Development of Image Processing System to Realize Table Tennis Strategy Board

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Abstract

When the coach gives advices to the player in table tennis match, the coach will inform the player some of the strategies accumulated in his past experiences. However, the data of past matches he/she gave advices is not always analyzed enough objectively. On the other hand, many artificial intelligence models which analyze the image data automatically have been proposed.

In this paper, we propose automatically constitutes the input data from the video image of table tennis matches, and extract rule knowledge of strategy from the input data by the learning type clustering method. We aim to realize the table tennis strategy board. We call this system as AI sports, AI table tennis. We first develop the image processing program that extract the input data from the video image by manual. With the image processing program, the data of the rally attributes are entered in a window that pops up step by step according to the trajectory of the ball. We discuss here the relation between the characteristics of the player and the ball coordinates based on the input data.

We analyzed the video of 16 matches from the third round to the final match in the table tennis women's singles tournament of the Rio de Janeiro Olympics held in 2016. The number of rallies was 372 and the ball trajectory was 6862. In particular, we analyzed the video at women's table tennis singles semi-final and discussed the player strategy using the relationship between the characteristics of the players and the coordinates of the ball.

Since the final purpose of the system is to extract rule knowledge from the video image by the learning type clustering method, in the future it is necessary to formulate ddi-Boosting as the learning type clustering method using fuzzy clustering.

Key words

Table Tennis Strategy Board, Image Processing, Learning Type Clustering Method, AI Sports