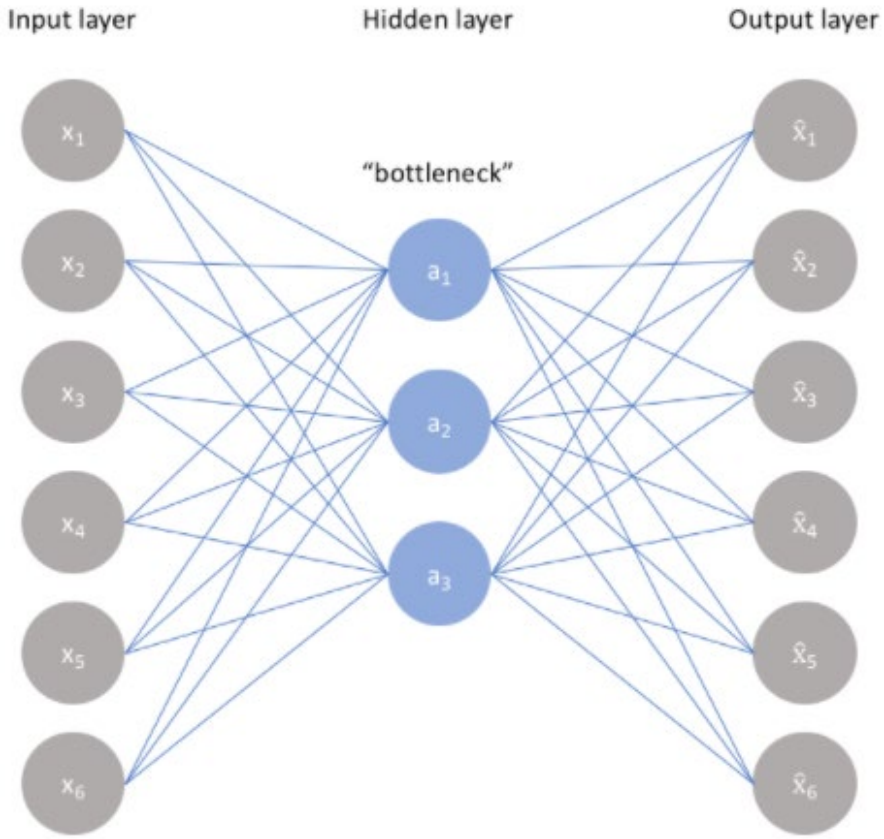
Reduce false positive rate using ensemble of Autoencoders

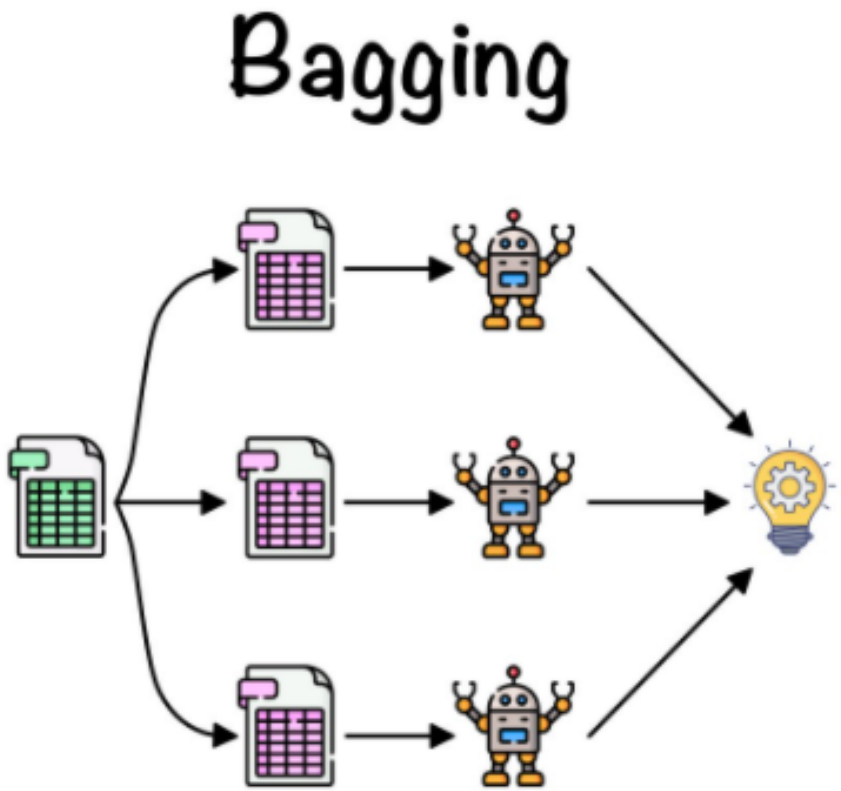
Autoencoder

- Encoder – compress the data.
- Bottleneck – compressed representation of the input data.
- Decoder – learns how to reconstruct the data from the encoded representation.
- Reconstruction loss – measure how close the output to the original input

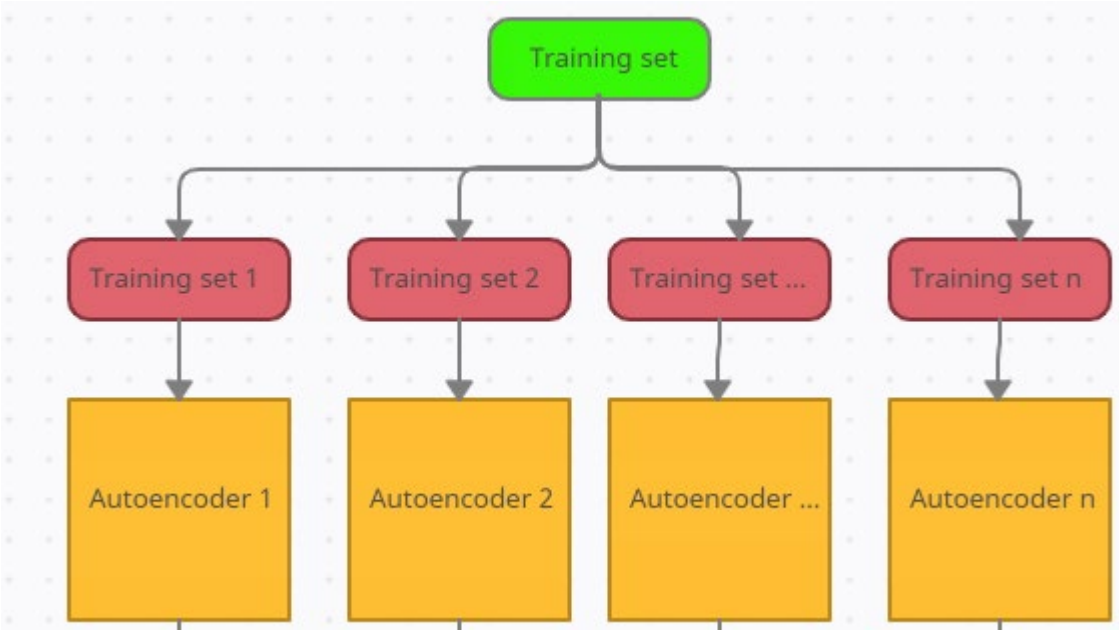


Bagging Ensemble

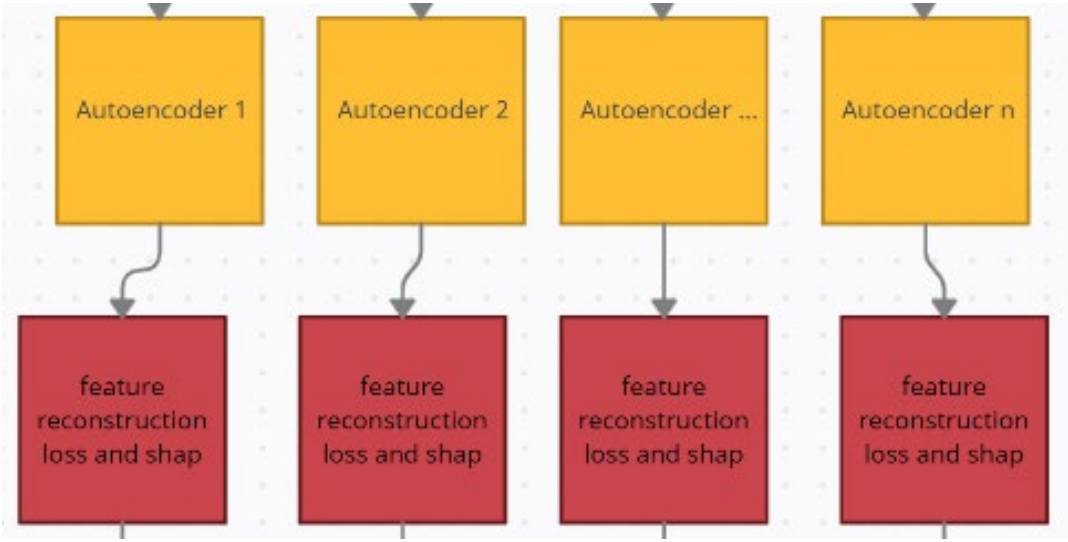
- Train multiple models independently.
- The models are usually from the same family (e.g. autoencoders) but with different hyperparameters (e.g. number of layers/neurons)
- Combine the results to make a final decision



