



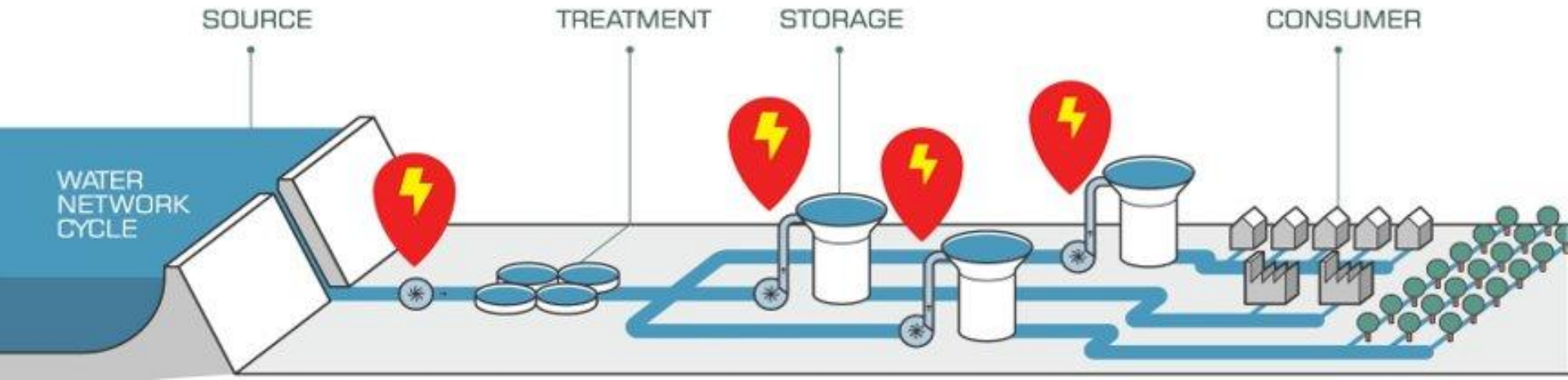
Time Series Forecast at Scale

Scale-up the model creation step

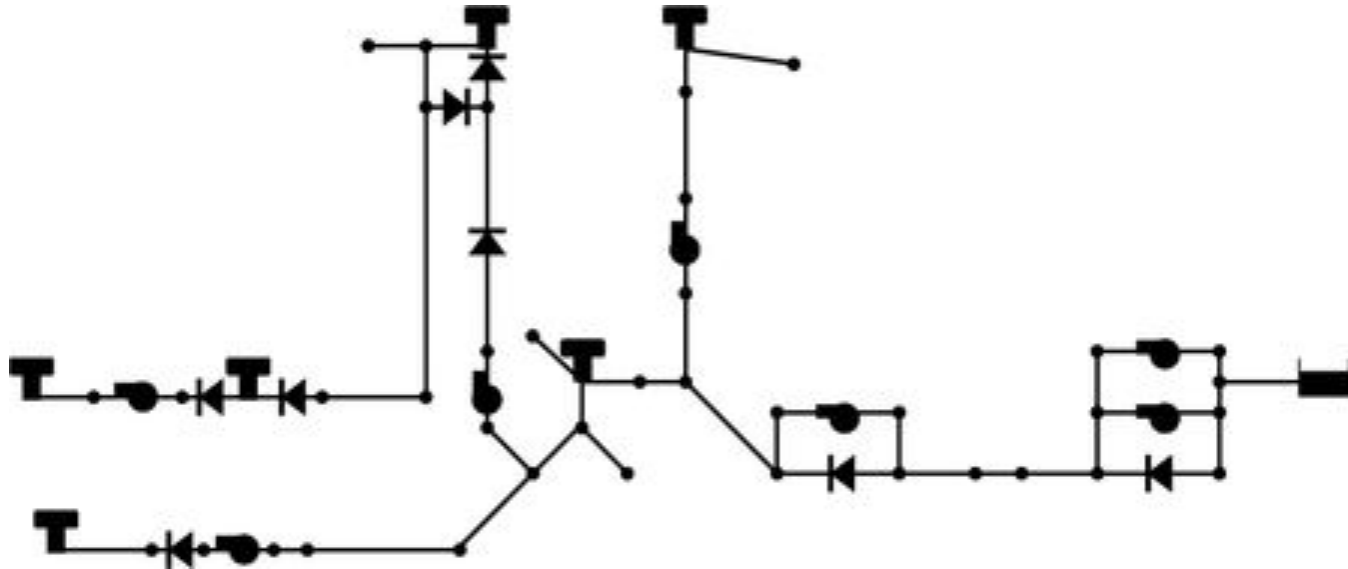
André Antunes - SCUBIC - June 2019



SCUBIC - WSS Optimization



SCUBIC - Water Networks





SCUBIC - Pipeline



PREDICTION



OPTIMIZATION

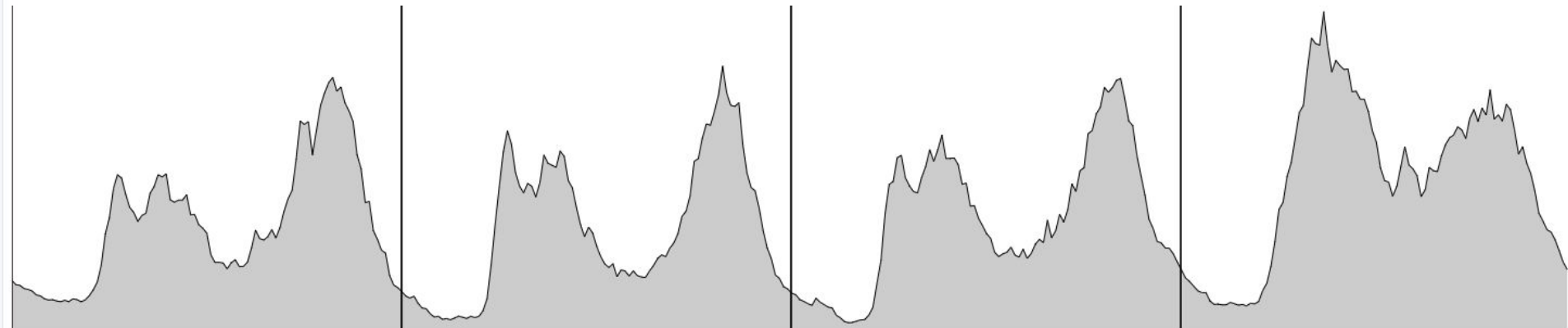


REDUCTION



SCUBIC - Time Series Forecast

