

**The IEEE Pittsburgh Section Signal Processing and Communications
Society Chapters Present:**

Signal Processing Approaches for Biometrics

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University of Pittsburgh, Pittsburgh
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Refreshments 11:30am – 12:00pm
Talk 12:00pm – 1:00pm

Determining the identity of a human is critical in many applications including e-commerce, secure access and surveillance. Most current human authentication systems are password based making them susceptible to problems such as forgetting the password or passwords being stolen. One way to overcome these problems is to employ biometrics (e.g., fingerprints, face images, iris images, etc.) for authentication. Many biometric modalities produce images and biometric verification (1: matching) and identification (1:N matching) involves matching these images. Many conventional biometric image matching methods are based on segmenting the regions of interest, extracting the features in the image domain and applying classifiers to separate these features. However, there are advantages to using signal processing methods that work in the spatial frequency domain. These advantages include shift-invariance (i.e., the object of interest can be off-center), no need for segmentation, graceful degradation and closed-form solutions. This talk will provide an overview of spatial frequency domain methods that have proven useful for face recognition and iris recognition.

Prof. Vijayakumar Bhagavatula received his Ph.D. in Electrical Engineering from Carnegie Mellon University (CMU), Pittsburgh and since 1982, he has been a faculty member in the Electrical and Computer Engineering (ECE) Department at CMU where he is now a Professor and the Associate Dean for the College of Engineering. He served as the Associate Head of the ECE Department from 1994 to 1996 and as its Acting Department Head during 2004-2005. In 2003, he received the Eta Kappa Nu Most Outstanding Teacher award in ECE Department at Carnegie Mellon University. Professor Kumar's research interests include Pattern Recognition (for automatic target recognition and biometrics applications) and Coding and Signal Processing for Data Storage Systems and for Digital Communications. He has authored or co-authored about 500 technical papers, twelve book chapters and one book entitled Correlation Pattern Recognition. He served as a Topical Editor for Applied Optics and as an Associate Editor of IEEE Trans. Information Forensics and Security. He is actively involved in the organizing committees of various biometrics and data storage conferences. Professor Kumar is a member of Sigma Xi, a Fellow of IEEE, a Fellow of SPIE, a Fellow of Optical Society of America (OSA) and a Fellow of the International Association of Pattern Recognition (IAPR).