Dictionary Methods for Time Series Classification and Regression

A Hands-on Introduction to Time Series Classification and Regression

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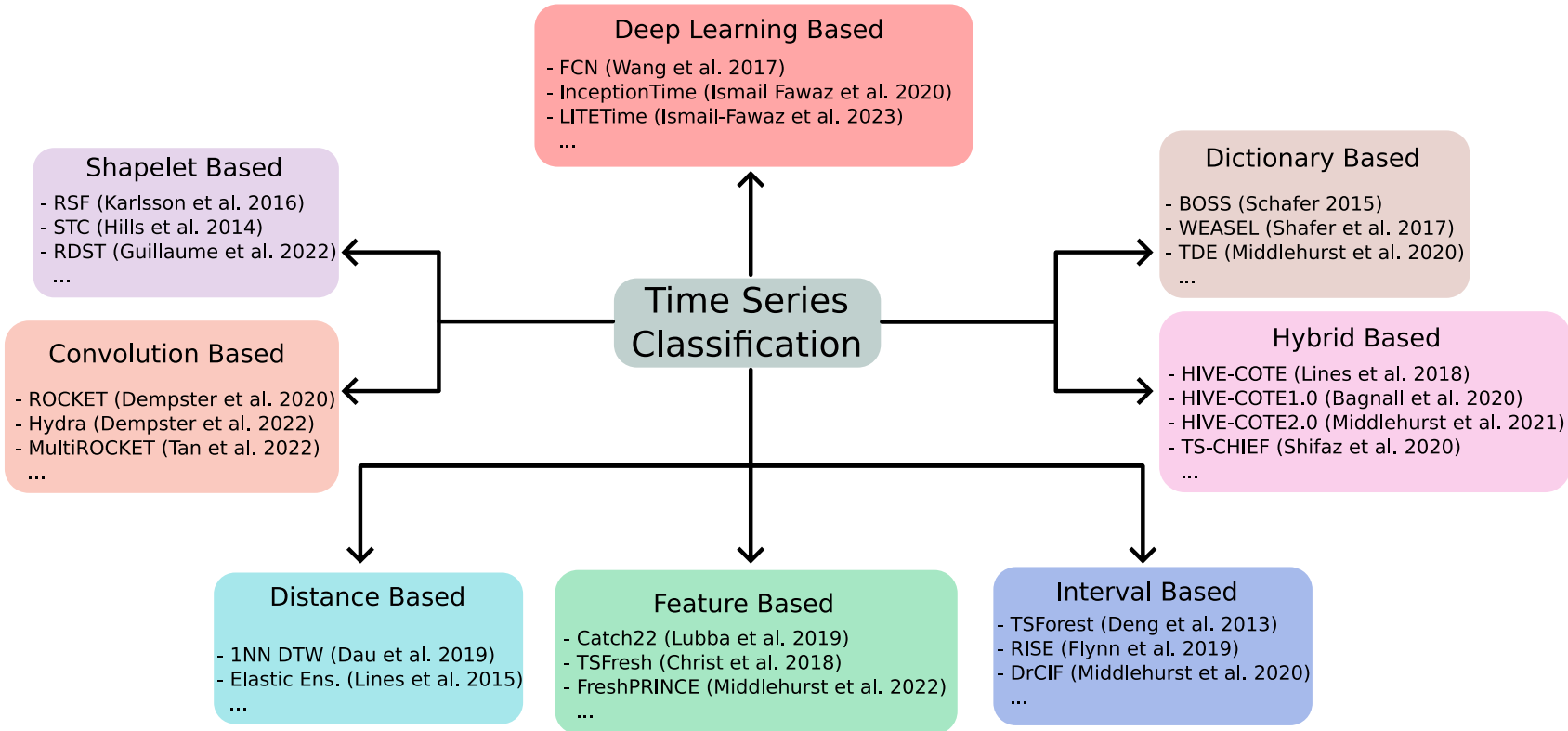
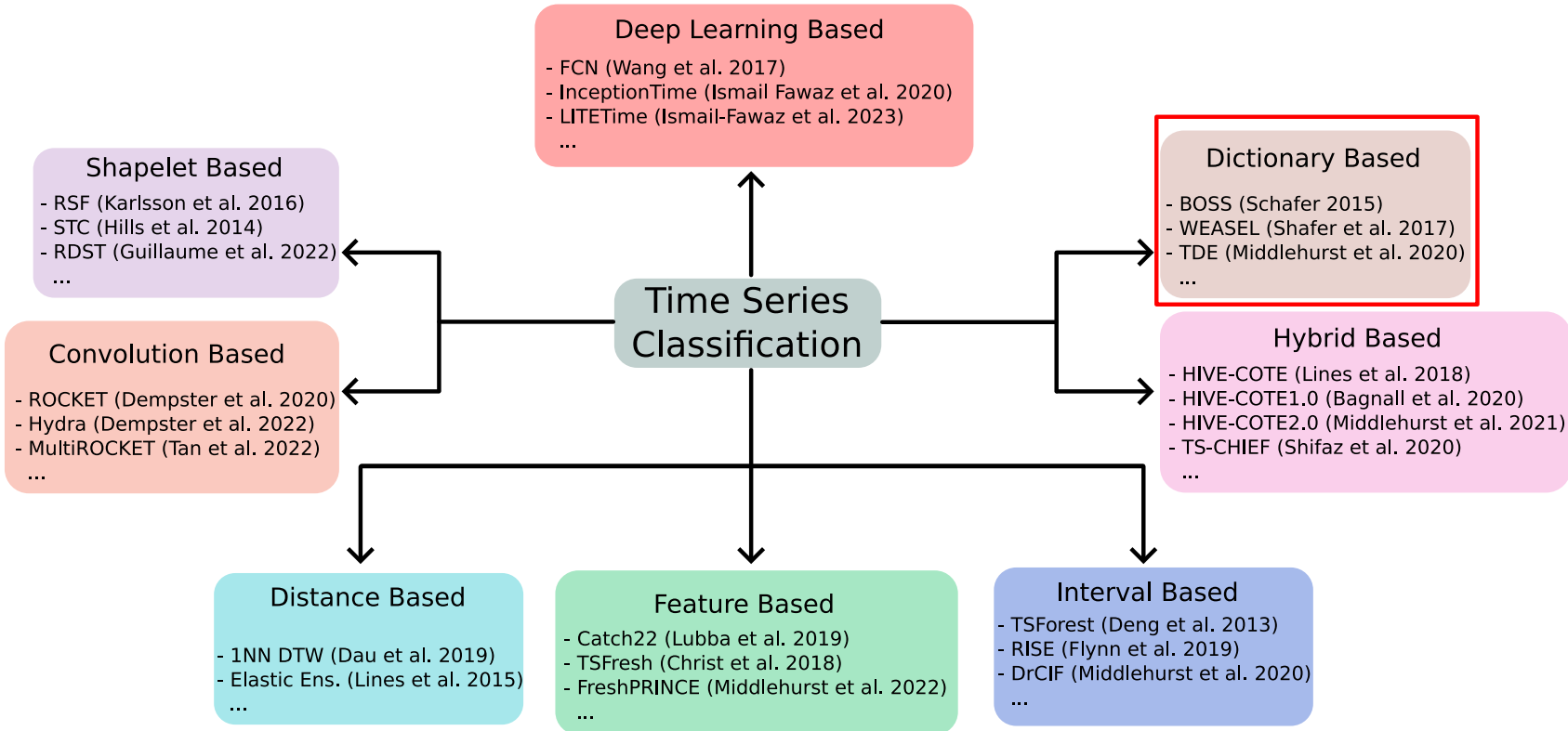
Taxonomy of methods



