1056-62-1209 **Naoki Saito*** (saito@math.ucdavis.edu), Department of Mathematics, University of California, Davis, One Shields Avenue, Davis, CA 95616, and **Linh Lieu**. *Hyperspectral Image Classification by Matching Node Connectivities.*

We present a simple and efficient scheme for pattern recognition and signal classification within the Diffusion Framework. Our Node Connectivity Matching (NCM) method is derived from the concept of diffusion distance originally proposed by Coifman and Lafon. However, instead of embedding data into a low dimensional diffusion space, which requires computing the eigenvalues and eigenvectors of the normalized diffusion matrix on the graph constructed from the data, we view each row of the normalized diffusion matrix as a training histogram (or probability distribution) of node connectivities. To classify an unlabeled data point, we compute the "distances" between its node connectivity histogram to all the training histograms using various measures such as the L^2 norm, the Hellinger distance, the Jeffreys divergence, and/or Earth Mover's Distance. In this talk we will also show our results on the classification of hyperspectral images of natural scenes and demonstrate that our NCM method is more accurate than using the conventional diffusion distances. (Received September 21, 2009)