An Operator Viewpoint to Analysis of Conditional Kernel Canonical Correlation

Jia Cai

Guangdong University of Business Studies, China
jiacai1999@gdccc.edu.cn

Kernel canonical correlation analysis (CCA) is a nonlinear extension of CCA, which aims at extracting information shared by two random variables. In this paper, a new notion of conditional kernel CCA is introduced. Conditional kernel CCA aims at analyzing the effect of variable $Z$ to the dependence between $X$ and $Y$. Rates of convergence of an empirical normalized conditional cross-covariance operator (empirical NCCCO) to the normalized conditional cross-covariance operator (NCCCO) are also investigated in this paper. Elaborate error analysis of conditional kernel CCA is elegantly conducted under mild decay conditions. Our refined analysis leads to satisfactory learning rates in a more general setting.

The work described in this paper is supported partially by National Natural Science Foundation of China (Grant No. 11001247) and Doctor Grants of Guangdong University of Business Studies (Grant No. 11BS11001).