Middlehurst, M., Schäfer, P., & Bagnall, A. (2024). Bake off redux: a review and experimental evaluation of recent time series classification algorithms. Data Mining and Knowledge Discovery, 1-74.

Taxonomy of methods



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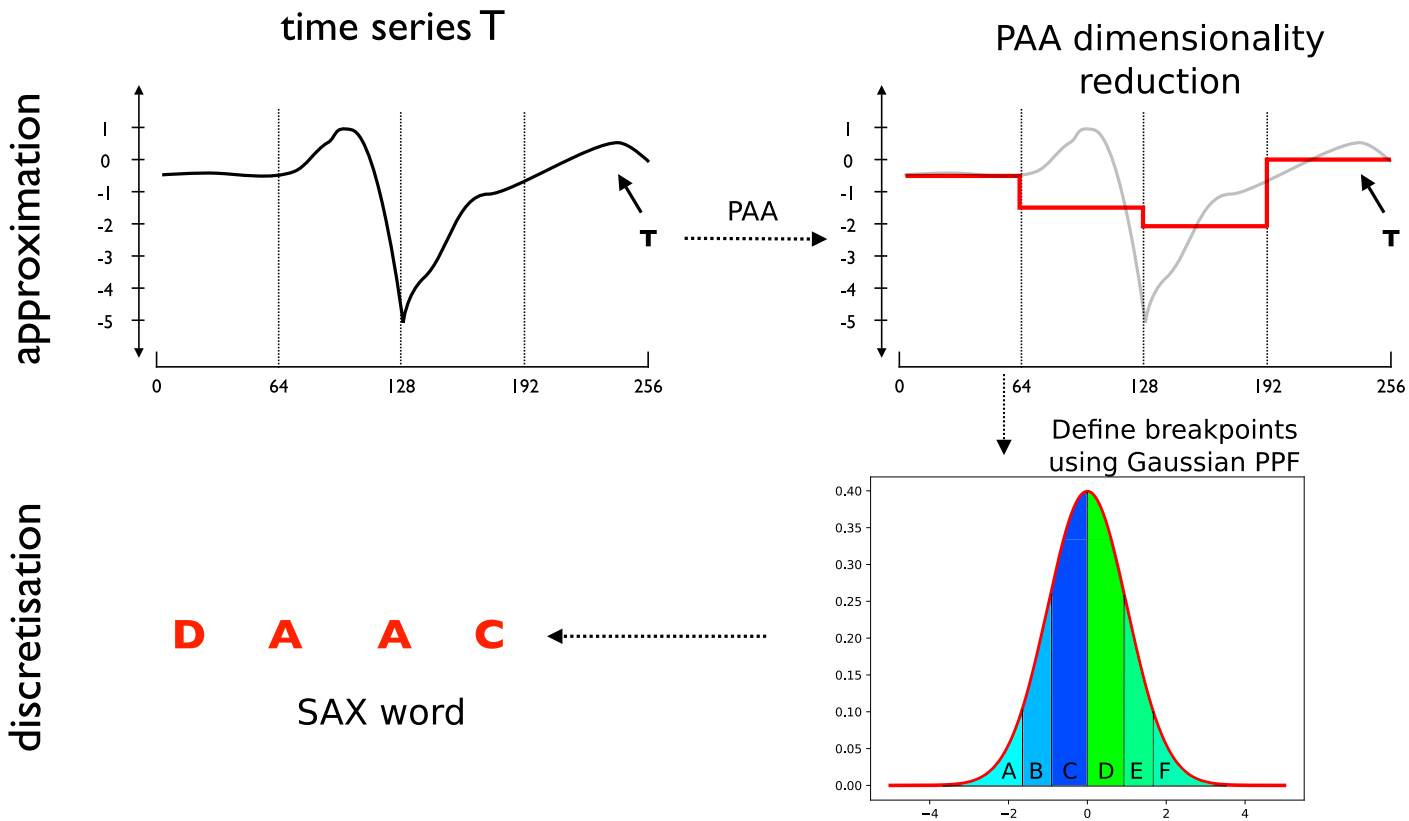
Dictionary Methods: Symbols Approximation

