

1106-VI-211

Matthew L Wright* (mlwright@ima.umn.edu). *Intrinsic Volumes of Random Cubical Complexes.*

How can we understand the size of noise in digital images? One way to answer this question involves studying intrinsic volumes of random sets. The intrinsic volumes generalize both Euler characteristic and Lebesgue volume, quantifying the size of a set in various ways. A random cubical complex is a union of (possibly high-dimensional) unit cubes, with vertices on an integer lattice, selected according to some probability model. I will describe a simple model of random cubical complex and provide exact polynomial formulae, dependent on a probability, for the expected value and variance of the intrinsic volumes of the complex. I will also give a central limit theorem and an interleaving theorem about the roots of the expected intrinsic volumes – that is, the values of the probability parameter at which an expected value is zero. Lastly, I will discuss applications such as image recognition. (Received August 11, 2014)