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The Voronoi Means Conjecture

Abstract

We recently developed a relax-and-round algorithm for k -means clustering. When applied to balanced spherical Gaussian mixtures of unit entrywise variance, this algorithm clusters most points according to Gaussian component provided the minimum distance between component centers is at least some polynomial in k . This talk introduces a new conjecture called the Voronoi Means Conjecture, which implies that this distance for successful clustering must exhibit k -dependence as an artifact of k -means. The conjecture is a statement about highly symmetric collections of vectors, and I will announce a prize for its resolution. (This is joint work with Soledad Villar and Rachel Ward at the University of Texas at Austin.)

Talk time: 2016-07-19 3:30PM— 2016-07-19 3:50PM

Talk location: Crow 204

Special Session: Applied harmonic analysis, frame theory, and operator theory. Organized by G. Kutyniok.