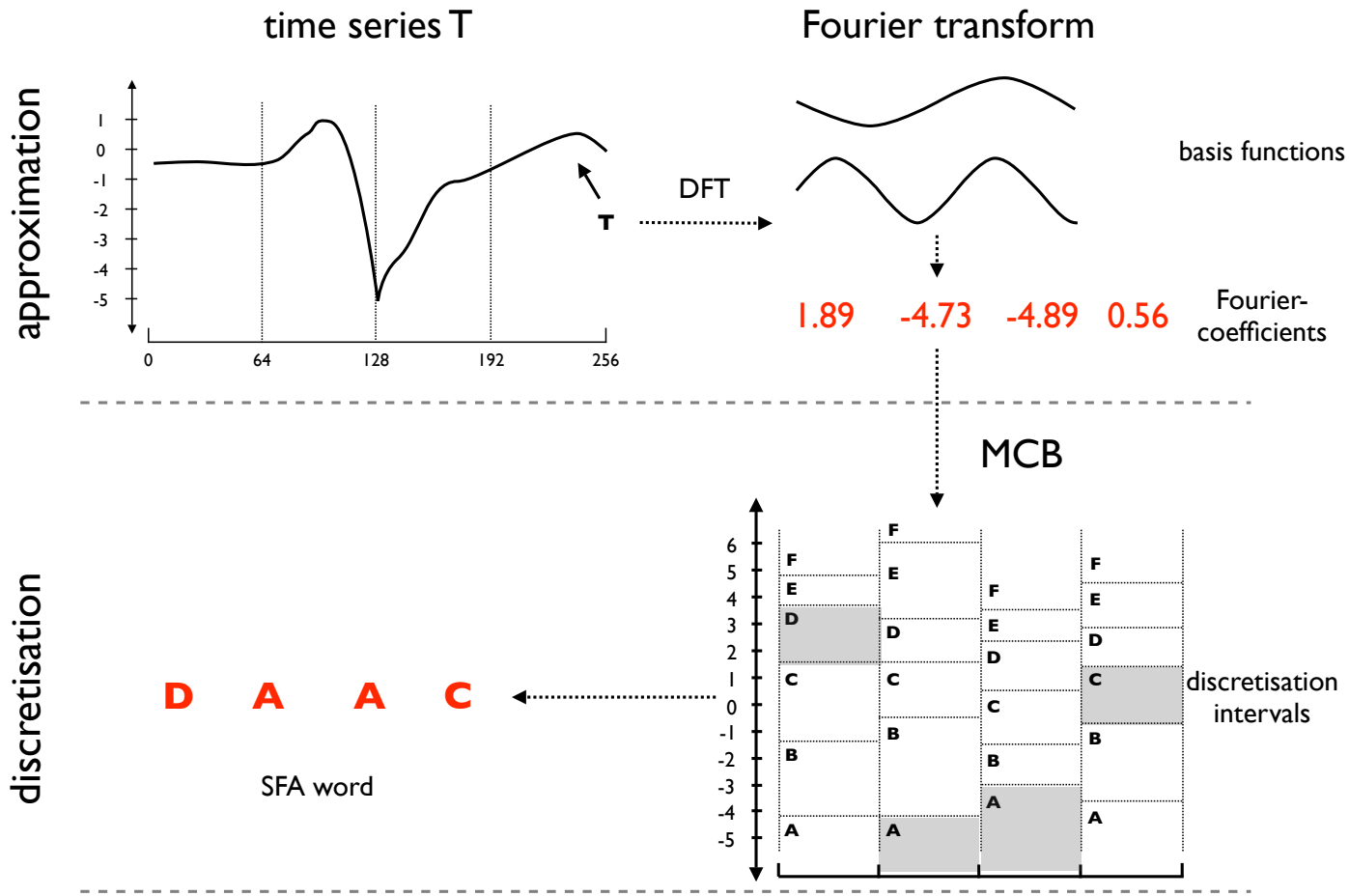
SAX: Symbolic Aggregate approXimation



- Lin, Jessica, et al. "Experiencing SAX: a novel symbolic representation of time series." Data Mining and knowledge discovery 15 (2007): 107-144.

