Project Group: Machine Learning for Predictive Maintenance

Minutes for March 17, 2021. 09:00 - 12:00

Present: Tanja Tornede*(Supervisor)*, Christopher Zinda, Paul Fährmann, Sanjay Gupta, Selami Hoxha, Vinay Kaundinya

Minutes-taker: Vinay Kaundinya

Topics Discussed:

General Class Diagram

Details —

1. Selami presented once again the idea on the design of the general class diagram and pointed out the changes from last week.
2. Paul explained the difference in transformer and fixed size feature type. Did we decide on the type of input for transformer types? We remove all extra classes.
3. Evaluator methods renamed.'eval model or eval splitter' changed to 'dataset splitter'.
4. Object variable and how it is used.
5. Change data structure in make pipeline to be an array for the two configs.
6. What is expected and predicted value. Have the same ordering for metrics, <ground truth, predicted> suggested ordering. Always have the same order.

General Sequence Diagram

Details —

1. In the second loop, average over all the metrics.
2. Currently it looks like only the last evaluation result is given.
3. Collection of results needs to be specified.
4. Move splitter left or right off evaluator. show that splitter is used by evaluator by having a small arrow. without much detail.
5. We want to have parsers as static, shift the boxes together or use constructor to initiate parsers.

Aditional Information —

1. People involved: Tanja Tornede and Team.

TFE

Details —

1. TFE, class diagram, described by Sanjay.
2. Often only univariate timeseries is considered, they usually assume different instances are of the same length, need to work on this more during implementation.
3. Change structure of TFE class diagrams in draw.io file.
4. Long arrows in the seq diagrams. Different styles in current seq diagrams, maintain consistency.
5. Include user in the seq diagrams, to get more context, instead of arrows originating from nothing.
6. Use constructors to represent a new class.
7. pyts is mostly for univariate classes, might need uni to multi variate transformer.
8. One for pyts, one for TSFresh, one for autoencoder and one for windowing. Exclude all other diagrams. Needed only for wrappers
9. new construct arrows are missing for tensorflow and sklearn methods. Move blue boxes to bottom, as discussed already.

Aditional Information —

1. People involved: Tanja Tornede and Team.

HIE

Details —

1. Change the arrangement of class diagram boxes, free the overlapping arrows, have reasonable height and width.
2. In LSTM Autoencoder box, multiple lstm units param used in the method train-encoder-decoder()
3. In HGRUN, why need feature extractor in HGRUNN, if we already have the required features.
4. Check how TS is used in StandardScaler.
5. Selami, to list the steps for fitting and predicting in case of LSTMAutoencoder.
6. Predict methods for all approaches to be worked upon.
7. Add constructor classes.

Aditional Information —

1. People involved: Tanja Tornede and Team.

RUL

Details —

1. Fit and transform to be used on all blue boxes(tensorflow, sklearn stuff).
2. Random forest class should be an ensemble. Add multi classifier approach as subclass.
3. Direct RUL and CNN to have an abstract box, that would allow user to choose only SVR or CNN to that of the approach from seed papers.

Aditional Information —

1. People involved: Tanja Tornede and Team.

Next Meeting:

1. Date and time: March 24, 2021 at 09:00 - 11:00
2. Person responsible for minutes: Christopher Zinda