Chapter 8: Demo svm.SVR

```python
In [0]: import numpy as np
        from sklearn.svm import SVR
        import matplotlib.pyplot as plt
```

```python
In [0]: X = np.array([[0.2313566 ], [0.35230223], [0.45908406], [0.48294093],
                [0.58074839], [0.62907617], [0.65463391], [0.66907165],
                [0.72477906], [0.84710095], [0.86498594], [0.90941156],
                [1.13304331], [1.25504584], [1.44700167], [1.74536094],
                [1.79142627], [1.83170011], [1.88076225], [2.0105496 ],
                [2.26131001], [2.29476084], [2.41590987], [2.47337582],
                [2.6651377 ], [2.68692155], [2.99062486], [3.43585631],
                [3.50038771], [4.11040781], [4.22895473], [4.31548218],
                [4.39430932], [4.44893063], [4.51696106], [4.65979544],
                [4.73270839], [4.89174978], [4.89780429], [4.93440963]])
```

```python
In [0]: y = np.array([ 0.96101284,  0.2415537 ,  0.25846608,  0.36762907,  0.48615592,
                -0.6262452 ,  0.64025271,  0.65477594,  0.8324045 ,  0.92479558,
                 2.02978015,  0.99651699,  0.99683044,  0.99995752,  0.97941008,
                 0.00497547,  0.96920264,  0.92358315,  0.91018836,  0.90276912,
                 2.14437202,  0.59680595,  0.51094802,  0.38943511,  0.27458801,
                 0.86368324, -0.26469069, -0.28272056, -0.36471195, -0.41187662,
                -1.32386553, -0.75770017, -0.83174207, -0.90513234, -0.95911322,
                -1.55498376, -0.99902373, -0.9992663 , -0.99879695, -0.96345159])
```
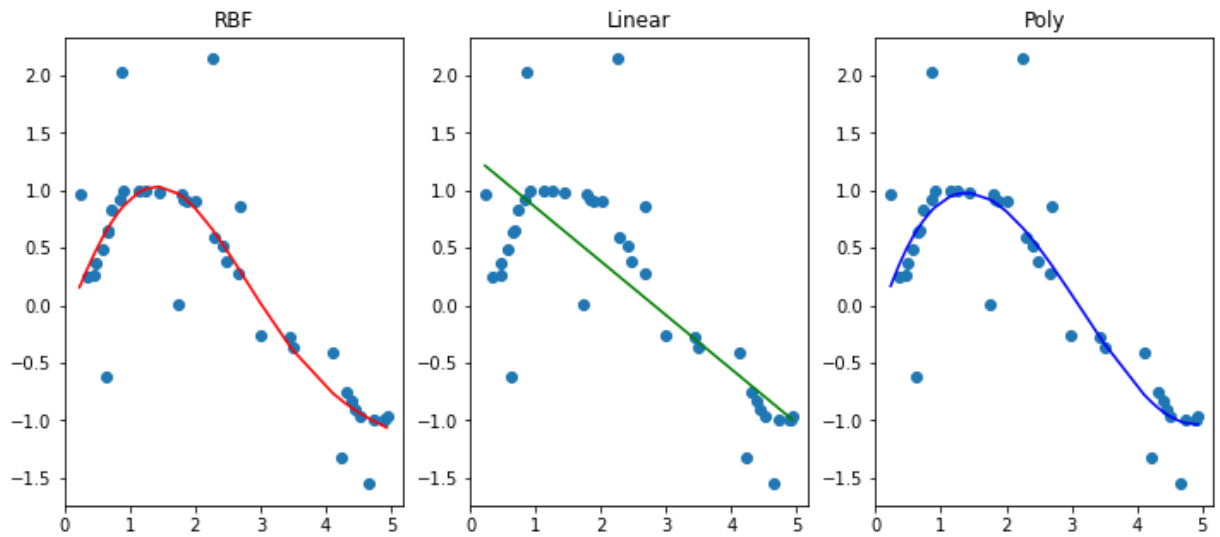
```python
In [0]: # Fit regression model
        svr_rbf = SVR(kernel='rbf', C=100, gamma=0.1)
        svr_lin = SVR(kernel='linear', C=100)
        svr_poly = SVR(kernel='poly', C=100, degree=3, coef0=1)
```

```python
In [0]: svr_rbf.fit(X, y)
        yhat_rbf = svr_rbf.predict(X)
```

```python
In [0]: svr_lin.fit(X,y)
        yhat_lin = svr_lin.predict(X)
```

```python
In [0]: svr_poly.fit(X,y)
        yhat_poly = svr_poly.predict(X)
```

In [8]:
```python
plt.figure(figsize=(12,5))
plt.subplot(1,3,1)
plt.plot(X,yhat_rbf, color='r')
plt.scatter(X,y)
plt.title("RBF")
plt.subplot(1,3,2)
plt.plot(X,yhat_lin, color='g')
plt.scatter(X,y)
plt.title("Linear")
plt.subplot(1,3,3)
plt.plot(X,yhat_poly, color='b')
plt.scatter(X,y)
plt.title("Poly")
plt.show()
```


In [0]: