NATIONAL RESEARCH UNIVERSITY HIGHER SCHOOL OF ECONOMICS

PROJECT PROPOSAL

TIME SERIES FORECASTING WITH TEMPORAL FUSION TRANSFORMERS

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In this project I research interpretable model for multi-horizon time series forecasting based on temporal fusion transformers that was proposed in the article [1]. The model will be reproduced on PyTorch framework, then I will extend training data for model and will experiment with hyperparameters.

Introduction

Multi-horizon forecasting is the prediction for estimates across several steps in future. It has many real-world applications. Typically, models provide forecasts from "black-box" models, while Temporal Fusion Transformer combines high-performance multi-horizon forecasting with interpretable insights into temporal dynamics. To learn temporal relationships at different scales, TFT uses recurrent layers for local processing and interpretable self-attention layers for long-term dependencies. TFT utilizes specialized components to select relevant features and a series of gating layers to suppress unnecessary components, enabling high performance.

Project goals:

1. Reproduce the model on PyTorch framework.

2. In the original paper data used from 2000-01-03 to 2019-06-28. I will train model on data to 2021-05-01.

3. Tune model's hyperparameters.

4. Change the model

References:

[1] Lim, Bryan & Arik, Sercan & Loeff, Nicolas & Pfister, Tomas. (2019). Temporal Fusion Transformers for Interpretable Multi-horizon Time Series Forecasting.