Soccer Alice

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The goal of the project

The aim of this project was to conceive a system that allows young students to play soccer with the mini robot Alice on a field of A4 size. The students must have the possibility to implement their own strategy in a team manager program.



Figure 1 Alice playing soccer

It is planned to suggest this robot soccer to expo.02, the Swiss National Exhibition taking place in 2002. A robot soccer championship will be organized, where many school classes from the whole country will take part with their self programmed robots.



The robots

Figure 2 Alice

The used robot is called Alice, and has been developed at the EPFL.

Alice has a size of 22x20x19mm. To fit the size of the field, there are three robots per team. Moreover, very thin steel sheet are mounted on Alice all around the circumference. These sheet create a spring effect and let the ball bounce back.

The robots are controlled by а PC that sends commands via an infra-red remote control connected to the serial port. They have no onboard sensors.



Figure 3 Control loop

The positioning system

In order to capture the current position of the robots on the field, we have adapted the existing program COPS (Color Objects Position Server). This image processing system is based on color recognition. It grabs images of the field via an USB camera and recognizes the rectangle color patches fixed on top of the robots.

The server

The main server, called ASM (Alice Soccer Manager), manages the communication with the image processing system, the Team Managers and the robots.

The whole system is very flexible due to the use of a TCP/IP communication between the different programs.

The lightness and smallness of this soccer kit allow its distribution in a small briefcase.