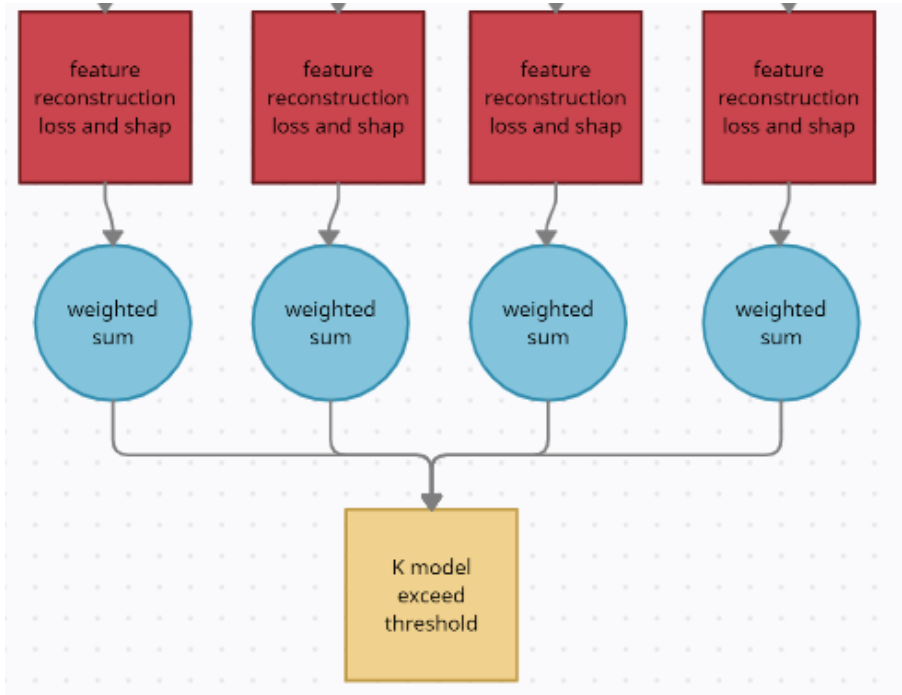
Our Method - training



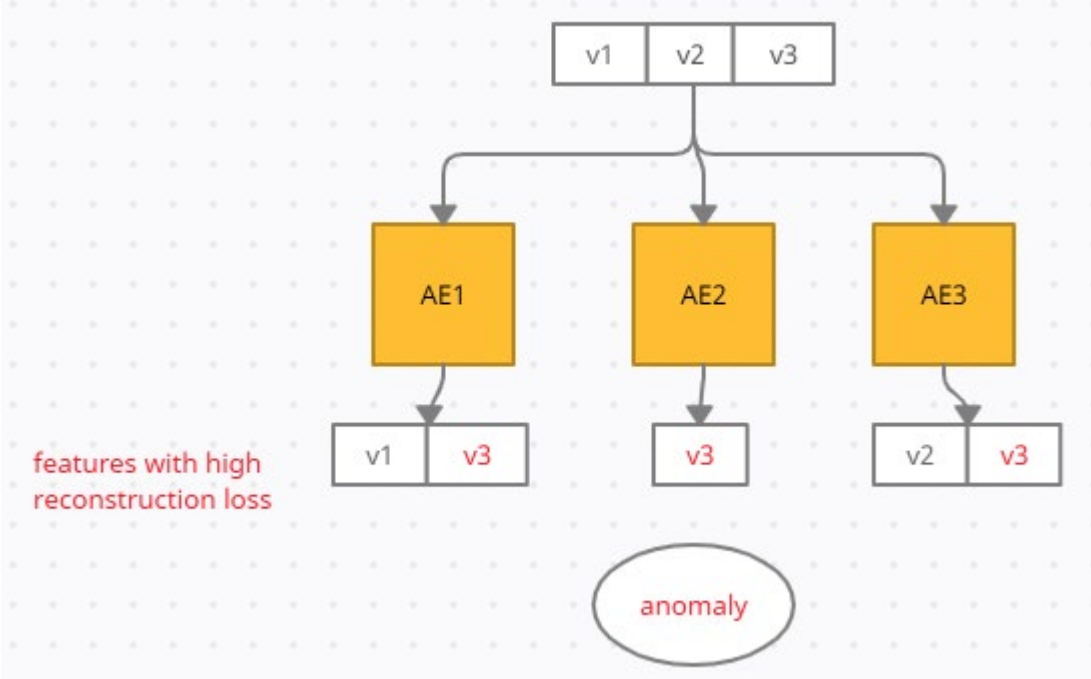
Our Method – calculate feature loss and SHAP values



Our Method – weighted sum and prediction



Our Method – example 1



Our Method – example 2