World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:17, No:02, 2023

Classification of Generative Adversarial Network Generated Multivariate Time Series Data Featuring Transformer-Based Deep Learning Architecture

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Abstract : As there can be cases where the use of real data is somehow limited, such as when it is hard to get access to a large volume of real data, we need to go for synthetic data generation. This produces high-quality synthetic data while maintaining the statistical properties of a specific dataset. In the present work, a generative adversarial network (GAN) is trained to produce multivariate time series (MTS) data since the MTS is now being gathered more often in various real-world systems. Furthermore, the GAN-generated MTS data is fed into a transformer-based deep learning architecture that carries out the data categorization into predefined classes. Further, the model is evaluated across various distinct domains by generating corresponding MTS data.

Keywords : GAN, transformer, classification, multivariate time series
Conference Title : ICICSA 2023 : International Conference on Intelligent Computing Systems and Applications
Conference Location : London, United Kingdom
Conference Dates : February 16-17, 2023