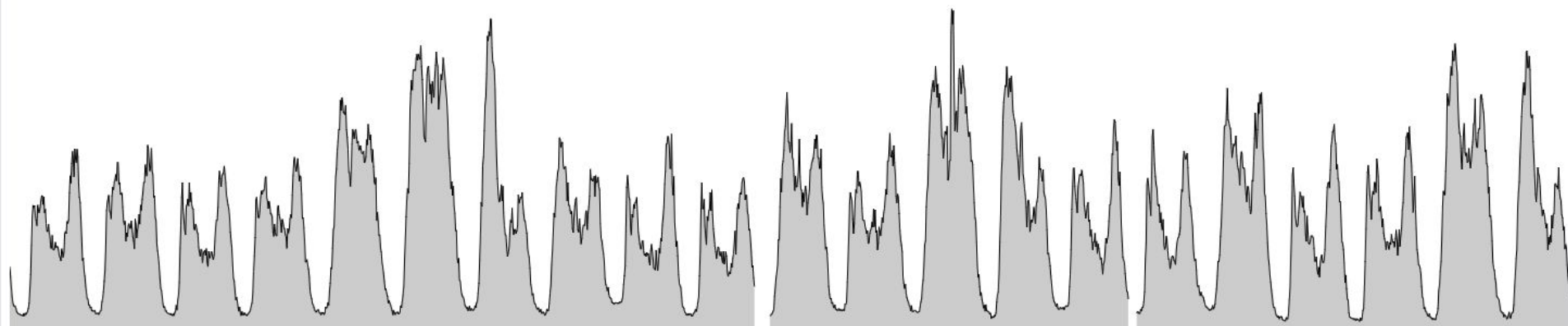
Junction2 - 4 Days





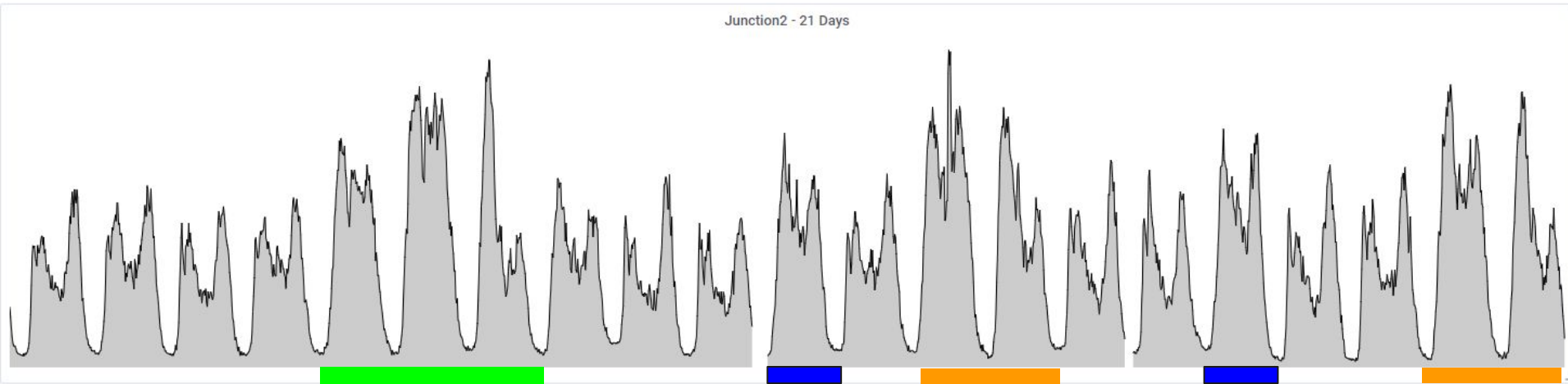
SCUBIC - Features

Junction2 - 21 Days





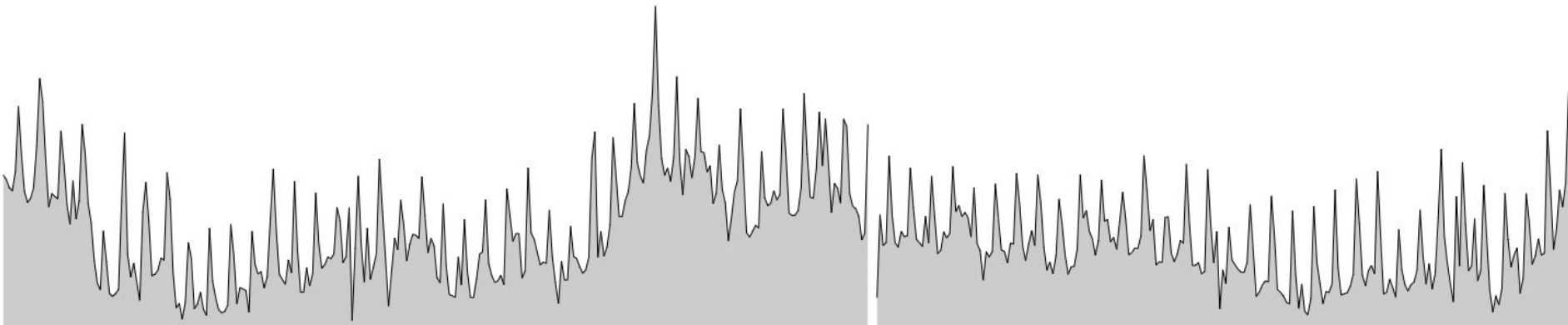
SCUBIC - Features





SCUBIC - Features

Junction2 -1.5 Years





SCUBIC - Pursuit of Perfection

- 1 MSc
 - Metrics and Models
- 2 Papers published
 - Sensitive Analysis
- 1 Pilot - INOVA, SA
 - Forecast + Optimization



SCUBIC- 1st Paying Customers





SCUBIC - Scale-up Strategy

class ScubicModel	
def filter()	def cross_val()
def create_matrix()	def save()
def fit()	...
class predict()	



SCUBIC - High-level as a Scale-up Strategy

class ScubicModel	
def filter()	def cross_val()
def create_matrix()	def save()
def fit()	...
class predict()	

class ClusteringModel
def create_matrix()
...



