

УДК 811.111

SYSTEM OF ARTIFICIAL INTELLIGENCE IN COMPUTER CHESS

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Intelligent System (IS) - is a technical or software system that can solve problems that traditionally considered to be creative, belonging to a particular subject area. Knowledge of this area is stored in the memory of such a system. The structure of the intelligent system comprises three main blocks - the knowledge base, a solver and the intelligent interface.

Intelligent systems are studied by a group of sciences, united under the name "artificial intelligence".

From the definition of artificial intelligence as a scientific field (middle of 50s of the twentieth century), you should identify the following areas of artificial intelligence to solve problems that are difficult to formalize, among the most important classes of problems, that were posed to the developers of intelligent systems: theorem proving, image pattern recognition, machine translation and understanding of human speech, game programs, computer art, and expert systems.

Game programs

Using computer modeling of the game has a long history. Applications for simple games like "Tic-Tac-Toe" appeared in the late 40s. Then the number of such programs has been rapidly increasing. Processes of the variety of card games, dominoes, checkers, chess, and many others were designed on the computer. During the establishment of such programs, researchers faced the problem of searching and sorting. The task of finding effective strategies for "searching on the game tree" was in many ways similar to the problem of finding effective ways to prove theorems. Classification of the situations on the playing field, was similar to the problem with the traditional tasks of pattern recognition. It made a good ground from game programs for practicing different techniques and methods to find solutions in a rich set of alternatives

One of the most interesting problems in the field of gaming software, using methods of artificial intelligence, is to teach a computer to play chess.

The question of algorithmic game of chess was considered in 1949 by K.Shannon (USA) for the first time. He proposed using of the following three principles in the organization of chess programs: 1) enumeration of possible extensions of a chess game on a certain number of moves ahead, 2) assessing the position by some evaluation function that takes into account the material and position, 3) the use of heuristic methods for reducing the running when watching moves ahead by taking into account the specifics of the game of chess. These principles are fundamental to the present time for most programs of this kind