Dictionary Methods: Symbols Approximation

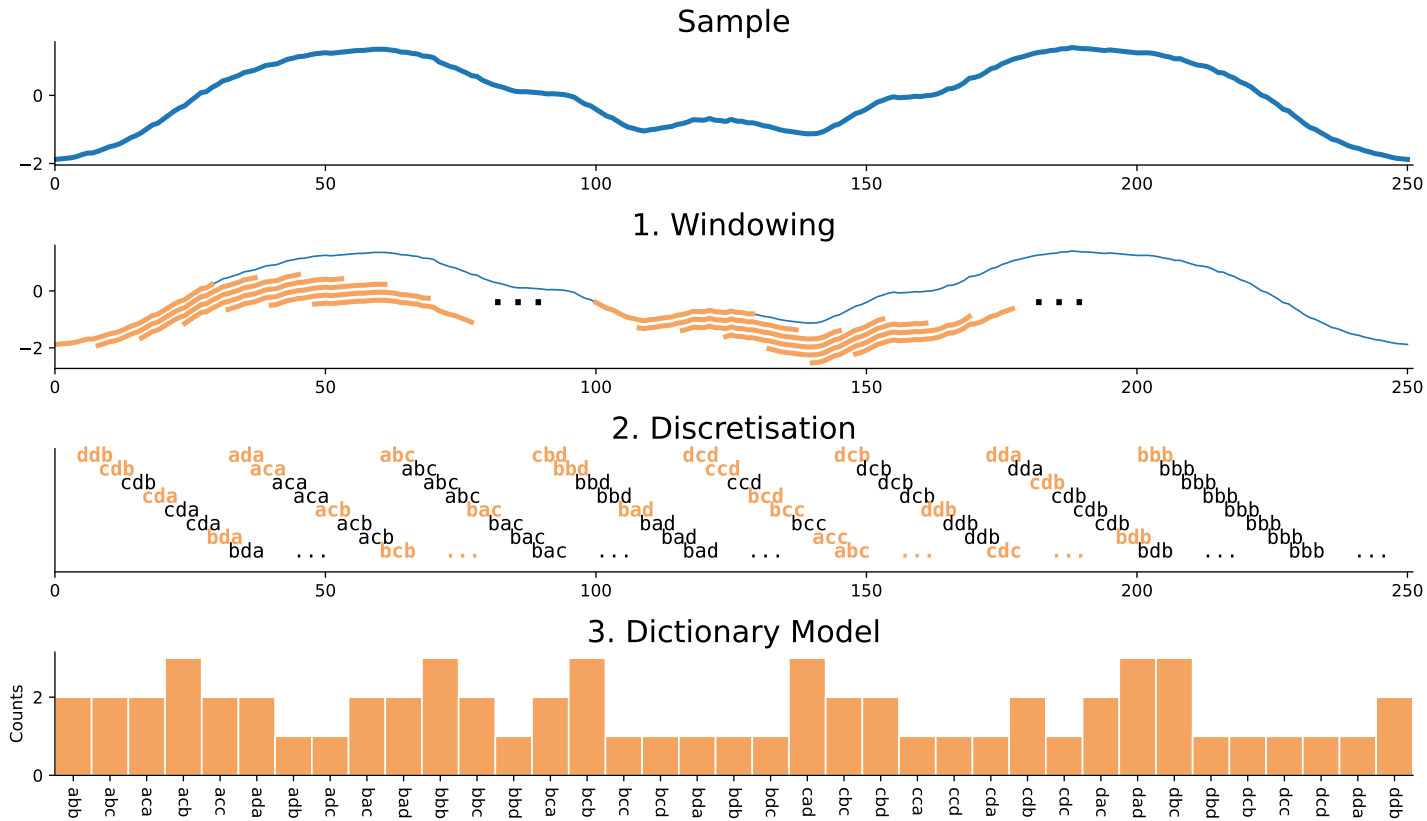
SFA: Symbolic Fourier Approximation



Schäfer, Patrick, and Mikael Högqvist. "SFA: a symbolic fourier approximation and index for similarity search in high dimensional datasets." Proceedings of the 15th international conference on extending database technology. 2012.

