Abstract

Any imagery generated by machines, be it for medical, or other purposes, has an inherent noise structure. Mathematically, we can thus call any image as a random field. For example, fMRI images; CT scans; images of CMB data, all can be treated as a random field. In this talk, we shall focus on a very simple testing (for mean) problem for an image. Using some standard Gaussian assumptions, and some "not so standard" assumptions, we shall propose a test statistic, and estimate its distribution (tail probability). In the process, we shall see how seemingly unrelated geometric characteristics show up in our computations, and how they unravel a whole new class of interesting problems.