Untitled

November 1, 2021

```python
[264]: import pandas as pd
```

```python
[265]: import matplotlib.pyplot as plt
```

```python
[266]: data = pd.read_csv('WEIGHTS-PLOT.csv')

       #plt.xlabel('Time (ms)')
       #plt.ylabel('Current(ma)')
       #data['actual_current_0'].plot()
```
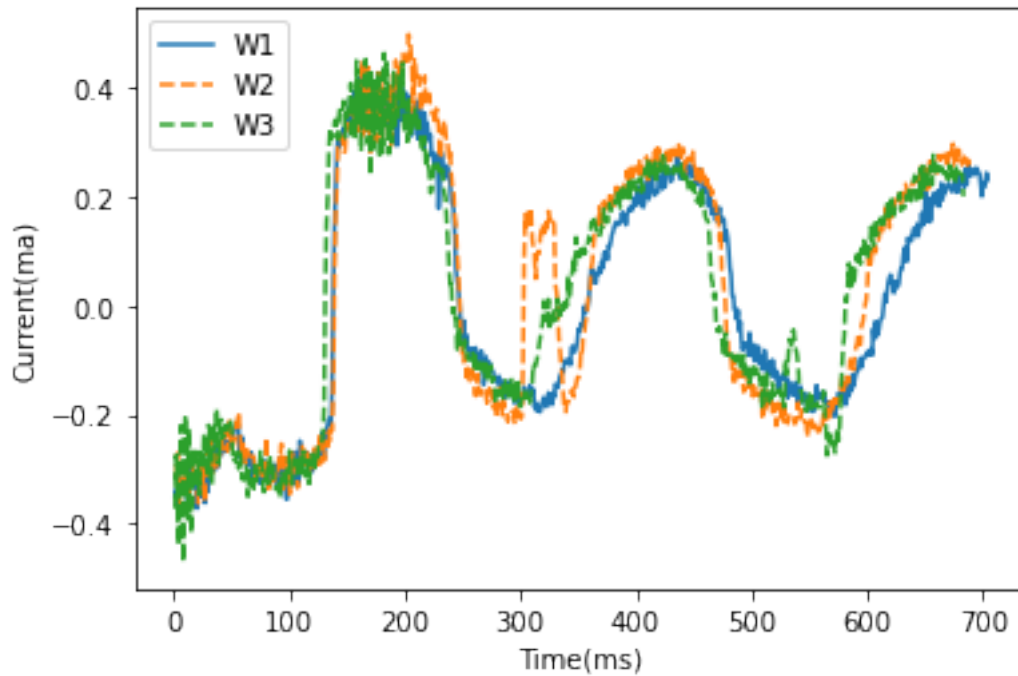
```python
[267]: w1 = data['W1_0'].tolist()
       w2 = data['W2_0'].tolist()
       w3 = data['W3_0'].tolist()
       ts = data['TimeStamp'].tolist()
```

```python
[ ]:
```
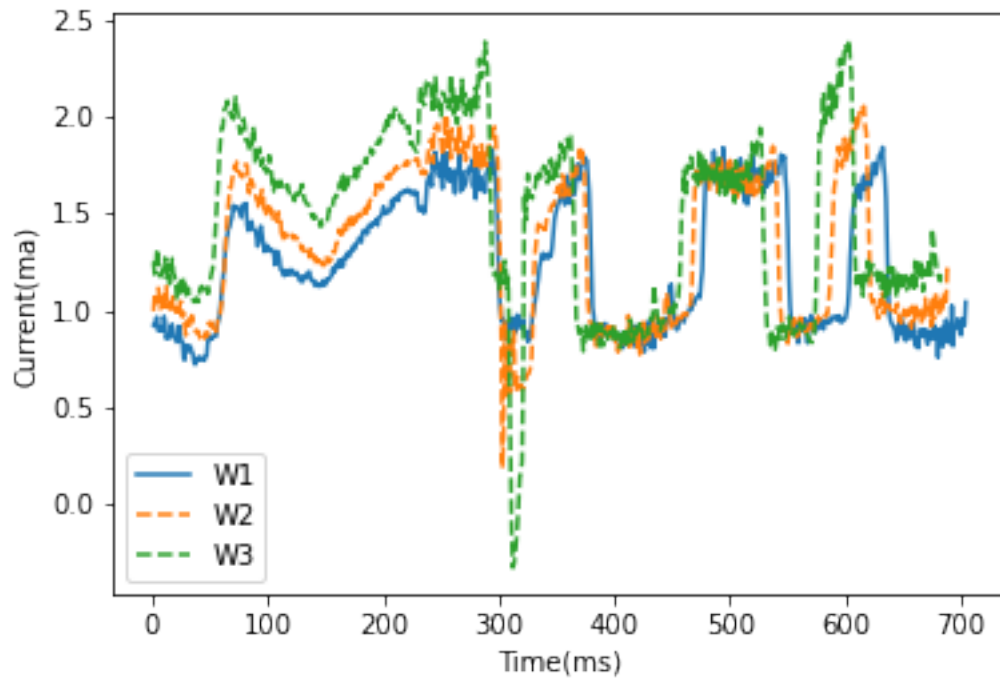
```python
[ ]:
```

```python
[268]: fig, ax= plt.subplots()
       ax.plot(ts, w1, label='W1')
       ax.plot(ts, w2, label='W2', linestyle='dashed')
       ax.plot(ts, w3, label='W3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j0-weight.pdf")
```
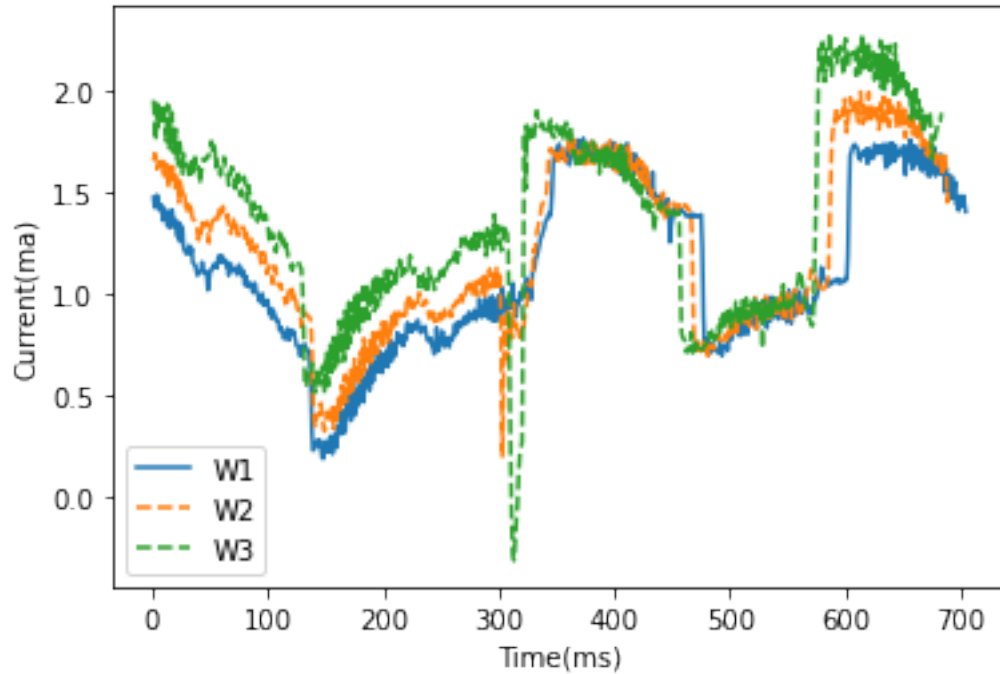
```
[269]:  w1 = data['W1_1'].tolist()
        w2 = data['W2_1'].tolist()
        w3 = data['W3_1'].tolist()
        ts = data['TimeStamp'].tolist()
```

```
[270]:  fig, ax= plt.subplots()
        ax.plot(ts, w1, label='W1')
        ax.plot(ts, w2, label='W2', linestyle='dashed')
        ax.plot(ts, w3, label='W3', linestyle='dashed')
        ax.legend()
        plt.xlabel('Time(ms)')
        plt.ylabel('Current(ma)')
        plt.savefig("j1-weight.pdf")
```

Current(ma)

2.5

2.0

1.5

1.0

0.5

0.0

W1
W2
W3

0   100   200   300   400   500   600   700
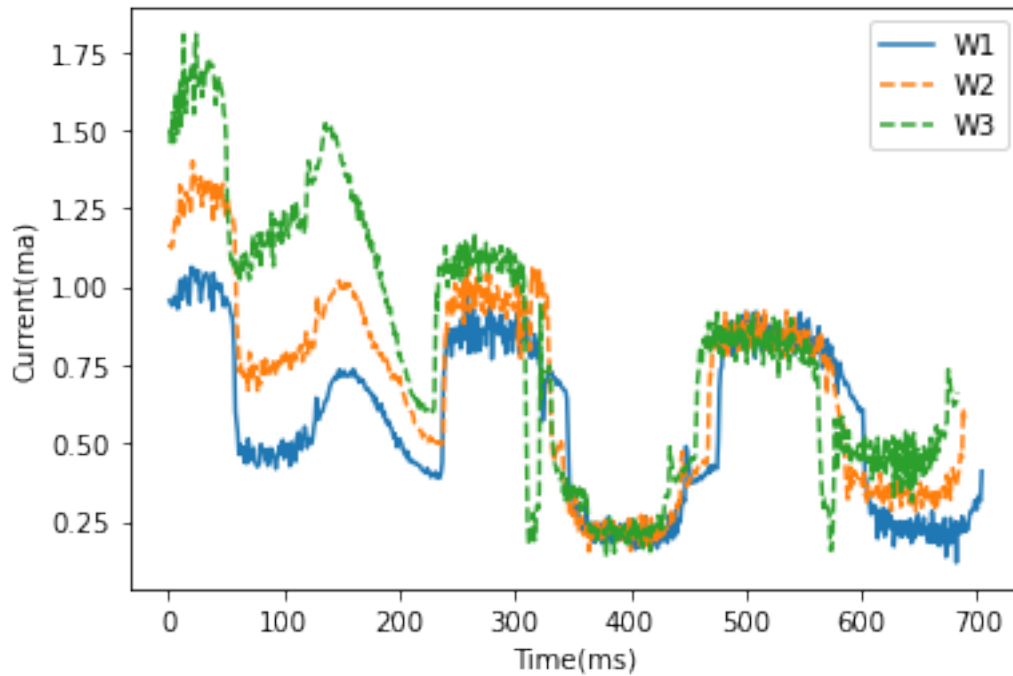
Time(ms)

```
[271]: w1 = data['W1_2'].tolist()
       w2 = data['W2_2'].tolist()
       w3 = data['W3_2'].tolist()
       ts = data['TimeStamp'].tolist()
```

```
[272]: fig, ax= plt.subplots()
       ax.plot(ts, w1, label='W1')
       ax.plot(ts, w2, label='W2', linestyle='dashed')
       ax.plot(ts, w3, label='W3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j2-weight.pdf")
```
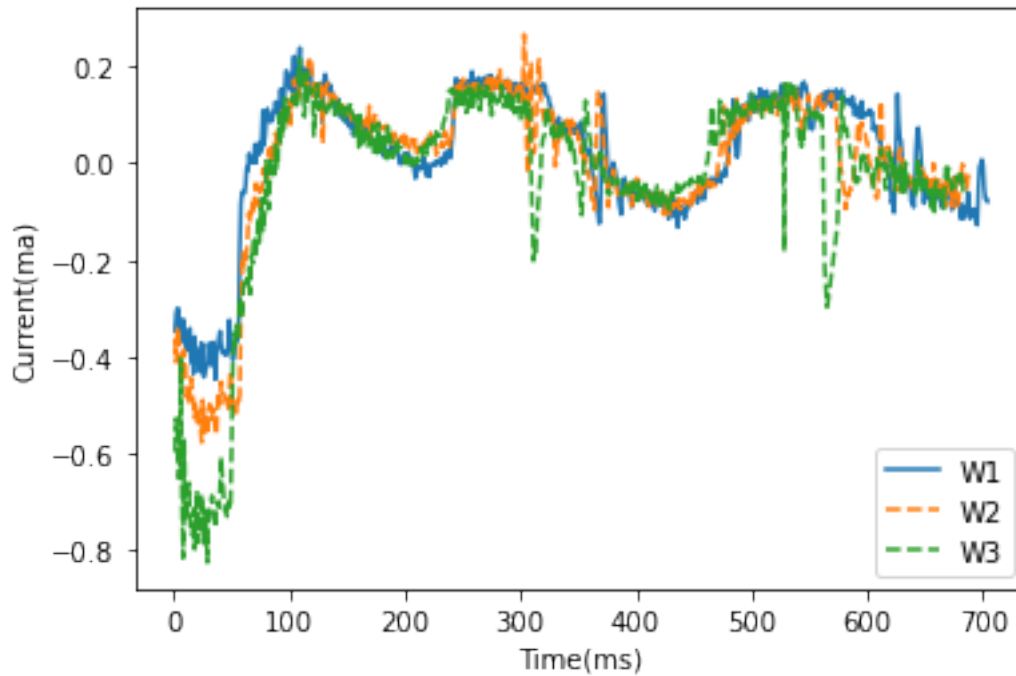
3

```
[273]: w1 = data['W1_3'].tolist()
       w2 = data['W2_3'].tolist()
       w3 = data['W3_3'].tolist()
       ts = data['TimeStamp'].tolist()
```

```
[274]: fig, ax= plt.subplots()
       ax.plot(ts, w1, label='W1')
       ax.plot(ts, w2, label='W2', linestyle='dashed')
       ax.plot(ts, w3, label='W3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j3-weight.pdf")
```

```
[275]: w1 = data['W1_4'].tolist()
       w2 = data['W2_4'].tolist()
       w3 = data['W3_4'].tolist()
       ts = data['TimeStamp'].tolist()
```

```
[276]: fig, ax= plt.subplots()
       ax.plot(ts, w1, label='W1')
       ax.plot(ts, w2, label='W2', linestyle='dashed')
       ax.plot(ts, w3, label='W3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j4-weight.pdf")
```

```
[277]: w1 = data['W1_5'].tolist()
       w2 = data['W2_5'].tolist()
       w3 = data['W3_5'].tolist()
       ts = data['TimeStamp'].tolist()
```

```
[278]: fig, ax= plt.subplots()
       ax.plot(ts, w1, label='W1')
       ax.plot(ts, w2, label='W2', linestyle='dashed')
       ax.plot(ts, w3, label='W3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j5-weight.pdf")
```
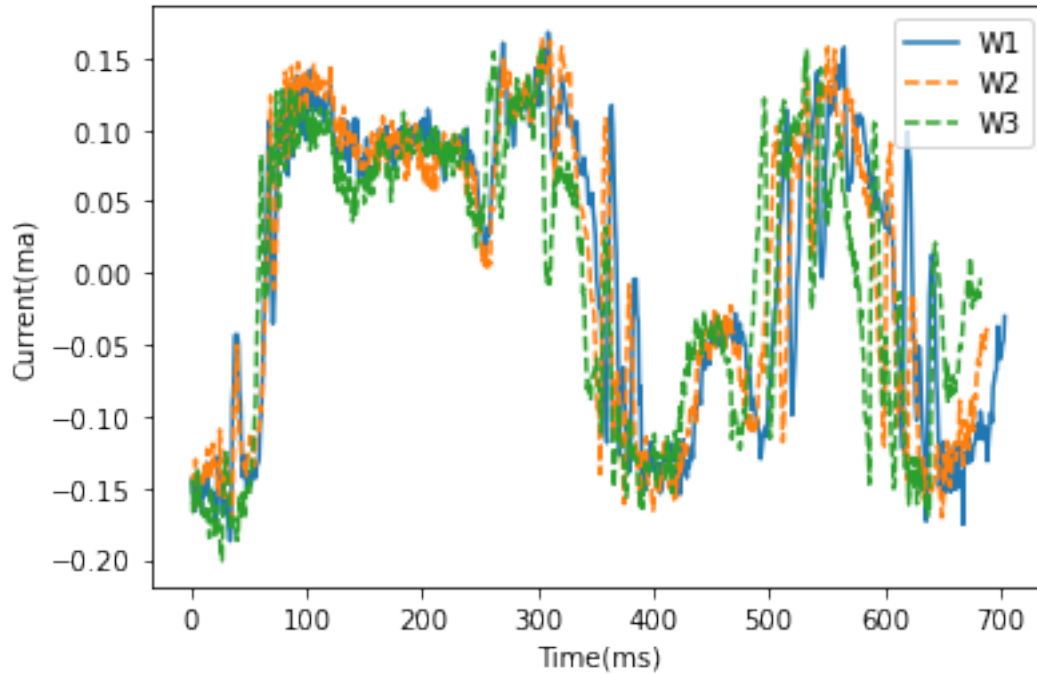
```
data = pd.read_csv('VELOCITY-PLOT.csv')
data.head()
```

```
   TimeStamp     V10_0     V10_1     V10_2     V10_3     V10_4     V10_5  \
0          1 -0.000143 -0.923103 -0.567551 -0.271983  0.000261 -0.000006
1          2 -0.000367 -0.927725 -0.572223 -0.269897  0.000269 -0.000015
2          3 -0.000693 -0.934536 -0.579265 -0.266845  0.000280 -0.000028
3          4 -0.000547 -0.931825 -0.577238 -0.268163  0.000276 -0.000022
4          5 -0.000540 -0.932090 -0.578463 -0.268169  0.000276 -0.000022

      V50_0     V50_1     V50_2  …    V200_2    V200_3    V200_4    V200_5  \
0 -0.000081 -0.921830 -0.566276  … -0.699517 -0.212597  0.000482 -0.000263
1 -0.000631 -0.933115 -0.577500  … -0.833334 -0.155150  0.000700 -0.000514
2 -0.001692 -0.955167 -0.599727  … -0.814288 -0.172558  0.000646 -0.000446
3 -0.003228 -0.988260 -0.633724  … -0.837593 -0.174620  0.000653 -0.000446
4 -0.002597 -0.978787 -0.627179  … -0.867579 -0.177062  0.000664 -0.000446

     V250_0    V250_1    V250_2    V250_3    V250_4    V250_5
0 -0.000039 -0.920969 -0.565424 -0.272950  0.000257 -0.000002
1 -0.002089 -0.963060 -0.607149 -0.253857  0.000328 -0.000084
2 -0.007148 -1.069718 -0.713725 -0.205860  0.000507 -0.000292
3 -0.014438 -1.244230 -0.889153 -0.129659  0.000795 -0.000625
```

7

```
4 -0.012021 -1.281011 -0.929811 -0.122564  0.000837 -0.000669
```

[5 rows x 31 columns]

[292]:
```
#V1 = data['V10_0'].tolist()
#V2 = data['V50_0'].tolist()
V1 = data['V100_0'].tolist()
V2 = data['V200_0'].tolist()
V3 = data['V250_0'].tolist()
ts = data['TimeStamp'].tolist()
```

[293]:
```
fig, ax= plt.subplots()
#ax.plot(ts, V1, label='V1')
ax.plot(ts, V1, label='V1', linestyle='dashed')
ax.plot(ts, V2, label='V2', linestyle='dashed')
ax.plot(ts, V3, label='V3', linestyle='dashed')
#ax.plot(ts, V5, label='V5', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j0-vel.pdf")
```
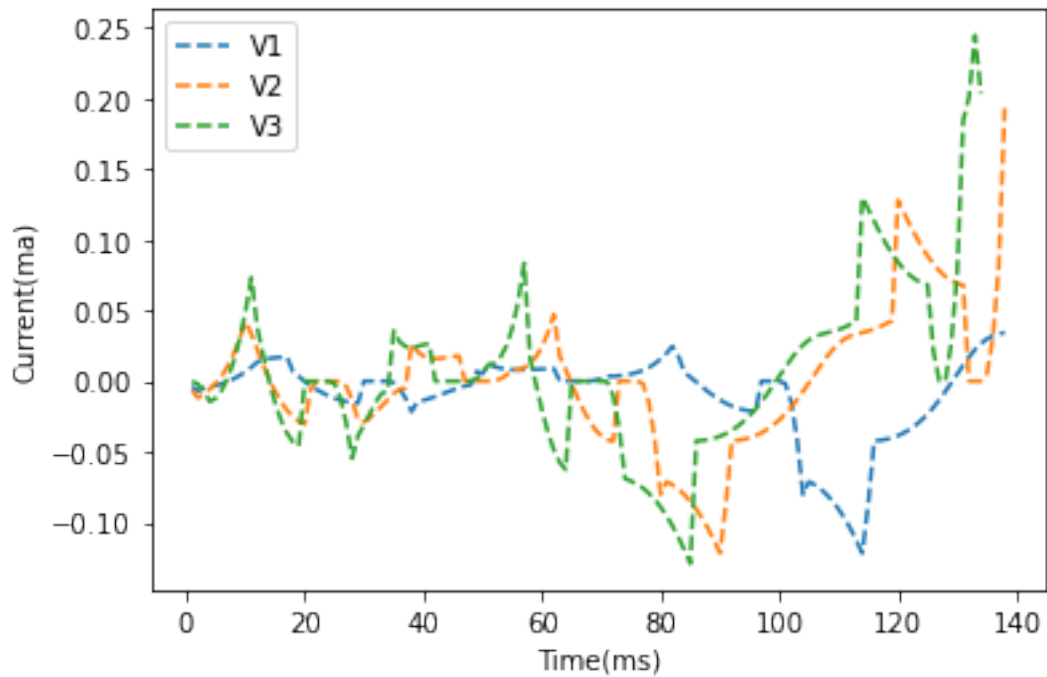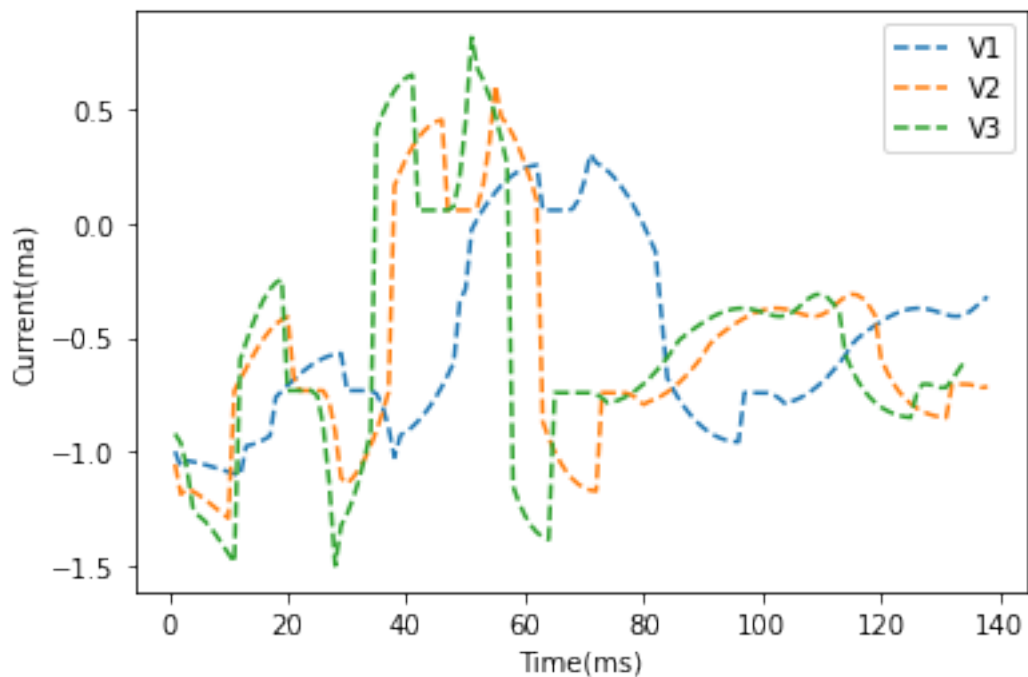

