Issues in Soccer Simulation Software Development

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Abstract

This paper deals with the related issues in the development of soccer simulation software. A guideline to the development of soccer simulation software is given. This paper is suitable for computer science students who plan to develop another version of soccer simulation. The paper also discusses soccer software simulation in terms of computer science education. Thus, students who plan to develop soccer simulation software should review this paper and prepare the issues discussed in this paper for their project proposals.

Keyword: RoboCup, artificial intelligence, computer programmers, game software.

Introduction

Soccer is extremely popular among Thai teenagers and is increasing in its popularity. A lot of young computer programmers dream of having their own versions of soccer simulation games. This is a great motivator for many computer programmers, especially at the college level, to develop soccer simulation software. The motivation is good, but the work is hard. From the computer science point of view, soccer is often used in several experiments. One reason that soccer is chosen among other sports is its popularity; hence an increased willingness of the students to participate in this work. Three aspects that soccer serves in computer science will be discussed in this paper.

Game Software

Because of its popularity, millions of people choose soccer to play as their hobby. This also applies to soccer simulation games, such as Wining Eleven (Konami 2004), FIFA Soccer (2004), and Championship Manager (2004). These games are developed for console-based systems such as: Sony Playstation, Super Nintendo Entertainment System (SNES), and personal computers. As shown in Fig. 1, the screen shots from Wining Eleven show virtual players competing on a soccer field. The movements of the virtual players are captured and simulated from human players, and then represented in the game to gain realistic feelings. Fig. 2 shows screen shots from FIFA Soccer 2004, while Fig. 3 shows screen shots from Championship Manager. Different from other games, Championship Manager allows the player to act as the manager of a soccer team hence, enhancement of realistic motions is not necessary. We will discuss in the next section, Game Development Issues.

AI Testbed

Soccer is a distributed control problem with a collaborative and competitive environment. This is because players in a soccer match have their own decision-making process and actions. These abilities are not centralized into any specific unit, but instead distributed to every individual player. The goal of the game is that a team wins when it scores higher than another (this is claimed as a completive environment); while every player in the same team has to cooperate with other team-mates to accomplish the team's goal. (This is claimed as a cooperative environment.) Soccer involves many aspects in computer science. An organization known as RoboCup (2004) was formed to serve such a purpose. RoboCup turned out to be very exciting for researchers