Dictionary Methods

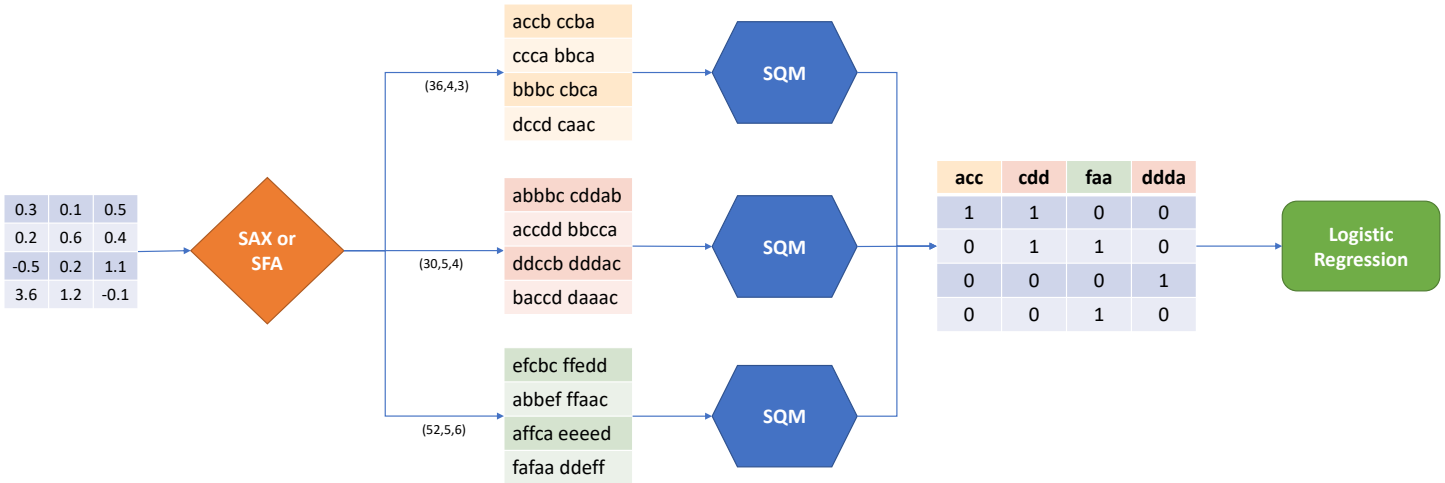
The BOSS



Schäfer, Patrick. "The BOSS is concerned with time series classification in the presence of noise." Data Mining and Knowledge Discovery 29 (2015): 1505-1530..

Dictionary Methods

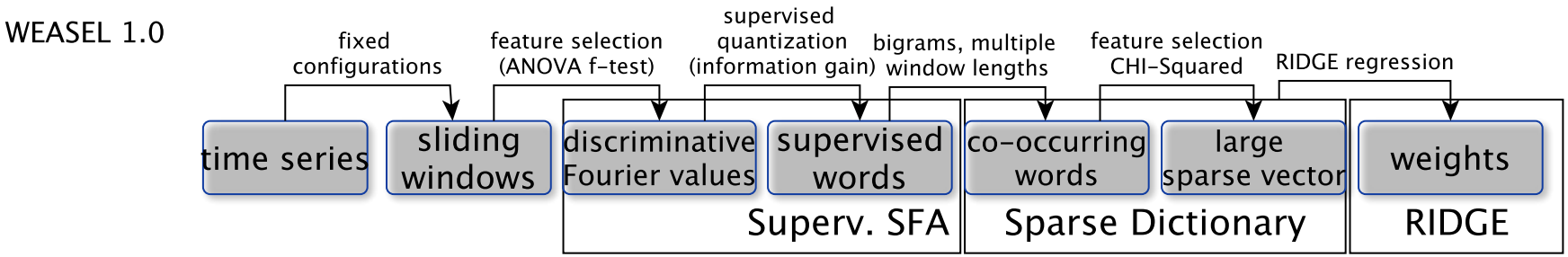
Multiple Representations Sequence Miner (MrSQM)



- Nguyen, Thach Le, and Georgiana Ifrim. "Fast time series classification with random symbolic subsequences." Advanced Analytics and Learning on Temporal Data: 7th ECML PKDD Workshop, AALTD 2022
- Nguyen, Thach Le, and Georgiana Ifrim. "MrSQM: Fast time series classification with symbolic representations." arXiv preprint arXiv:2109.01036 (2021).

