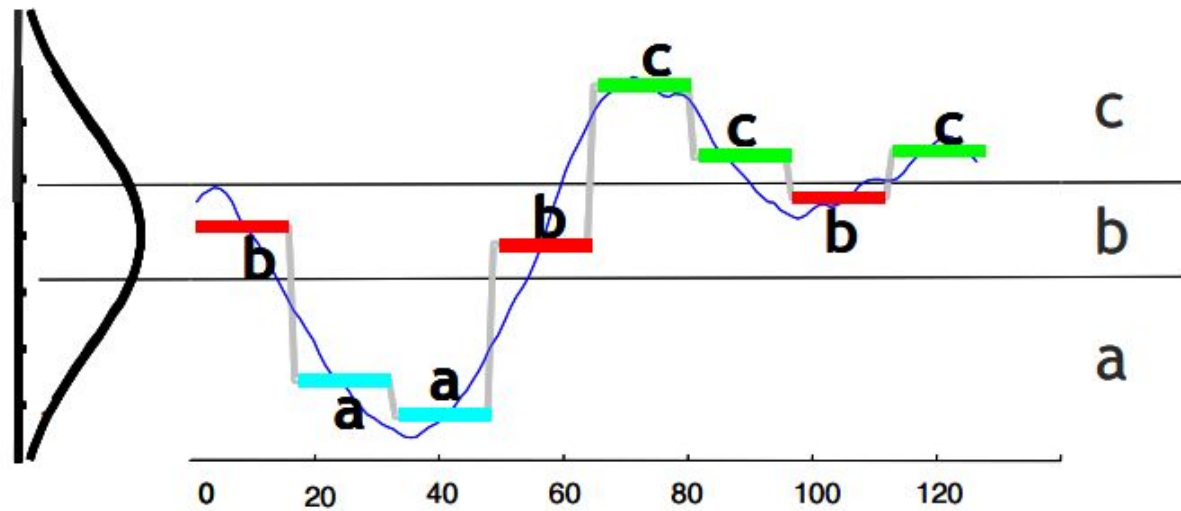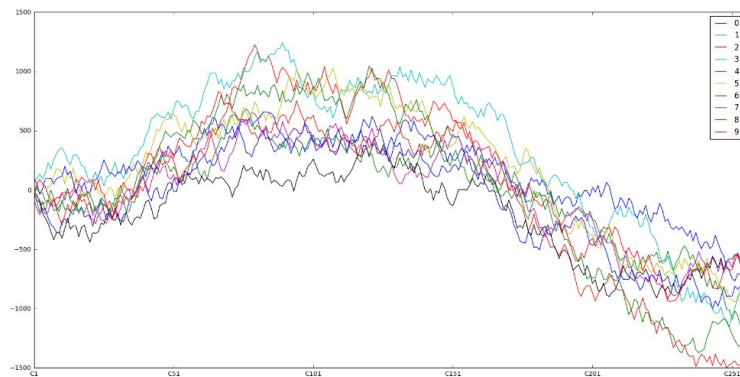# ISAX

- Time series data compression algorithm, implemented on H2O's distributed architecture
- Find groups of similar time series patterns in one billion
  - http://blog.h2o.ai/2016/11/indexing-1-billion-time-series-with-h2o-and-isax/
- ISAX applied to fields such as IoT, Finance, BioInformatics,Image/Sound processing.
  - http://www.cs.ucr.edu/~eamonn/SAX.htm
- Compress your time series data and run:
  - Clustering
  - Classification
  - Anomaly Detection
  - Predictive analytics

ISAX

ISAX

- Highly scalable, tested on 2TB of data, 1Billion time series w/ 256 points (columns)
  - Leverages H2O's MapReduce framework
- Accessible from R or Python
- Image below, a group of similar time series was found from 1 Billion. Search took ~5 minutes. Indexing took 10 minutes.

Time Series at H2O

- More time series features are coming to H2O soon. Keep checking back!
  - Pivoting
  - Rolling Window

Good H2O code examples

- https://github.com/h2oai/h2o-3/blob/master/h2o-core/src/main/java/water/rapids/ast/prims/reducers/AstCumu.java

- https://github.com/h2oai/h2o-3/blob/master/h2o-core/src/main/java/water/rapids/ast/prims/timeseries/AstIsax.java

- http://blog.h2o.ai/2014/03/h2o-architecture/