Déjà vu: A data-centric forecasting approach through time series cross-similarity.

**Pre-processing Steps for forecasting with similar series:**

* pre-processing is essential for removing differences in seasonal patterns, randomness, or differences in scaling that lead to there not being representative series to forecast with
* This paper applies three steps:
  + **Removing seasonality** if identified as seasonal (which is re-added to the forecasts)
    - Apply box-cox transformation
    - STL decomposition is performed if the series is identified as seasonal through a seasonality test.
    - Non-seasonal series and series where the number of observations is fewer than three seasonal periods are assumed non-seasonal
    - Inverse box-cox is applied to the trend + remainder component
    - Seasonality is added back to the forecasts using the previous seasonal period (for us, we would just add the seasonal component back in)
  + **Smooth the seasonally adjusted series** to remove randomness and possible outliers
    - Apply Loess smoothing to the inverse box-cox transformed trend and remained component (or the full series if non-seasonal)
    - Applied using the *stats* package in R
    - Note that yearly and quarterly benefitted from “less” smoothing, while monthly benefitted from “more” smoothing
  + **Scale the target and reference series** to the same magnitude so that values are comparable
    - Each point is divided by the forecast origin
      * Different scaling needs to be applied if either the target or reference series contain zero values
    - Inverse the scaling by multiplying the origin