Task

- S-1, S-2, and S-3 are a collection of 8,9 and 11 unique multivariate time series data of the same domain, respectively.
- Each multivariate series is recorded from 38 sensors over time.
- Train and test set of each multivariate series is given.
- Train set contains data without anomaly
- Test set contains data with anomaly
- Ground truth for the test set is given in the folder Test_Label [0: Normal, 1: anomalous]

- Propose a deep learning based pipeline for anomaly detection in multivariate time series.
- Train the model using all multivariate time series instances and save a single unique trained model for all the data instances

　　　[Hint: Use techniques like domain adaptation (if necessary) to improve model generalization across different sources.]

- Use the trained model to detect the anomalies from all test sets independently
- Evaluate the performance using precision, recall, and F1-score metrics.
- Take the average of precision, recall, and F1-score of all multivariate test sets from S-1, S-2, and S-3.
- We have not shared the 8th, 9th, and 11th test set of S-1, S-2, and S-3. The performance of your model will be validated on these datasets.

- Prepare a report summarizing the overview of a complete idea to solve the problem, model architecture, training process, testing process, and evaluation results.
- Provide the trained deep learning model, which should be saved in a format compatible with TensorFlow/Keras or PyTorch.
- Provide a text file (req.txt) containing the required version of the deep learning framework (e.g., Tensorflow, Keras, PyTorch), along with all the required libraries or packages and their versions that your model depends on.
- Provide a text file (Readme.txt) containing the required steps to test your model for anomaly detection in unseen multivariate series (8th, 9th, and 11th test sets of S-1, S-2, and S-3).