

# COMPUTING COLLOQUIUM

THURSDAY, APRIL 18

10:30 a.m.

Online presentation only via Zoom

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## Correlation Clustering: Latest Advances

Given a set of objects and nonnegative real weights expressing "positive" and "negative" feeling of clustering any two objects together, the problem of correlation clustering aims at grouping the input objects so as to either minimize the sum of negative-type intra-cluster weights plus the sum of positive-type inter-cluster weights (min-disagreement correlation clustering), or maximize the sum of positive-type intra-cluster weights plus the sum of negative-type inter-cluster weights (max-agreement correlation clustering).

Correlation clustering is perhaps the most natural formulation of clustering. It has received a great deal of attention in the literature, with a focus on various aspects, such as theoretical results, algorithms, and problem generalizations/variants.

In this talk, we present a number of latest advances in correlation clustering, including: (i) theoretical results about min-disagreement correlation clustering with global weight bounds; (ii) formulations and algorithms of correlation clustering in a reinforcement-learning setting, where weights are unknown, and they have to be estimated in multiple rounds, while performing the clustering itself; (iii) experimental studies on correlation clustering with fairness constraints.

**Francesco Gullo** is an associate professor of computer science at the University of L'Aquila (Italy), in the Department of Information Engineering, Computer Science, and Mathematics (DISIM). He received his PhD, in "Computer and Systems Engineering", from the University of Calabria (Italy), in 2010. During his PhD, he was an intern at the George Mason University (US), and a teaching/research assistant at the University of Catanzaro (Italy). After his graduation, he was a postdoc at the University of Calabria (Italy), a postdoc and a research scientist at the Yahoo Labs (Spain), a research scientist at the Fundacio Barcelona Media (Spain), and a senior associate researcher at the UniCredit banking group (Italy). His research falls into the broad areas of artificial intelligence and data science, with emphasis on algorithmic aspects. His recent interests include graph machine learning, graph data management, natural language processing, and trustworthy AI. His research has been published in premier venues such as SIGMOD, VLDB, KDD, WWW, ICDM, CIKM, EDBT, WSDM, ECML-PKDD, SDM, TODS, TKDE, TKDD, MACH, DAMI, JCSS, TNSE, PR. He has also been serving the scientific community: he was/is/will be Associate Editor of EPJ Data Science journal, Finance Chair of CIKM'24, Workshop Chair of KDD'24 and ICDM'16, Industry Track Program co-Chair of ASONAM'24, Program co-Chair of MIDAS workshop @ECML-PKDD['16-'24], MultiClust symposium @SDM'14, MultiClust workshop @KDD'13, 3Clust workshop @PAKDD'12), as well as (senior) program-committee member of major conferences, including SIGMOD, KDD, WWW, IJCAI, AAAI, CIKM, SIGIR, ICDM, WSDM, SDM, ECML-PKDD, ECAI, ICWSM.

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