SCUBIC - Pandas

`pandas.to_datetime('Time')`

`pandas.set_index()`

`pandas.interpolate('time')`

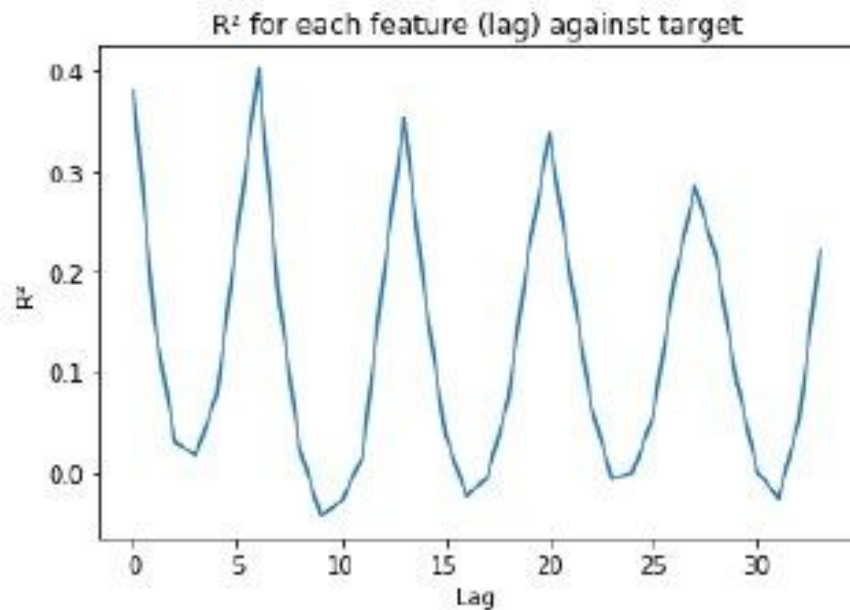
`pandas.shift()`

`pandas.resample(frequency).mean().interpolate('time')`

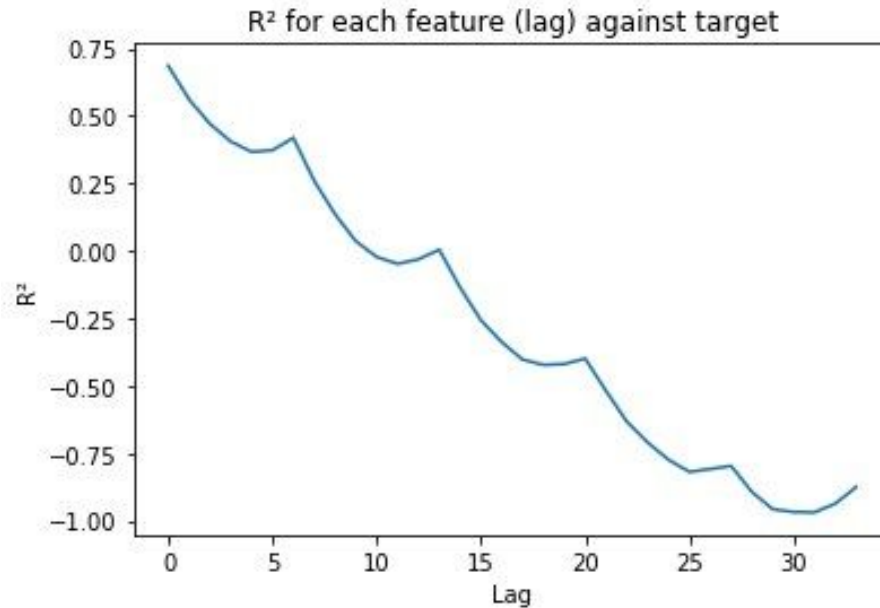
`pandas.mask(outliers)`

- `df.mask(df.sub(df.mean()).div(df.std()).abs().gt(3))`

