

(Nov. 1, 2011) □ Researchers from the Universidad Politécnica de Madrid's Facultad de Informática have designed a new type of TV remote control that is capable of measuring finger pressure and wrist rotation angle. It then transmits this information to the TV to change channel or adjust the volume to the preferred level.

On the outside the fully waterproof and drop-resistant control looks like a rubber finger exercise ball.

The invention is one of the results of Gonzalo Bailador's PhD thesis, supervised by Gracián Triviño of the Facultad de Informática's Department of Photonic Technology. It was granted Patent No. P200501609 by the Spanish Patent and Trademark Office.

The system proposes different mechanisms for recognizing repetitive human body gesture and posture patterns based on soft computing techniques.

Soft computing is a set of informatics techniques capable of modeling and analysing complex systems across disciplines as far apart as biology, business organization, medicine or the humanities. The techniques covered by this discipline include neural networks, Bayesian networks, bio-inspired computation or even chaos theory.

The focus of this research was primarily on two soft computing techniques. The first, known as prediction-error classification, involves generating a signal predictor for each pattern and then detecting the signal class from any errors. The second soft computing technique, known as fuzzy finite automata, modelled each temporal pattern and recognized different signal patterns.

New contributions

The most representative contribution of this research to the prediction-error classification technique was more of a practical than theoretical advance in the field of gesture recognition.

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Tuesday, 01 November 2011 09:51

In the field of fuzzy finite automata, the researchers managed to identify individuals by their movement, that is, recognize the distinctive pattern of their movements which was used for identification purposes.

On top of these practical advances, this research has resulted in a major theoretical contribution, reported in an article published in the leading scientific journal *International Fuzzy Sets and Systems* (Elsevier).

Additionally, this line of research has led to a publication in another first-class sector journal, *Pattern Recognition*, as well as participation in conferences and congresses, like the *International Conference of Artificial Intelligence and Soft Computing* (2006), *International Conference of Computing Intelligence for Measurement Systems and Applications* (2007) or *XIV Congreso español sobre tecnología y lógica fuzzy* (2008), etc.

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