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Project Group: Machine Learning for Predictive Maintenance

Minutes for March 10, 2021. 09:00 - 12:00

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

Also present: Alexander Tornede*(Guest)*

Minutes-taker: Selami Hoxha

Topics Discussed:

General Class Diagram

Details —

1. Christopher presented once again the idea on the design of the general class diagram and pointed out the changes from last week.

2. The diagram was described as closer to the goal but there was an issue with the RUL separation into Direct RUL and tabular since it would not support every pipeline.

3. A general remark for rul team given by Tanja was to think of generalizing the use of regressor in SVR to use a general regressor.

4. We discussed the possibility of having HI estimation as a feature extractor in the class diagram to make building pipelines easier.

5. The fit and predict that appears in every class should be removed since they return the same thing in every case

6. Can we have multiple feature extraction with make_union? The reasoning was that we expect it to work since we extend transformer mixin. Alexander suggested that we make a class that has a list of feature extraction methods as an array and then implement make_union.

7. We consider to handle the error in the pipeline. If the elements in the pipeline don't fit then the error will be thrown from the pipeline. We do not use the HI for example anymore in RUL as a class but we assume that there was some call that calculates HI in the pipeline.

8. Alexander suggested to make sure that the pipeline elements are interchangeable, we can think that our framework will be able to be used by three kinds of users: a user that is not interested about having everything setup and just put in the dataset to get the result, a intermediate user that does not want to create the whole pipeline in its own but still wants to be able to make changes, and a user that is able to use our framework elements when creating its own pipeline with make_pipeline for example.

Aditional Information —

    1. People involved: Tanja Tornede and Team.

General Sequence Diagram

Details —

1. Make sure that everything is renamed from "approach" to predictor.

2. We need to include dataset operations that are needed to be able to evaluate the approaches.

3. In the general sequence without configuration Evaluator parameters should be fixed.

4. In the sequence diagram with configuration we should make it possible to have a fixed dataset and test different approaches.

5. If we want the config file to be created per hand, we need to have a clear separation between configuration and serialization. At the moment it seems they are interleaved.

6. How do we define a pipeline in config file? The idea given is to use a string representation of the whole pipeline with all the methods and parameters. Another way we could represent the configuration file is to use JSON notation.

Aditional Information —

    1. People involved: Tanja Tornede and Team.

Individual Class Diagrams

Details —

1. RandomForestApproach in RUL class diagram can be replaced in the tabular case by replacing the regressor with the sckit-learn implementation of sckit-learn.

2. Also Ensembles are implemented by sckit-learn. The use of this implementation should be considered.

3. Feature extraction team should use the same notation for packages.

4. Feature extraction team should consider using tensorflow for the implementation for Learning with neural networks.

5. HI class diagram should use packages instead of specific classes from libraries.

Aditional Information —

    1. People involved: Tanja Tornede and Team

Individual Sequence Diagrams

Details —

1. The sequence diagrams have all the problem of initializing the class.

2. The HI sequence diagram should separate the calls for fit and predict and fix the self calls.

Aditional Information —

1. People involved: Tanja Tornede and Team

Next Meeting:

1. Date and time: March 17, 2021 at 09:00 - 11:00

2. Person responsible for minutes: Vinay Kaundinya