1077-51-2277 **Jeff M Phillips***, University of Utah, 50 S. Central Campus Dr., Salt Lake City, UT 84112.

Computational Geometry on Uncertain Data.

Computational geometry has been built on the study of fixed input points. A common way to start a paper is "Let P be a set of points in R^d." In this talk I will discuss recent work dealing with uncertain points, i.e. when each input point is not given precisely, but rather its location is presented as a probability distribution. This formulation leads to many interesting questions (and answers!). For instance, consider the problem of finding the smallest enclosing ball of a point set. For fixed points this has a unique solution, but for uncertain points the answer is a distribution of balls. How can we compute and conveniently represent this distribution? I will generalize this discussion on appropriate representations for questions on uncertain points, and I will present (often simple) methods to compute them. I will also illustrate the success of these techniques on real-world data, and also suggest some exciting directions for further work. (Received September 22, 2011)