Tactics Analysis in Soccer – An Advanced Approach

Jürgen Perl[2], Andreas Grunz[1] & Daniel Memmert[1]

[1]German Sport University, Cologne, Germany

[2]Johannes Gutenberg-University, Mainz, Germany

Abstract

In order to run a game tactically, high level knowledge is required from and by coaches and analysis experts. Assessing tactical performance through statistic indicators has some drawbacks, however, it is not only difficult to prove reliability on the defined indicators, but those static indicators often hide the game's dynamics. New network-based approaches offer a promising way to improve future evaluation of tactical performance and recognition of game dynamics. The aim of this article is to introduce a new approach where pattern-based tactics analysis is combined with success-oriented statistical frequency analysis. Therefore, the neural network-based pattern analysis of the SOCCER-approach (Perl & Memmert, 2011) has been completed by an event-oriented statistical analysis, which is mainly based on an automatic recognition of ball possession as an indicator of success. After a short introduction into basic aspects of game analysis, automatic position tracking and net-based pattern analysis, the new concept of SOCCER is presented in two steps: The first part deals with net-based analysis of dynamic processes, oriented in constellations of tactical groups of players. The second part deals with rule based semantics analysis, which allows automatic recognition and evaluation of individual activities and embedding them into the tactical patterns - thus enabling both, evaluation of tactical processes based on individual success as well as evaluation of individual activities in the context of tactical processes.

KEYWORDS: COMPUTER SCIENCE, GAME ANALYSIS, SOCCER, PATTERN RECOGNITION, NEURAL NETWORKS