturing Intelligence 1).
5. “Fuzzy Logic and the Semantic Web” Workshop, Marseille, France, 2005.