1120-37-261 **Jose de Jesus Galarza*** (jose.galarza01@utrgv.edu), 155 Las Villas Ave., Brownsville, TX 78526. *Clustering algorithms and their applications for the quantization of uniform distributions.*

In order to make an optimal quantization of the uniform distribution defined on a set one needs to construct centroidal Voronoi tessellations. First, we explore the k-means method, its motivation and how it is used to approximate the uniform distribution on a square with a measure supported by a set of k points, and obtain the optimal sets of points (k-means) which generate the tessellations. We give numerical results for $k \leq 51$ optimal points and explore some applications of the centroidal voronoi tessellations in discrete domain. Then, we discuss Lloyd's algorithm, its motivation, and the latest results by implementing the algorithm with simulations on the quantization of a square. We end by discussing conjectures regarding the tessellations with the Lloyd's algorithm and its future applications.

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