

Poster Session (P)
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TELEMETRY DATA OF SPACE STATION OUTLIER DETECTION BASED ON KPCA AND NAIVE BAYES

Abstract

Future of space exploration, space station in orbit will provide us a large scale telemetry data collect which to support scientific research, system status validation and Health management. During the fault detection process of the telemetry data , one kind of data type which is related to the state and operate event of spacecraft, is a class of multivariate time series. But the present telemetry data outlier detection methods widely used in engineering are based on the experience to set the threshold value, have lower adaptability and can't meet the demand of future mission. This paper proposed a new approach based on KPCA(kernel principal Component Analysis) and naive Bayes for detecting fault or outliers. Use the principal component direction vector in the high dimension space as the telemetry data feature and obtains, training decision vector table, then use naive Bayes to calculate the conditional probabilities of the vector and error rate to classifying outliers. Finally a specific application for Spacecraft GNC Sub-system of the method is given.