**Multivariate time series results**

- TOTOPO works with **both univariate and multivariate** time series.
- TOTOPO is the **second best performer** compared to two baselines and a novel SOTA by Franceschi, [1].
- On the 4-channel dataset ERing TOTOPO improves accuracy from an average of 13.3% up to 94.4%.

**Univariate time series results**

- TOTOPO is the **third best classifier**, as suggested by CD diagram, on 78 univariate datasets from [2].
- TOTOPO outperforms all models on 5 out of 6 datasets of type DEVICE.

**Limitations:** TOTOPO underperforms on datasets with small differences between classes.

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**Objectives**

- Implement pipeline for topological data analysis (TDA) for time series classification
- Evaluate the performance on a broad range of datasets for time series classification
- Compare method to topological baselines and to state-of-the-art approaches

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**Innovation**

- Approach compared to both baselines and other TDA-based approaches.
- Uses sliding windows and direct extraction of Persistence Diagrams (PDs).
- Combines models as an ensemble.

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**TOTOPO**

- Create PDs from time series.
- Calculate TDA inputs from PDs: Betti series, TDA Summaries and L2-norms series.
- Train base learners on inputs and the original time series.
- Generate an ensemble of base learners.

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**Noise robustness exploration**

- Apply three noise levels to the signals.
- Compare average accuracies for each noise level on Figure 3.
- TOTOPO's accuracy deteriorates less then others for small noise levels.