
Modeling Holidays and Special Events

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import pandas as pd
import numpy as np
from prophet import Prophet
import matplotlib.pyplot as plt

playoffs = pd.DataFrame({
    'holiday': 'playoff',
    'ds': pd.to_datetime(['2008-01-13', '2009-01-03', '2010-01-16',
                          '2010-01-24', '2010-02-07', '2011-01-08',
                          '2013-01-12', '2014-01-12', '2014-01-19',
                          '2014-02-02', '2015-01-11', '2016-01-17',
                          '2016-01-24', '2016-02-07']),
    'lower_window': 0,
    'upper_window': 1,
})

superbowls = pd.DataFrame({
    'holiday': 'superbowl',
    'ds': pd.to_datetime(['2010-02-07', '2014-02-02', '2016-02-07']),
    'lower_window': 0,
    'upper_window': 1,
})

holidays = pd.concat((playoffs, superbows))

m = Prophet(holidays=holidays)
forecast = m.fit(df).predict(future)

forecast[(forecast['playoff'] + forecast['superbowl']).abs() > 0][
    ['ds', 'playoff', 'superbowl']][-10:]

fig = m.plot_components(forecast)
```