[294]:
```
#V1 = data['V10_0'].tolist()
#V2 = data['V50_0'].tolist()
```

```
V1 = data['V100_1'].tolist()
V2 = data['V200_1'].tolist()
V3 = data['V250_1'].tolist()
ts = data['TimeStamp'].tolist()
```

[295]:
```
fig, ax= plt.subplots()
#ax.plot(ts, V1, label='V1')
ax.plot(ts, V1, label='V1', linestyle='dashed')
ax.plot(ts, V2, label='V2', linestyle='dashed')
ax.plot(ts, V3, label='V3', linestyle='dashed')
#ax.plot(ts, V5, label='V5', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j1-vel.pdf")
```
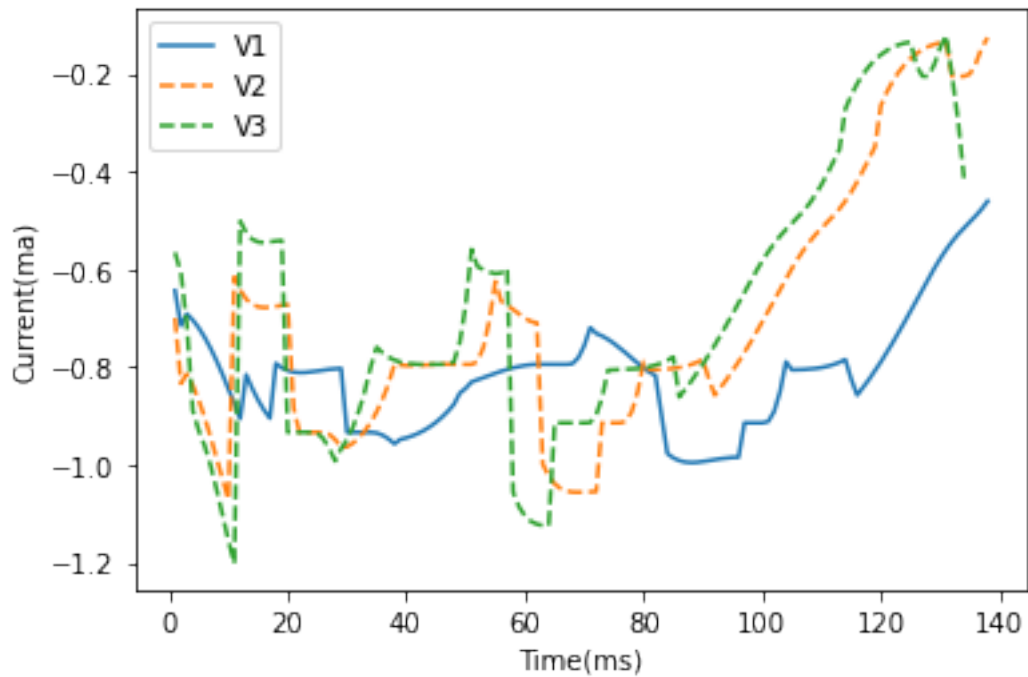

[296]:
```
V1 = data['V100_2'].tolist()
V2 = data['V200_2'].tolist()
V3 = data['V250_2'].tolist()
ts = data['TimeStamp'].tolist()
```

[297]:
```
fig, ax= plt.subplots()
ax.plot(ts, V1, label='V1')
ax.plot(ts, V2, label='V2', linestyle='dashed')
```

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```
ax.plot(ts, V3, label='V3', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j2-vel.pdf")
```
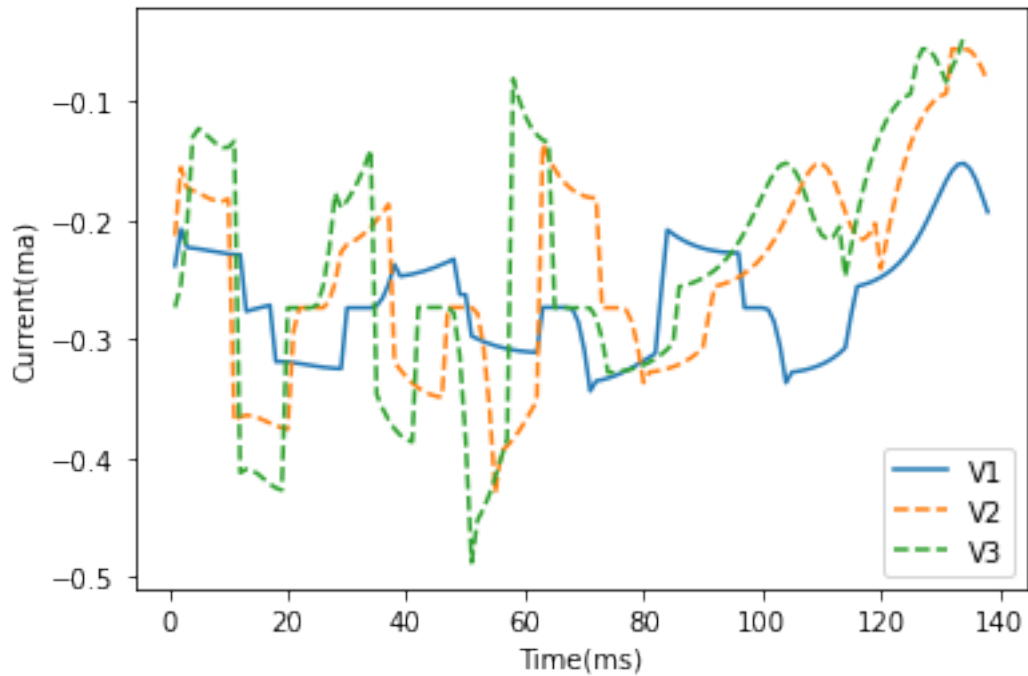

[298]:
```
V1 = data['V100_3'].tolist()
V2 = data['V200_3'].tolist()
V3 = data['V250_3'].tolist()
ts = data['TimeStamp'].tolist()
```

[299]:
```
fig, ax= plt.subplots()
ax.plot(ts, V1, label='V1')
ax.plot(ts, V2, label='V2', linestyle='dashed')
ax.plot(ts, V3, label='V3', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j3-vel.pdf")
```
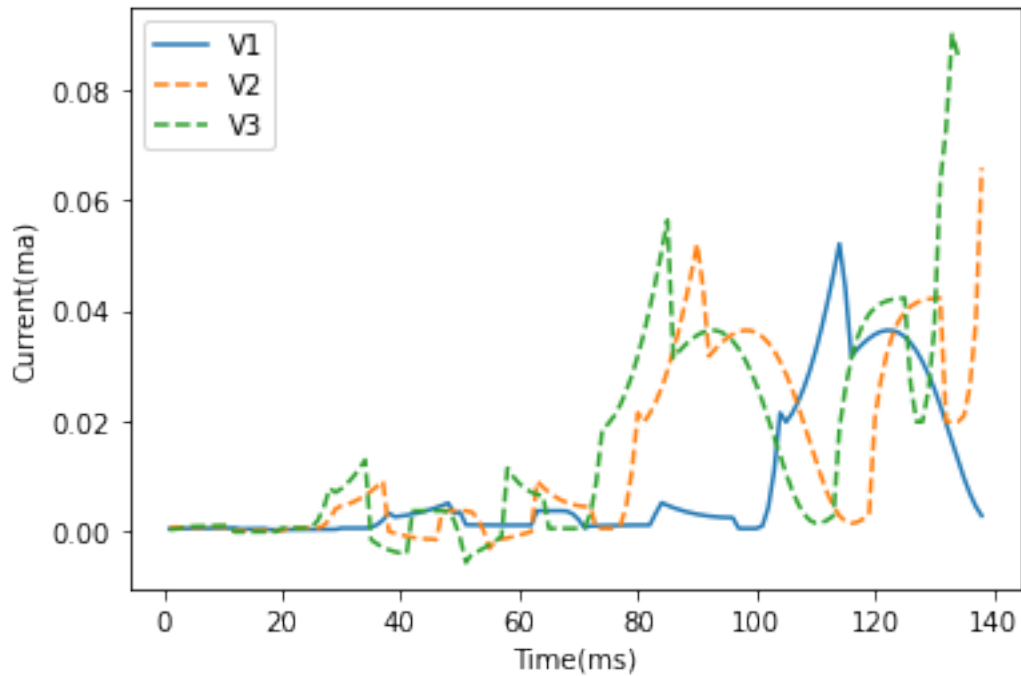
```
[300]: V1 = data['V100_4'].tolist()
       V2 = data['V200_4'].tolist()
       V3 = data['V250_4'].tolist()
       ts = data['TimeStamp'].tolist()
```

```
[301]: fig, ax= plt.subplots()
       ax.plot(ts, V1, label='V1')
       ax.plot(ts, V2, label='V2', linestyle='dashed')
       ax.plot(ts, V3, label='V3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j4-vel.pdf")
```

```
[302]: V1 = data['V100_5'].tolist()
       V2 = data['V200_5'].tolist()
       V3 = data['V250_5'].tolist()
       ts = data['TimeStamp'].tolist()
```
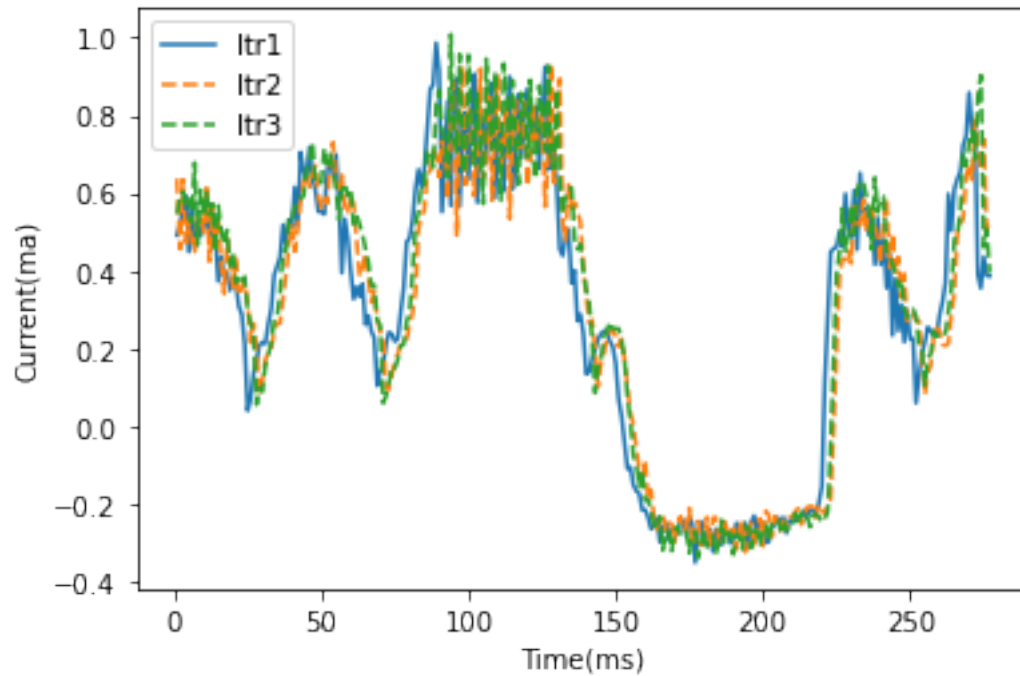
```
[303]: fig, ax= plt.subplots()
       ax.plot(ts, V1, label='V1')
       ax.plot(ts, V2, label='V2', linestyle='dashed')
       ax.plot(ts, V3, label='V3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j5-vel.pdf")
```
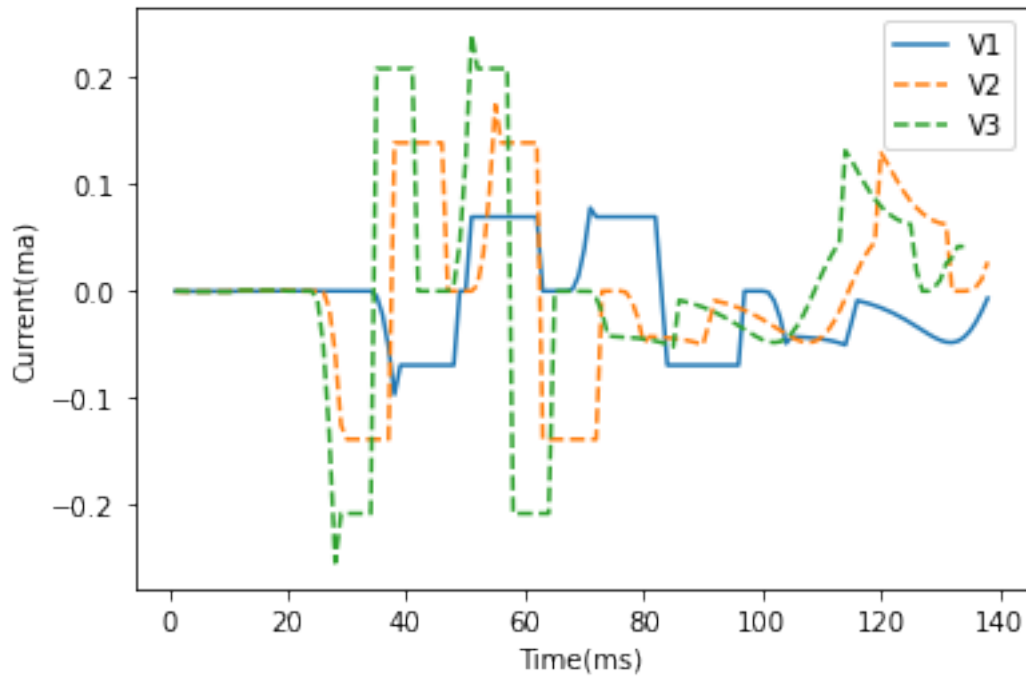
```
[312]: data = pd.read_csv('ITERATION-PLOT (1).csv')
```

```
[313]: I1 = data['itr1_0'].tolist()
       I2 = data['itr2_0'].tolist()
       I3 = data['itr3_0'].tolist()
       ts = data['TimeStamp'].tolist()
```
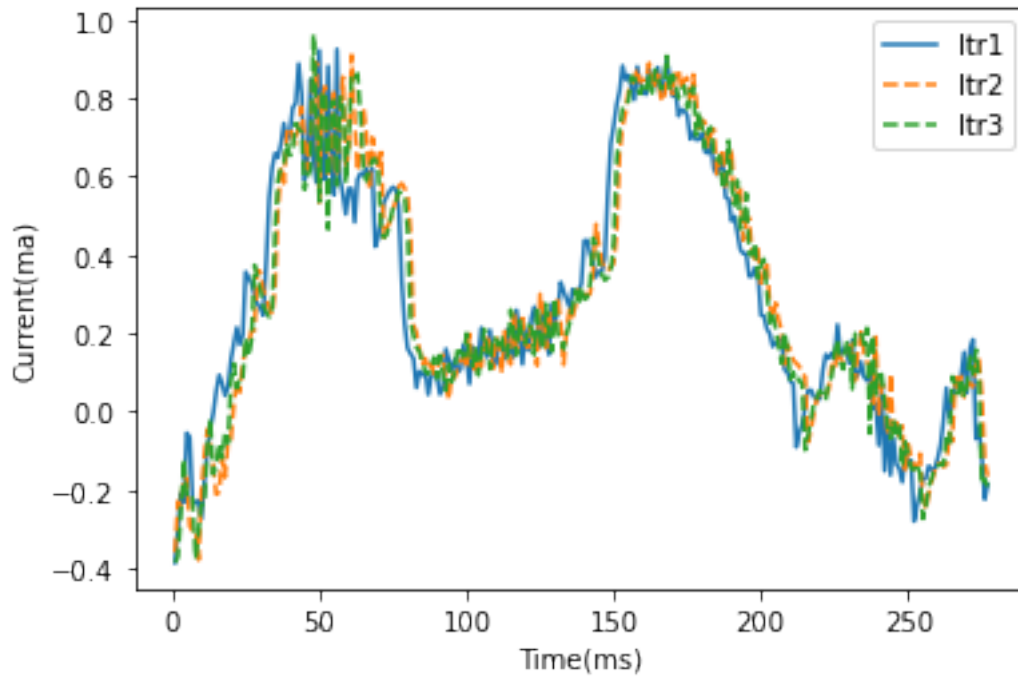
```
[314]: fig, ax= plt.subplots()
       ax.plot(ts, I1, label='Itr1')
       ax.plot(ts, I2, label='Itr2', linestyle='dashed')
       ax.plot(ts, I3, label='Itr3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j0-itr.pdf")
```

[315]:
```python
I1 = data['itr1_1'].tolist()
I2 = data['itr2_1'].tolist()
I3 = data['itr3_1'].tolist()
ts = data['TimeStamp'].tolist()
fig, ax= plt.subplots()
ax.plot(ts, I1, label='Itr1')
ax.plot(ts, I2, label='Itr2', linestyle='dashed')
ax.plot(ts, I3, label='Itr3', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j1-itr.pdf")
```
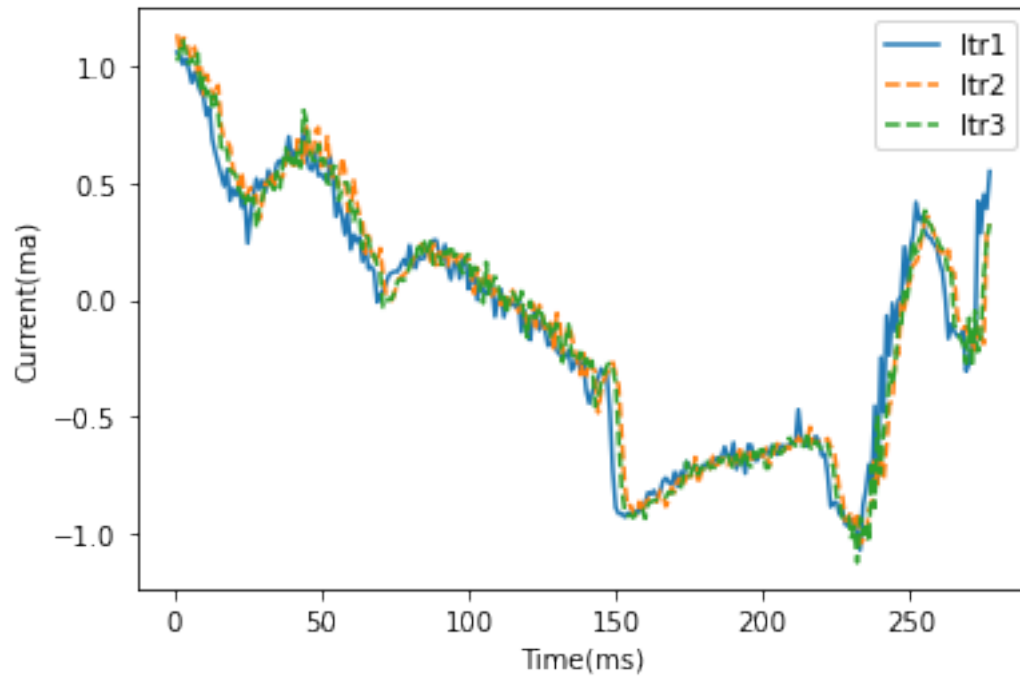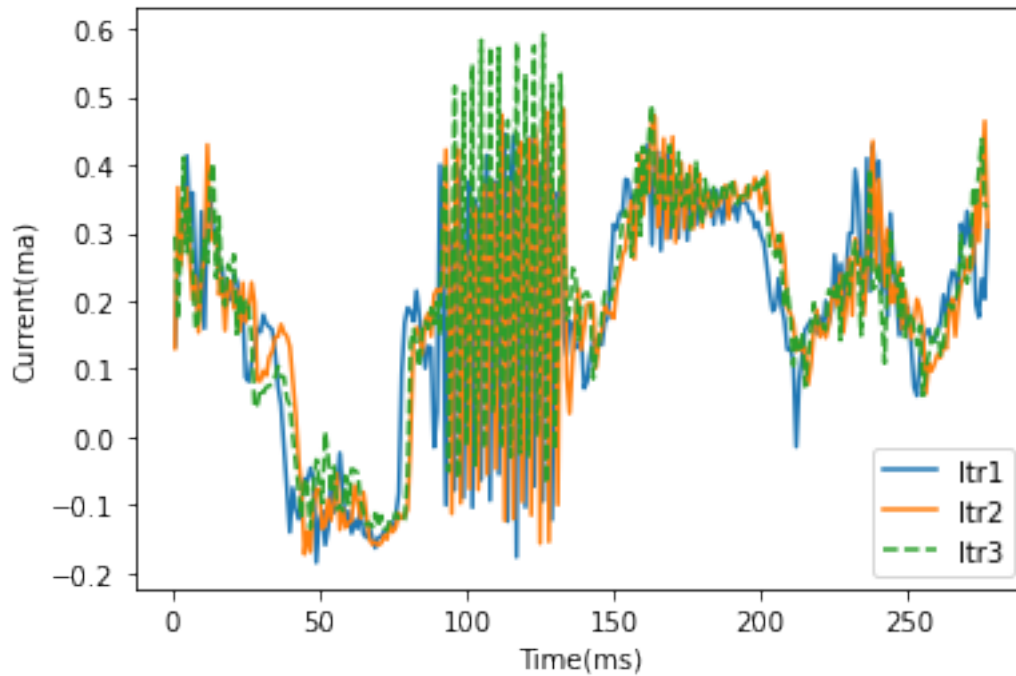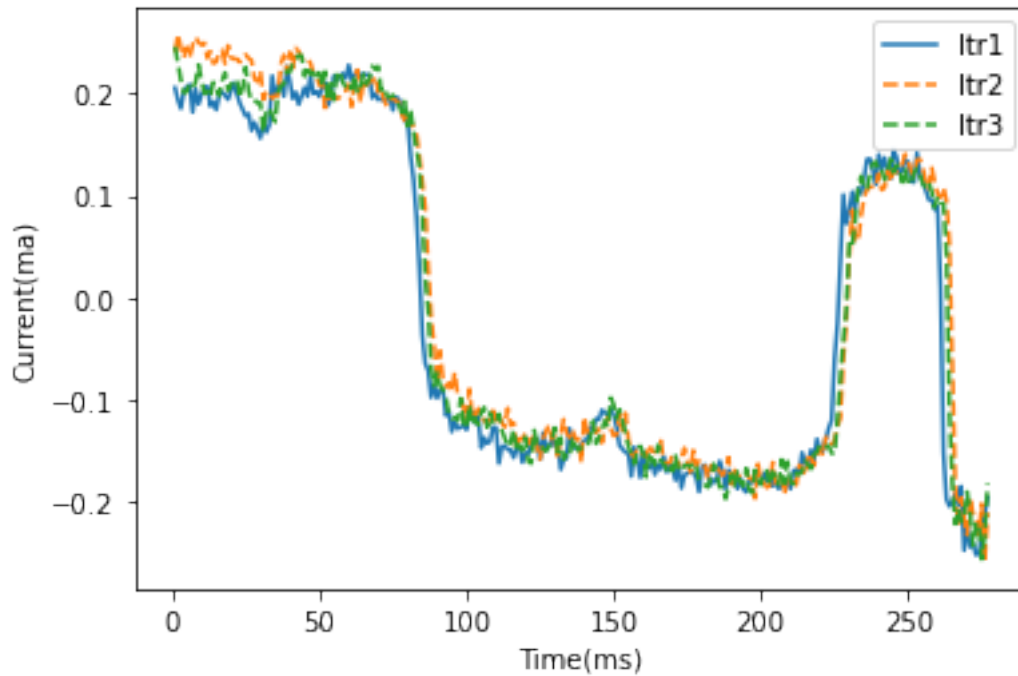
```
[316]:  I1 = data['itr1_3'].tolist()
        I2 = data['itr2_3'].tolist()
        I3 = data['itr3_3'].tolist()
        ts = data['TimeStamp'].tolist()
        fig, ax= plt.subplots()
        ax.plot(ts, I1, label='Itr1')
        ax.plot(ts, I2, label='Itr2', linestyle='dashed')
        ax.plot(ts, I3, label='Itr3', linestyle='dashed')
        ax.legend()
        plt.xlabel('Time(ms)')
        plt.ylabel('Current(ma)')
        plt.savefig("j3-itr.pdf")
```

[317]:
```python
I1 = data['itr1_4'].tolist()
I2 = data['itr2_4'].tolist()
I3 = data['itr3_4'].tolist()
ts = data['TimeStamp'].tolist()
fig, ax= plt.subplots()
ax.plot(ts, I1, label='Itr1')
ax.plot(ts, I2, label='Itr2')
ax.plot(ts, I3, label='Itr3', linestyle='dashed')
ax.legend()
plt.xlabel('Time(ms)')
plt.ylabel('Current(ma)')
plt.savefig("j4-itr.pdf")
```
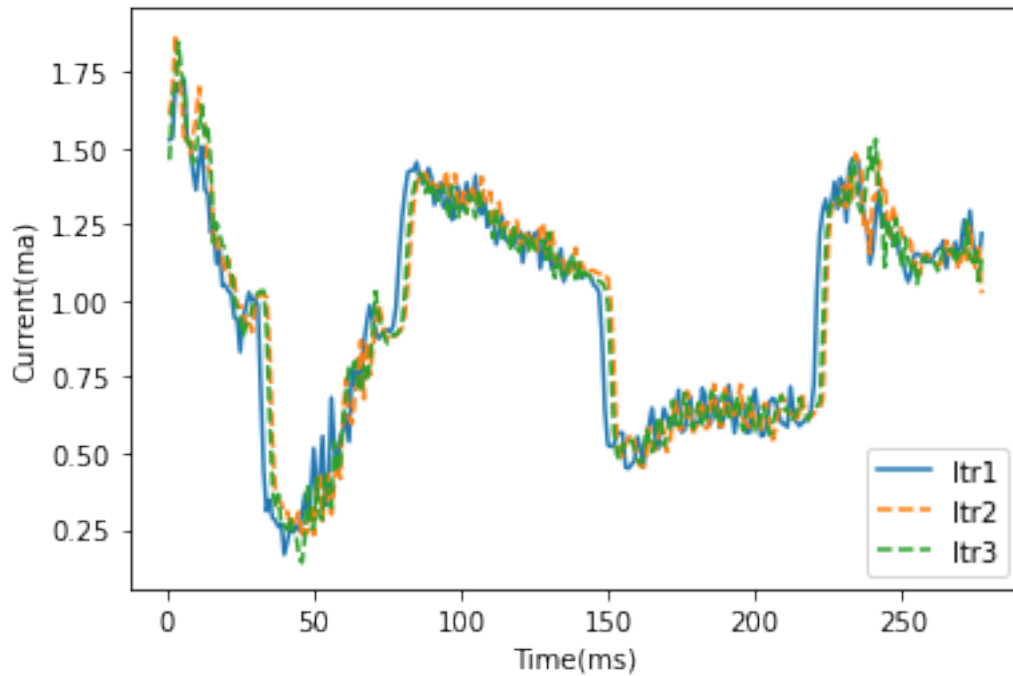
```
[318]:  I1 = data['itr1_5'].tolist()
        I2 = data['itr2_5'].tolist()
        I3 = data['itr3_5'].tolist()
        ts = data['TimeStamp'].tolist()
        fig, ax= plt.subplots()
        ax.plot(ts, I1, label='Itr1')
        ax.plot(ts, I2, label='Itr2', linestyle='dashed')
        ax.plot(ts, I3, label='Itr3', linestyle='dashed')
        ax.legend()
        plt.xlabel('Time(ms)')
        plt.ylabel('Current(ma)')
        plt.savefig("j5-itr.pdf")
```
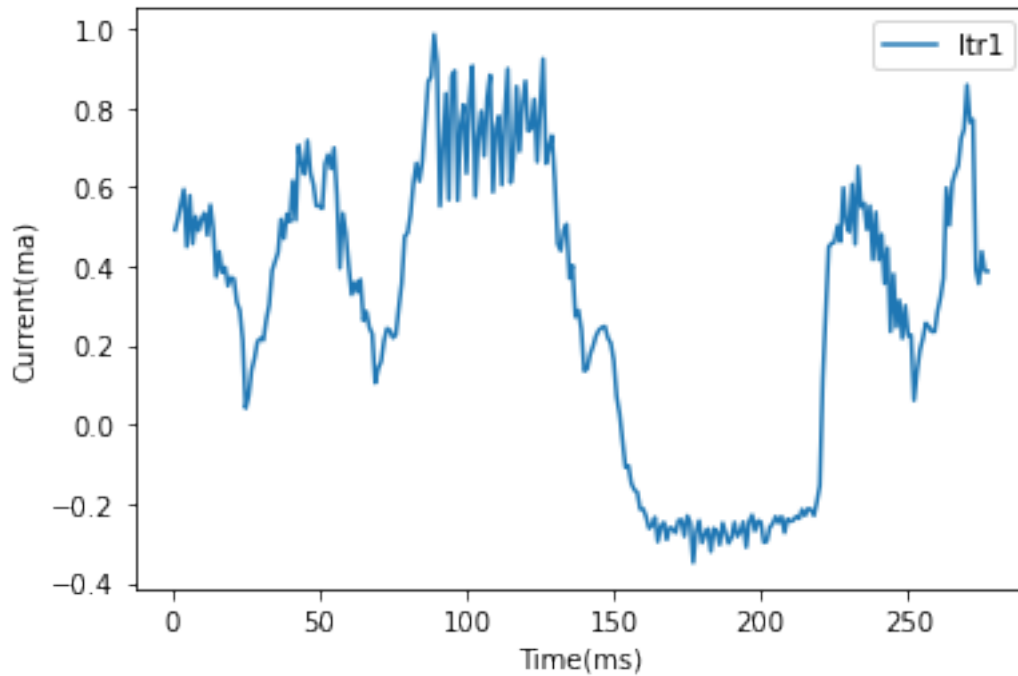
```
[319]: I1 = data['itr1_2'].tolist()
       I2 = data['itr2_2'].tolist()
       I3 = data['itr3_2'].tolist()
       ts = data['TimeStamp'].tolist()
       fig, ax= plt.subplots()
       ax.plot(ts, I1, label='Itr1')
       ax.plot(ts, I2, label='Itr2', linestyle='dashed')
       ax.plot(ts, I3, label='Itr3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
       plt.savefig("j2-itr.pdf")
```
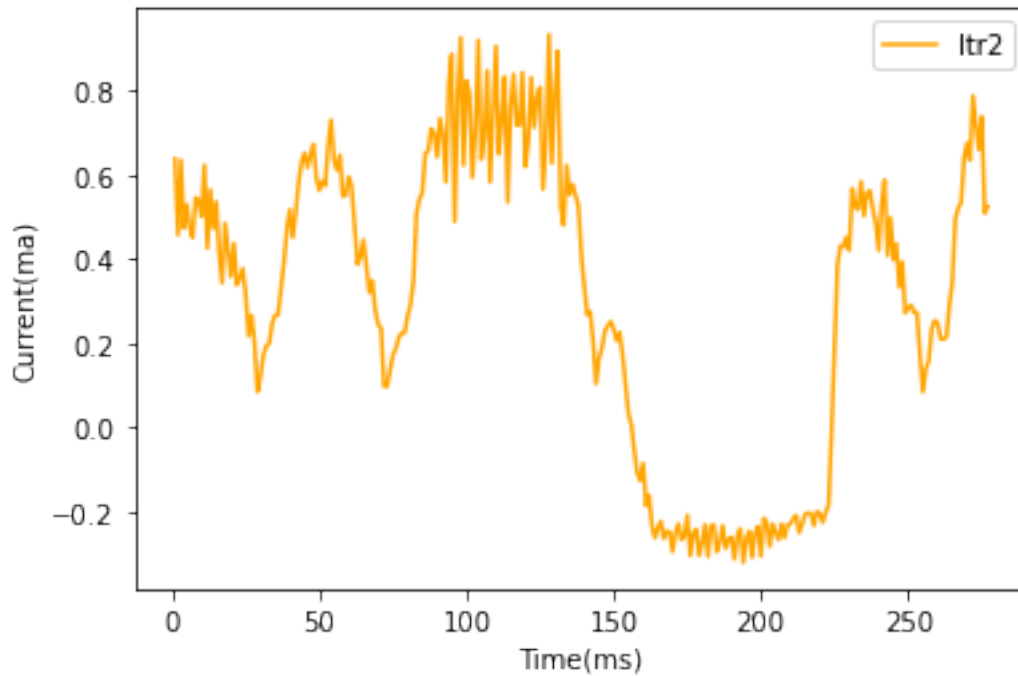
```
[320]: I1 = data['itr1_0'].tolist()
       #I2 = data['itr2_0'].tolist()
