Abstracts: This talk will introduce our work on shape dynamic analysis with application in human activity recognition, subspace learning and tracking. Shape dynamics, such as human activity, facial expression and organ motion are very important feature in computer vision. However, very few works address the modeling of shape dynamics with a rigid formulation of the geometry of a shape space. To better approach to this particular problem, we adapt the previous works on manifold valued SDE to develop a framework that bridges the Euclidean dynamic analysis to the dynamic in a shape space. Under such framework, the shape sequence of human activity is mapped to a Euclidean process, which is modeled as piece-wise Brownian motion. The mapping is adaptive to the curvature of the shape space such that the resulted Euclidean process will only reflects the essential part of dynamics in the shape space instead of the other part that is due to the embedding of shape space in a particular ambient space. In the subspace learning aspect, the mapping is optimized such that the resulted Euclidean process lies in a lower dimension space while still well approximates the original shape dynamics.