Synthetic emotions for empathic building

Salmeron, J.L.
Ruiz-Celma, A.

Abstract
Empathic buildings are intelligent ones that aim to measure and execute the best user experience. A smoother and intuitive environment leads to a better mood. The system gathers data from sensors that measure things like air quality, occupancy, noise and analyse it for the better experience of the users. This research proposes an artificial intelligence-based approach to detect synthetic emotions based on Thayer's emotional model and Fuzzy Cognitive Maps. This emotional model is based on a biopsychological approach to the analysis of the humans' emotional state. In this research, Fuzzy Grey Cognitive Maps are used, which are an extension of the fuzzy cognitive maps using the grey systems theory to model uncertainty. Fuzzy Cognitive Grey Maps (FGCMs) have become a very valuable theory for modeling high-uncertainty systems when small and incomplete discrete data sets are available. This research includes experiments with a couple of synthetic case studies for testing this proposal. This proposal provides an innovative way for simulating synthetic emotions and designing an empathic building.