

Anomaly Detection using Dimensionality reduction - an Active learning approach.

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Anomaly detection can be extremely challenging in real-world situations considering the big data problem. The features that distinguish the anomalies are usually unknown. In this case, standard anomaly detection algorithms may perform very poorly because they are not being fed the correct features. Learning these features even with a few examples of anomalies is challenging. We introduce an algorithm based on dimensionality reduction methods. It learns about primary prototypes in the data while identifies the anomalies by their large distances from the prototypes. Besides, it can identify the anomalies as a new class and get customized to find interesting objects. We evaluated our algorithm on a wide variety of simulated and real datasets, in up to 3000 dimensions. It shows to be robust and highly competitive with commonly-used anomaly detection algorithms, especially in high dimensions.

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