Data Science Seminar Series

Wednesday, March 22, 11:30-12:30 pm, virtual/Teams

TITLE

Why Spectrum Clustering Algorithm Work So Well?

SPEAKER

Dr. Roger Yu

ABSTRACT

Spectral clustering is one of the most popular clustering algorithms. It is simple to implement, very efficient, and very often outperforms traditional clustering algorithms such as the k-means algorithm. However, the first glance spectral clustering appears a bit mysterious: start with a similarity matrix of a data set, and then construct a matrix of its eigenvectors, which is much smaller matrix; applying k-mean algorithm on a lower dimension space to identify clusters and thus finding the clusters of the original data set. Essentially, we change the representation of data points to data points of eigenvector space. In the new representation, clusters can be trivially detected. So why this change of representation enhance clustering property? In this talk, we will give some intuition on this question and explore the variation of spectral clustering algorithm as well as its applications and extensions.

BIOGRAPHY

Dr. Roger Yu received Ph.D. in Discrete Mathematics from Simon Fraser University in 1991 and has been a Full Professor at TRU since 2001. Currently, Dr. Yu serves as Director of Centre for Optimization and Data Science (CODS). Dr. Yu's research interests include Graph Theory, Combinatorial Optimization, Complex Networks, and data analysis. He has published more than 80 peer-reviewed research articles in academic journals, with research publication H-index 15, supervised 7 PhD students, and 6 Master students, and held Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant as principal investigator since 1992. He has been an invited speaker to two dozen of international conferences, and are awarded four TRU Award for Excellence in Scholarship and TRU Master Scholar Award.

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