



## ZORAN OGNJANOVIC

Zoran Ognjanović (<http://www.mi.sanu.ac.rs/~zorano/index.html>) was born in 1964 in Belgrade, where he finished elementary school and the Mathematical Gymnasium. He studied at the Faculty of Mathematics of the University of Belgrade from 1983 to 1987. He defended his master's thesis entitled "Proof of theorems in modal calculus S4 based on the method of dual boards" in 1993 at the same faculty. He defended his doctoral dissertation entitled "Some probabilistic logics and their applications in computing" in 1995 at the University of Kragujevac. The mentor of his doctoral dissertation was Professor Dr. Miodrag Rašković. Immediately after finishing

his doctoral dissertation, he was elected a research assistant professor. He was elected research associate professor in 2003, and research professor in 2008. He worked at the Mihailo Pupin Institute from 1988 to 1989, after which he got a job at the Mathematical Institute of SANU, where he still works today. Since 2015, he has been the director of the Mathematical Institute of SANU. He is a member of the Serbian Academy of Nonlinear Sciences, SANN, American Mathematical Society, AMS, and Association for Computing Machinery, ACM. He received the following awards: 1. Award of the Serbian Academy of Sciences and Arts in the field of mathematics and related sciences for 2013. 2. Annual award of the Ministry of Science of the Republic of Serbia for 2004 for achieved results in fundamental research. 3. Annual award of the National Technique for 1994. 4. Award for the best work in the Robotics Section, Yugoslav Conference of ETAN, Sarajevo, 1988.

**Scientific research topic:** The main area of scientific work of Dr. Zoran Ognjanović is mathematical logic and its application. There are a number of papers on probabilistic logic where he is particularly interested in the theorems of completeness and decidability of various variants of these logics. In his works an original mathematical technique was developed which solved long-standing open problems and especially given: strongly complete axiomatization of propositional logic with probability operators and strongly complete axiomatization of first order logic with probability operators for  $[0,1]$ -real-value probabilities. These results are noticed in the article Logic and Probability in the Stanford Encyclopedia of Philosophy. The proposed methodology is also applicable in other logics, in the theory of computability where in type theory the probabilities of  $\lambda$ -terms are formalized and analyzed. He is also interested in the digitization of cultural and scientific heritage. He is credited with introducing standards in this field in our country and connecting leading institutions in the field of science and culture: SANU, the National Library in Belgrade, the National Museum, the Mathematical Institute of

SANU and others. He has participated in the following international projects frameworks: DAAD, UNESCO Participation Program, FP6, FP7, Tempus, COST.

**Scientific results:** His papers have been published in leading international journals. So far, he is the author and/or co-author of the following published publications: two monographs in English (Springer), two monographs in Serbian, 14 chapters in international monographs, and more than 140 papers in international journals and in proceedings of international conferences.

**Pedagogical engagement:** At the Faculty of Mathematics, he was elected first as an assistant professor, then as an associate professor. There he taught mathematical logic and discrete mathematics for many years. He taught Algebra and Logic in Computing from 1999 to 2008 at the Faculty of Natural Sciences and Mathematics in Kragujevac. He is a lecturer at the Serbian PhD School of Mathematics, the doctoral studies at the Faculty of Technical Sciences in Novi Sad and at the Faculty of Economics in Belgrade. So far, he has mentored 5 doctoral dissertations.

**Organizational work:** He was the leader of the following national scientific projects: 2002 - 2005 Fundamental research project 1379 (Methods of mathematical logic in support of reasoning in real situations), 2006 - 2010 Fundamental research project 144013 (Representations of logical structures and applications in computing), 2011 - 2018 Project of integral and interdisciplinary research III 44006, Development of new information and communication technologies, using advanced mathematical methods, with applications in medicine, telecommunications, energy, national heritage protection and education. He was the leader of a number of cultural heritage digitization projects funded by the Ministry of Culture. From 2011 to 2014, he was the deputy director, and from 2015, he has been the director of the Mathematical Institute of SANU.

### **Selected papers**

1. Zoran Ognjanović, Miodrag Rašković, Some first order probability logics, *Theoretical Computer Science*, 247, 191 - 212, 2000;
2. Zoran Ognjanović, Discrete Linear-time Probabilistic Logics: Completeness, Decidability and Complexity, *Journal of Logic Computation*, Vol. 16, No. 2, 257-285, 2006;
3. Zoran Marković, Miodrag Rašković, Zoran Ognjanović, A Logic with Approximate Conditional Probabilities that can Model Default Reasoning, *International Journal of Approximate Reasoning* Volume 49, Issue 1, 52-66, 2008;
4. Zoran Ognjanović, Miodrag Rašković, Zoran Marković, *Probability Logics: Probability-Based Formalization of Uncertain Reasoning*, Springer, 2016.
5. Bojan Marinković, Paola Glavan, Zoran Ognjanović, Thomas Studer, A temporal epistemic logic with a non-rigid set of agents for analyzing the blockchain protocol, *J. of Logic and Computation*; 29(5); 803-830, 2019.