

Topological Data Analysis, combined with Variational Autoencoders, generates succinct representations of a time series. They can be used as inputs in classifiers and lead to superior results in time-series classification.

Topologically-based Variational Autoencoder for Time Series Classification

👤 Rivera-Castro, Mustafa, Pilyugina and Burnaev

RESULTS

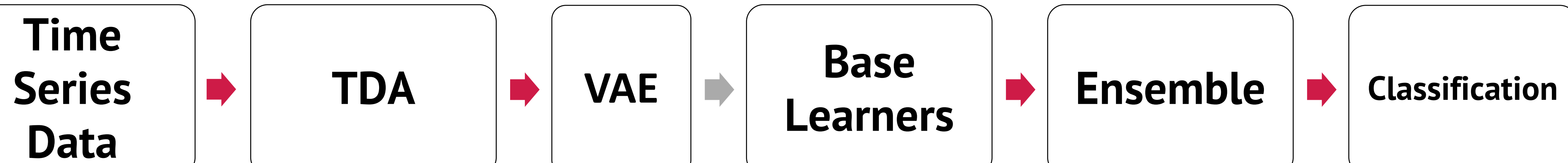
- The proposed technique is superior to the established practices in the time-series research
- It is as equally good as standard machine-learning classifiers.

DISCUSSION

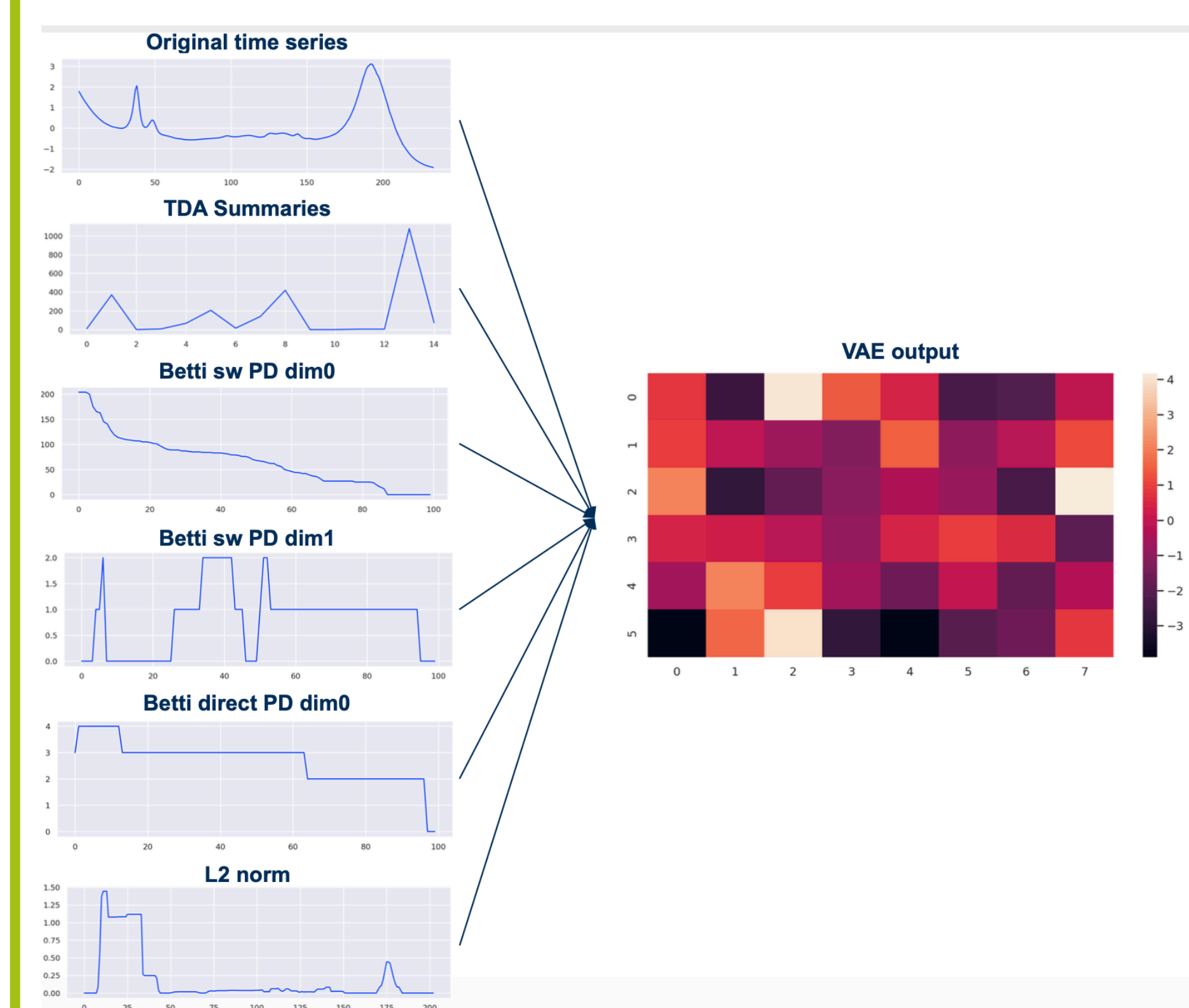
- The performance varies greatly depending on the dataset evaluated.
- The proposed approach's success depends on the structure of the time series and its corresponding point cloud

WHAT WE DO

- Create an ensemble of VAE inputs from TDA-based models
- Evaluate performance of TDA on multiple univariate time series datasets



The Effect of VAE



Dolan-More Curves