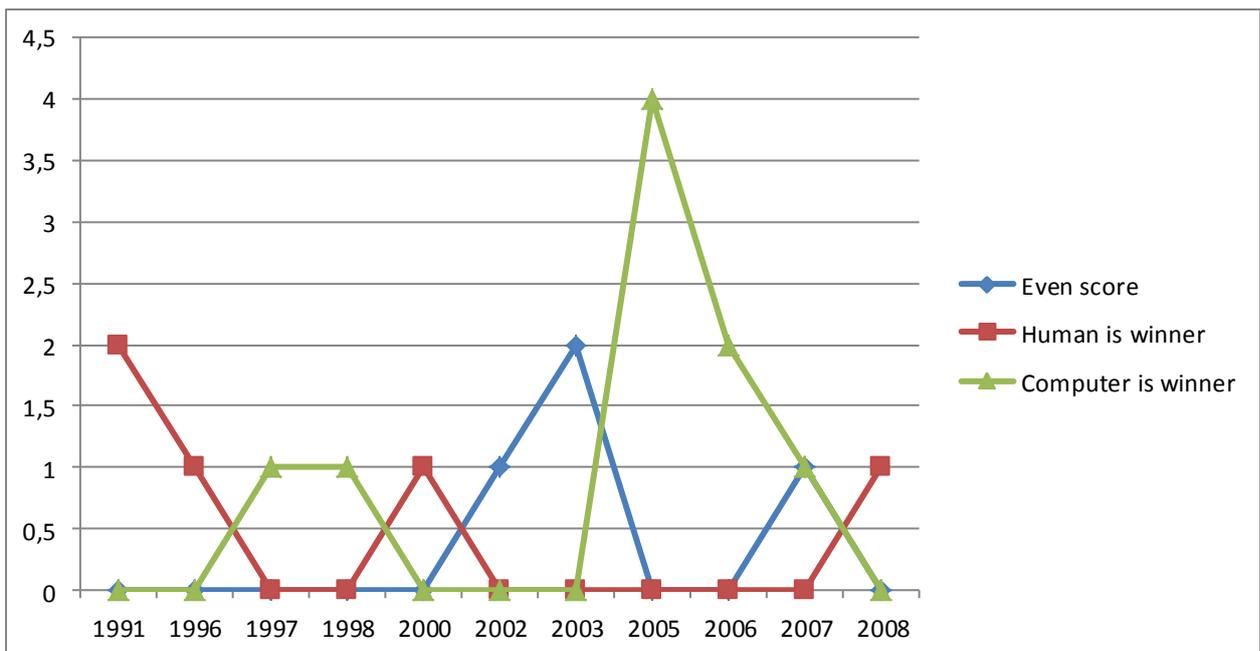
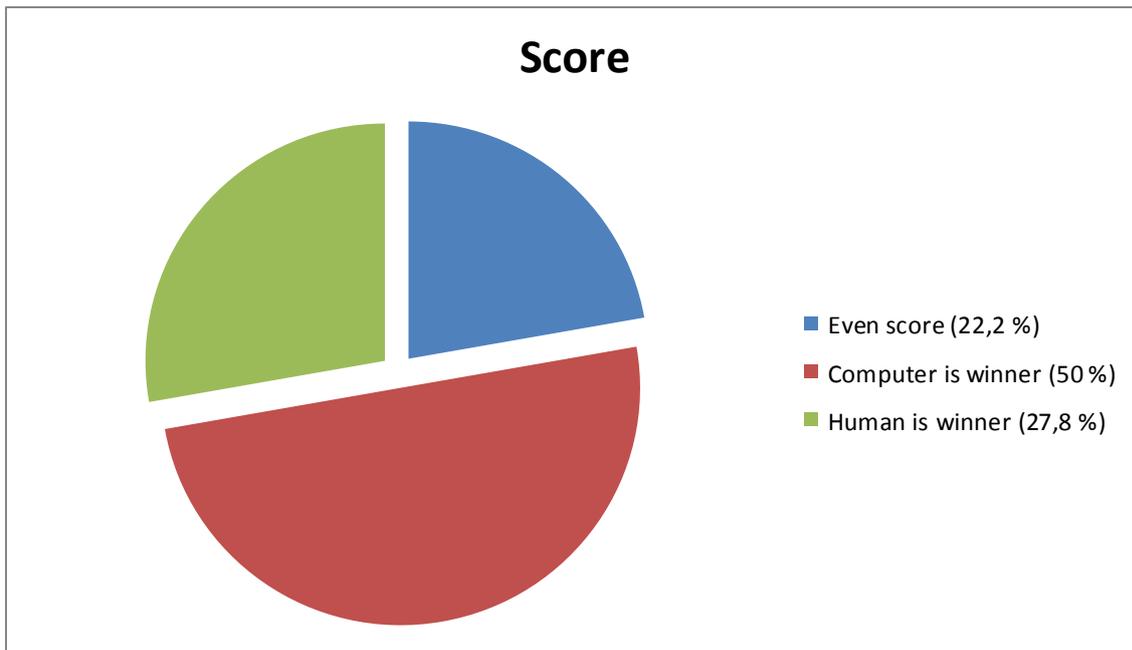
Scientists from around the world actively work on computer chess, and the results of their achievements are applied in other applicable intellectual developments that have a real practical value.

Tournaments are regularly held both among the chess programs and humans against computers.

Computer chess development has continued up to this day in the Russian Federation and abroad, and the question "who is more intelligent"- a human being or a machine – is actual nowadays.

As for me, I think it is difficult to answer uniquely. The findings of my analysis of tournaments among humans and computers of last 20 years show the following results: a half of the victories belong to computers. Also you can see that number of computer wins is increasing nowadays. So I can draw a conclusion that game programs have reached a high

level. I suppose that talking about machine domination will be possible only when the number of their wins is close to 100%.



Intelligence is an ability to understand and choose. Computer chess programs are consider chess moves as a game tree. In theory, they should examine all moves. This evaluation continues until a certain maximum search depth or the program determines that a final position has been reached (for example checkmate). And then program selects the optimal strategy based on the assessment position.

Programmers try to limit a number of moves that should be considered (game three pruning). The most popular is «Alpha-beta pruning», where positions with lower value of evaluation function are not considered. The second pop method is «Iterative deepening», where the program increases the search depth until the best move is found.

Top programs have exceeded even world champion caliber players. What will happen in this area in the future - time will tell.