

## **Importance of Shoulder in Playing Table Tennis: Skill Visualization Using Fuzzy Rules Acquired by TAM Network**

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### **Abstract**

The Topographic Attentive Mapping (TAM) network is a biologically-inspired classifier that bears similarities to the human visual system. When used in a TAM network, the proposed pruning algorithm improves classification accuracy and allows extracting fuzzy skill knowledge as represented by the network structure.

In this paper, difference of skill level in playing table tennis is analysed by TAM network, and importance of shoulder is visualized by fuzzy rules. The trajectory pattern of forehand strokes of table tennis players is analysed with nine sensor markers attached to the right upper arm of players. With the fuzzy rules acquired from TAM network, technique rules are extracted by learning algorithm in order to classify the skill level of players of table tennis from the sensor data. In addition, the difference between the elite player, middle level player and beginner is visualized, and how to improve skills specific to table tennis from the view of data analysis is discussed.

**Key words:** *neural networks, fuzzy rules, skill visualization, table tennis*