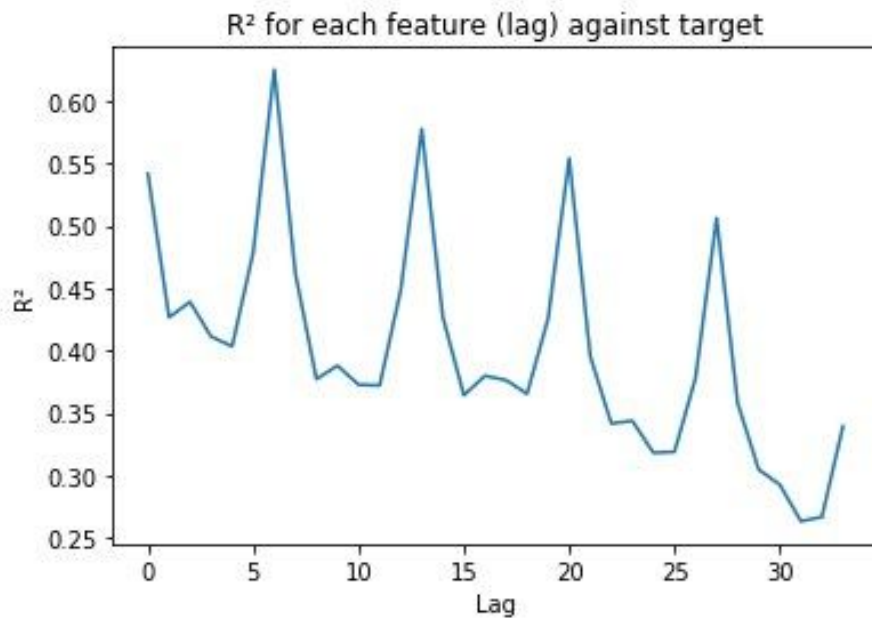
SCUBIC - Feature Selection



SCUBIC - Feature Selection



SCUBIC - Feature Selection





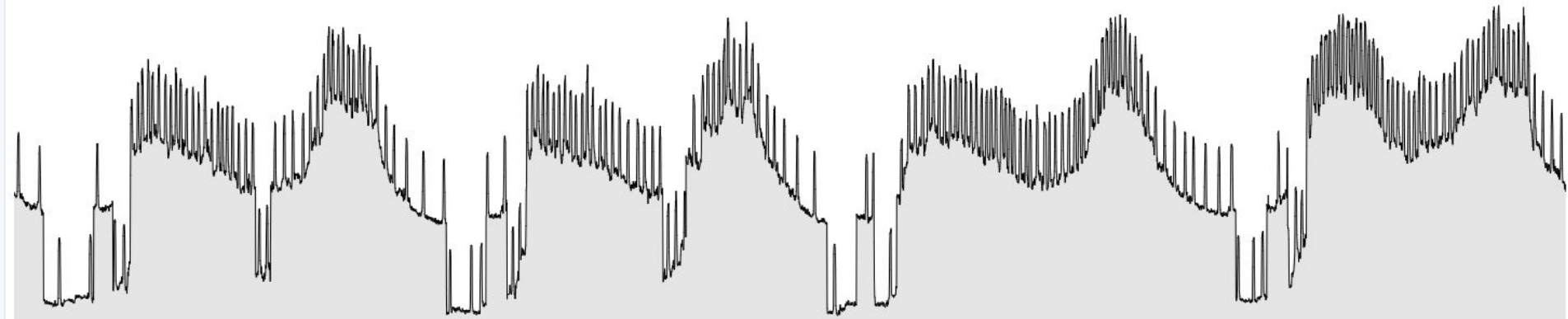
SCUBIC - Cross Validation





SCUBIC- Next Steps

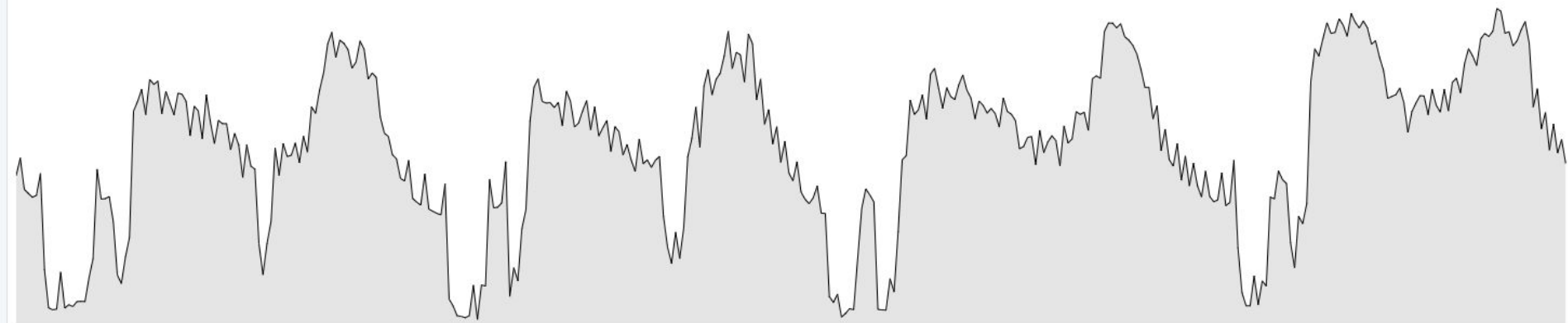
Junction3 - 4 Days





SCUBIC- Next Steps

Junction3 - 4 Days





SCUBIC- Next Steps

Junction3 - 4 Days

