

Computer Discovered Mathematics and Applications in Education

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Since the beginning of the computer era the discovery of new mathematics by computers is an important research task. In 1958, in a seminal paper predicting future successes of artificial intelligence, Herbert Simon and Alan Newell suggested that: Within ten years a digital computer will discover an important new mathematical theorem. Now is year 2015, and computer discovered theorems are already published. The first computer program able easily to discover new theorems is the "Discoverer", the computer program created by Grozdev and Dekov. Hence, now we can tick off the prediction by Simon and Newell as realized.

In the first part of the talk we discuss the Paulson criterion which determines the data necessary to accept the Simon-Newell prediction as realized. In the second part we present a survey on mathematical results discovered by the "Discoverer".

We consider a computer-discoverer as effective, if it is an every-day tool for investigation by mathematicians. In the third part of the talk we present applications of computer discovered results in the mathematics education. We accent on the production of problems for high-school and university education by the "Discoverer".