$\mathcal{K}$-Means, Mixture Models & EM

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A Bit of History

[J. B. MacQueen, 1967]

- [http://img1.wikia.nocookie.net/
  _cb20110723073418/pixar/images/b/b2/
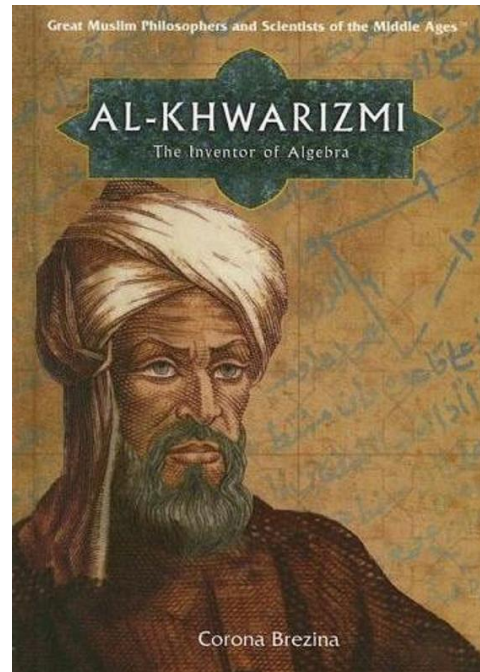 Lightning_mcqueen_cars_2.png]

- [H. Steinhaus 57], [S. Lloyd 57], [E. W. Forgy 65]

- Vector Quantisation/Clustering/Bunching/Grouping

- Old, but often still the first choice!

- Learning: Supervised, Unsupervised, Reinforcement, Semi-supervised

- Two flavours of K-Means: K as a parameter, & the distance threshold as a parameter

- Crisp boundaries: grading, states on a linguistic basis (hmm...), f'print image ROI. Fuzzy: signal-noise separation, concept of well-built (h, w)

Algorithms

- http://www.muslimheritage.com/uploads/Al_Khwarizmi_Inventor_of_Algebra_Corona_Brezina_Fig_6.JPG

'Algorithm': The Latin form of the name of the Persian mathematician and astronomer. Abu Abdallah Muhammad Ibn Musa al-Khwarizmi , (780 - 850). 'Algebra' comes from al-jabr, one of the two operations he used to solve quadratic equations. Brought Indo-Arabic numerals & decimals to the West

- Set of finite steps to solve a problem