UNIVERSITY OF CALIFORNIA MERCED | SCHOOL OF ENGINEERING

Electrical Engineering and Computer Science Seminar

Multi-view representation learning with canonical correlation analysis

Dr. Weiran Wang

Friday, February 28, 2020

12:00 PM – 1:20 PM in COB 114

Faculty Host: Prof. Miguel Á. Carreira-Perpiñán

Abstract
Canonical correlation analysis (CCA) has been the main workhorse for multi-view feature learning, where we have access to multiple ''views'' of data at training time while only one primary view is available at test time. The idea of CCA is to project the views to a common space such that the projections of different views are maximally correlated.

In the first part of the talk, we compare different nonlinear extensions of CCA and propose new variants of it. We find that the deep neural network extensions of CCA have consistently good performance while being computationally efficient for large datasets.

In the second part of the talk, we study the stochastic optimization of CCA, whose objective is nonconvex and does not decouple over training samples. Based on the alternating least squares formulation of CCA, we propose a globally convergent stochastic algorithm, which solves the resulting least squares problems approximately to sufficient accuracy with state-of-the-art stochastic gradient methods. We provide the overall time complexity of our algorithm which improves upon that of previous work.

This talk summarizes primarily my postdoc research at TTI-Chicago, and I will give pointers to more recent development.

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Biography
Weiran Wang is currently a research scientist at Salesforce Research. From 2017 to 2019, he was an applied scientist at Amazon Alexa, developing intelligent personal assistant. From 2014 to 2017, he was a postdoctoral scholar at Toyota Technological Institute at Chicago. He obtained his PhD degree from the EECS Department at University of California, Merced in 2013. His research includes algorithms for deep learning, multi-view representation learning, sequence prediction, manifold learning, optimization for machine learning, and applications to speech and audio processing.

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