

Biometric Consortium 2004 Conference

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Topic: [Robust Face Detection and Recognition Based on Dimensionality-Increasing Techniques]

Abstract: This talk will address robust face detection and recognition techniques by means of dimensionality-increasing methods. The motivation of applying dimensionality-increasing techniques comes from Cover's theorem on the separability of patterns. Cover's theorem states that a complex pattern classification problem cast in a high-dimensional space nonlinearly is more likely to be linearly separable than in a low-dimensional space. As a result, a pattern classifier in a high-dimensional space increases its discriminating power, e.g. a linear classifier in a high-dimensional feature space has the same classification capability as a quadratic one in the input space.

Biography: Chengjun Liu received the Ph.D. from George Mason University in 1999, and he is presently an Assistant Professor of Computer Science at New Jersey Institute of Technology. His research interests are in Computer Vision, Pattern Recognition, Image Processing, Evolutionary Computation, and Neural Computation. His recent research has been concerned with the development of novel and robust methods for image/video retrieval and object detection, tracking and recognition based upon statistical and machine learning concepts. The class of new methods he has developed includes the Bayesian Discriminating Features method (BDF), Kernel Methods with Fractional Power Polynomial Models, the Probabilistic Reasoning Models (PRM), the Enhanced Fisher Models (EFM), the Enhanced Independent Component Analysis (EICA), the Shape and Texture-based Fisher method (STF), the Gabor-Fisher Classifier (GFC), and the Independent Gabor Features (IGF) method. He has also pursued the development of novel evolutionary methods leading to the development of the Evolutionary Pursuit (EP) method for pattern recognition in general, and face recognition in particular. He is a member of the IEEE and the IEEE Computer Society.