國立政治大學應用數學系演講

Department of Mathematical Sciences, National Chengchi University

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Speaker: 李育傑 教授
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Title: Sharing Models without Sharing Data Distributed Consensus Reduced Support Vector Machine

Time: 16:10 - 17:00, Wednesday, December 18, 2019

Venue: Room 070221, 2F, Zhi Xi Building(志希樓 2 樓 E 化教室)

Refreshment: Refreshments will be served in the Faculty Lounge 30 minutes before the talk.

Abstract

Nowadays, machine learning performs astonishingly in many different fields. In general, the more data we have, our machine learning methods will show better results. However, in some cases, the data owners may not want to share the data they have because of legal issues or privacy concerns. If we can pool their data together for the machine learning task we will have a better result. In the other situation, we encounter an extremely large dataset, which is difficult to store in a single machine. We may utilize more computational units to solve it. To deal with these two problems, we propose the distributed consensus reduced support vector machine (DCRSVM), which is a nonlinear model for binary classification. We apply the ADMM, Alternating Direction Method of Multipliers, to solve the DCRSVM. In each iteration, the local workers will update their model by incor- porating the information shared by the master. The local workers only share their models in each iteration but never share their data. The master will fuse the local models reported by the local workers. At the end, the master will generate the consensus model that almost identical to the model generated by pooling all data together. Pooling all data together is not allowed in many real world applications.

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