Personal Robotics: through Game to Science

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Abstract

Robotics has been one of the most interesting and rapidly developing fields of knowledge.

It should be noted an important fact - at the turn of the century there was a paradigm shift - from robotics "screwdriver" and "soldering" to the discipline of robotics programming and control synthesizing.

Industrial robots can perform many complex operations, but they in most cases have program control, when the logic and the trajectory of the executive bodies are always defined counting on the 100% probability of execution (usually by scripts).

When there is a real problem for the control of groups of dynamic objects that need to solve various problems within the common task, it became clear that "industrial" approaches do not work here because of the need to construct algorithms of consensus and interaction of moving objects with uncertainty arising from real situations. In this sense, the study of such situations are suitable situations arise in sports. Reflection – robofootball, which was created with the intention of promoting research and education in the field of artificial intelligence.

This area of intensive development at the Department of Theoretical Cybernetics, Mathematics and Mechanics Faculty SPb University, as a means of teaching, research and motivation. On the basis of the department created Cyber-Physical laboratory in which activity participating school kids. Also, under its aegis competitions on robot soccer are held.

Subjects development goes together with laboratory SPRINT (SPbSU-Intel). There is a development of theoretical courses and practical work based on the development of mobile robot control in manual, semiautomatic and automatic modes (by means of video vision system) based on tablet computers. One of the immediate objectives is the development of a universal hardware and software framework for research - Educational Cybernetic Set Up.