cases	doc_1	doc_2	decision	id
		authors: • Thabang Mathonsi • Terence L. van Zyl **title**: Multivariate Anomaly Detection based on Prediction Intervals Constructed using Deep Learning **publication_date**: 2021-10-07 12:34:31+00:00 **source**: SupportedSources.ARXIV **journal**: None **volume**: **doi**: **urls**: • http://arxiv.org/pdf/2110.03393v1 • http://arxiv.org/abs/2110.03393v1 • http://arxiv.org/pdf/2110.03393v1 **id**: id2838605678986905946 **abstract**: It has been shown that deep learning models can under certain circumstances outperform traditional statistical methods at forecasting. Furthermore, various techniques have been developed for quantifying the forecast uncertainty (prediction intervals). In this paper, we utilize prediction intervals constructed with the aid of artificial neural networks to detect anomalies in the multivariate setting. Challenges with existing deep learning-based anomaly detection approaches include (i) large sets of parameters that may be computationally intensive to tune, (ii) returning too many false positives rendering the techniques impractical for use, (iii) requiring labeled datasets for training which are often not prevalent in real life. Our approach overcomes these challenges. We benchmark our approach against the oft-preferred well-established statistical models. We focus on three deep learning architectures, namely, cascaded neural networks, reservoir computing and long short-term memory recurrent neural networks. Our finding is deep learning outperforms (or at the very least is competitive to) the latter. **versions**:	DUPLICATES	119
	authors: • Thabang Mathonsi • Terence L van Zyl **title**: Multivariate anomaly detection based on prediction intervals constructed using deep learning **publication_date**: 2021-10-07 00:00:00 **source**: SupportedSources.SEMANTIC_SCHOLAR **journal**: Neural Computing and Applications **volume**: **doi**: 10.1007/s00521-021-06697-x **urls**: • https://www.semanticscholar.org/paper/7f4dc5bb1d387777256a11f9ee6ee671581a1a6c **id**: id-3963461934191989760 **abstract**: None **versions**:			