Dictionary Methods

WEASELv1.0 and WEASELv2.0



- Schäfer, Patrick, and Ulf Leser. "Fast and accurate time series classification with weasel." Proceedings of the 2017 ACM on Conference on Information and Knowledge Management. 2017.
- Schäfer, Patrick, and Ulf Leser. "WEASEL 2.0: a random dilated dictionary transform for fast, accurate and memory constrained time series classification." Machine Learning 112.12 (2023): 4763-4788.

Dictionary Methods

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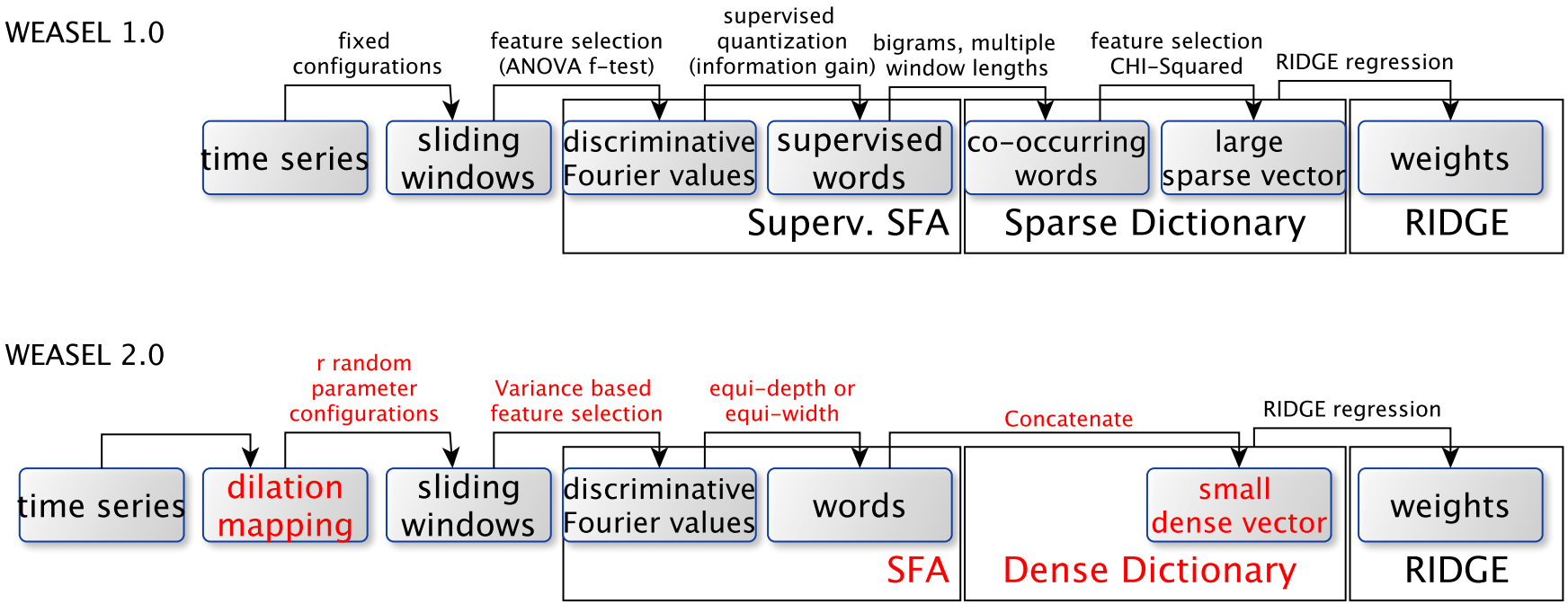

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Lets code!

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https://github.com/aeon-toolkit/aeon-tutorials/tree/main/KDD-2024/Slides/part6_dictionary_based.pdf

https://github.com/aeon-toolkit/aeon-tutorials/tree/main/KDD-2024/Notebooks/part6_dictionary_based.ipynb

https://msd-irimas.github.io/pages/dl4tsc/