       #I3 = data['itr3_0'].tolist()
       ts = data['TimeStamp'].tolist()
       fig, ax= plt.subplots()
       ax.plot(ts, I1, label='Itr1')
       #ax.plot(ts, I2, label='Itr2', linestyle='dashed')
       #ax.plot(ts, I3, label='Itr3', linestyle='dashed')
       ax.legend()
       plt.xlabel('Time(ms)')
       plt.ylabel('Current(ma)')
```

[320]: Text(0, 0.5, 'Current(ma)')
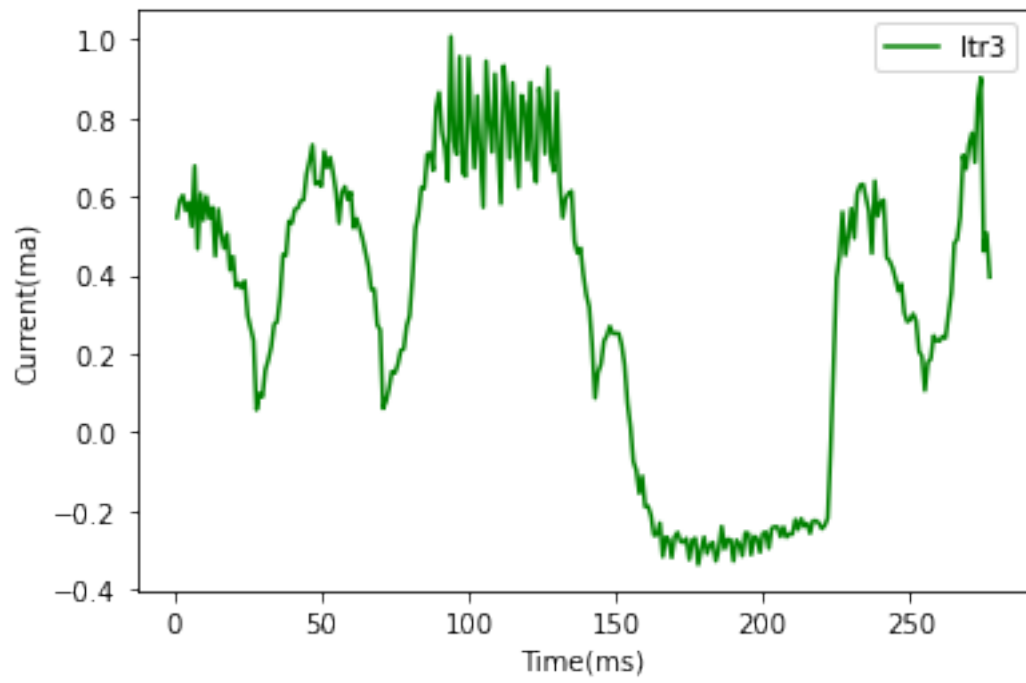
```
[321]:  #I1 = data['itr1_0'].tolist()
        I2 = data['itr2_0'].tolist()
        #I3 = data['itr3_0'].tolist()
        ts = data['TimeStamp'].tolist()
        fig, ax= plt.subplots()
        #ax.plot(ts, I1, label='Itr1')
        ax.plot(ts, I2, label='Itr2', color='orange')
        #ax.plot(ts, I3, label='Itr3', linestyle='dashed')
        ax.legend()
        plt.xlabel('Time(ms)')
        plt.ylabel('Current(ma)')
```

```
[321]:  Text(0, 0.5, 'Current(ma)')
```

```
[322]:  #I1 = data['itr1_0'].tolist()
        #I2 = data['itr2_0'].tolist()
        I3 = data['itr3_0'].tolist()
        ts = data['TimeStamp'].tolist()
        fig, ax= plt.subplots()
        #ax.plot(ts, I1, label='Itr1')
        #ax.plot(ts, I2, label='Itr2', linestyle='dashed')
        ax.plot(ts, I3, label='Itr3', color='green')
        ax.legend()
        plt.xlabel('Time(ms)')
        plt.ylabel('Current(ma)')
```

[322]: Text(0, 0.5, 'Current(ma)')

[ ]: