UNSUPERVISED ANOMALY DETECTION FOR AUTONOMOUS VEHICLES

ABSTRACT OF DISCLOSURE

In some embodiments, techniques are provided for analyzing time series data to detect anomalies. In some embodiments, the time series data is processed using a machine learning model. In some embodiments, the machine learning model is trained in an unsupervised manner on large amounts of previous time series data, thus allowing highly accurate models to be created from novel data. In some embodiments, training of the machine learning model alternates between a fitting optimization and a trimming optimization to allow large amounts of training data that includes untagged anomalous records to be processed. Because a machine learning model is used, anomalies can be detected within complex systems, including but not limited to autonomous vehicles such as unmanned aerial vehicles. When anomalies are detected, commands can be transmitted to the monitored system (such as an autonomous vehicle) to respond to the anomaly.

Fig. 7