

Mathematical Modeling of Distributed Memory

Annotation. Several mathematical models are considered with the purpose to make a comparison of the memory models used in artificial systems and in alive creatures. The first model was proposed by M. Tsetlin, who called it “Pile of Books Model” in his publication in 1961. He described some valuable properties of his memory model.

This model was rediscovered by Hendriks in 1972. In 1973 Burville and Kingman obtained strict mathematical results concerning the depth of the memory that later found reasonable use in the Internet search machines.

The main attention in the present paper is paid to our “Distributed Memory Model”, which contains additional parameters: the numbers of copies of the same elements.

Our model demonstrated some additional useful applications for Internet. Also some similarity was found with the results mentioned by A.Levi and S.Sikevits on some unusual functions observed in biological cells applied for storage of enzymes. Our model provides an explanation for the phenomenon.