Computational Intelligence for Biometric and Industrial Applications

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Abstract: Biometric technologies allow for identifying persons or behaviors by analyzing one or more physical or behavioral features. These technologies are very promising to create ambient intelligence environments as well as for security. Adaptive signal and image processing is very critical for feature extraction and identification, tracking, and behavior and emotion recognition.
Computational intelligence techniques (including neural networks, fuzzy logic, evolutionary computing, and multi-agent systems) have been proved to be useful and effective in addressing this kind of data processing, especially when it is difficult to identify an algorithm while sufficiently descriptive examples are available, or when fuzzy descriptions are more natural to capture the essence of the problem, or when complex non-linear optimization is needed, or when multiple agents cooperate in solving the application problem. The relevance of computational intelligence to contribute in solving these applications has been shown both in the design process of the solution as well as technological component of the solution itself. Computational intelligence can in fact provide additional flexible techniques for designing and implementing adaptable systems based on signal and image processing, which can be configured from behavioral examples or by mimicking approximate reasoning processes.
This talk will analyze the opportunities offered by computational intelligence technologies to support the realization of adaptable operations and intelligent services. Examples will focus on biometric systems and industrial applications.

About Speaker: Dr. Vincenzo Piuri has received his Ph.D. in computer engineering at Politecnico di Milano, Italy (1989). He has been Associate Professor at Politecnico di Milano, Italy and Visiting Professor at the University of Texas at Austin and at George Mason University, USA. He is Full Professor in computer engineering (since 2000) and has been Director of the Department of Information Technology at the Università degli Studi di Milano, Italy. He is a Fellow of the IEEE, Distinguished Scientist of ACM, and Senior Member of INNS. He has more than 350 research papers, books and book chapters in areas such as signal and image processing, machine learning, pattern analysis and recognition, biometrics, theory and industrial applications of neural networks, intelligent measurement systems.

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