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Unconventional Models for Artificial Intelligence

Artificial Intelligence (AI) is defined as a double field of research consisting of theory and engineering. They both cooperate on the development of computer systems which specifically perform tasks typical of human intelligence. AI theorists should provide robust support to the system design and knowledge instead the results are not up to the expectations. A conspicuous amount of theoretical works has been produced about the possibility and limits of computing, the essence of intelligence and other stimulating topics although these studies have not always had the desired impact on practical and industrial production. We are facing an eclectic collection of memorabilia and what is exactly AI remains rather mysterious.

The structure of theoretical computer science shows how formal theories illustrate every aspect of technology although these constructions are narrow, disjoined and abstract. For instance, I quote Siegelmann who calls into question the Turing machine [1]. This presentation means to offer critical insights and even puts forward unconventional models [2] to clarify themes that typically emerge in AI.

[1] Siegelmann H.T. (1999), *Neural Networks and Analog Computation: Beyond the Turing Limit*, Birkhäuser.

[2] Rocchi P. (2013), *Logic of Analog and Digital Machines*, Nova Science Publishers, N.Y.

Biography

Paolo Rocchi received a degree in physics from the Sapienza University of Rome in 1969 and the following year he joined IBM as a docent and researcher. He is still active in various fields of research including software evolution, computer security, education, information theory, fundamentals of computer science, artificial intelligence and software engineering. In addition he has conducted inquiries into probability theory, reliability theory and theoretical biology. He has written over one hundred and thirty works, including a dozen books. Upon retirement in 2010 Rocchi was recognized as an Emeritus Docent at IBM for his achievements. He is also an Adjunct Professor at Luiss University of Rome. He is a founder member of the Artificial Intelligence Italian Association.

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