Canonical Variate Analysis based Variable Reconstruction and Sensor Fault Diagnosis

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Many multivariate statisitical process control (MSPC) techniques have been developed for detection, isolaiton, and diagnosis on the modern chemical processes which have high dimensionality, strong correlations, and severe dynamics. Recently, the canonical variate analysis (CVA) has been researched to analyze process dynamics and to monitor process abnormalities. Several researches showed that CVA is superior to PCA in process abnormality detection. This paper proposes new CVA based variable reconstruction algorithms and sensor fault identification strategy using them. Through comparison to conventional dynamic PCA, it is verified that the proposed can be expected to be superior to the previous approaches for sensor fault identificaiton.