# Experiment analysis

March 11, 2020

[58]:
```
import torch
import numpy
import matplotlib.pyplot as plt
```

## 1 const learning rate with 1500 epochs

### 1.1 TD-SV

#### 1.1.1 TD-SV Loss

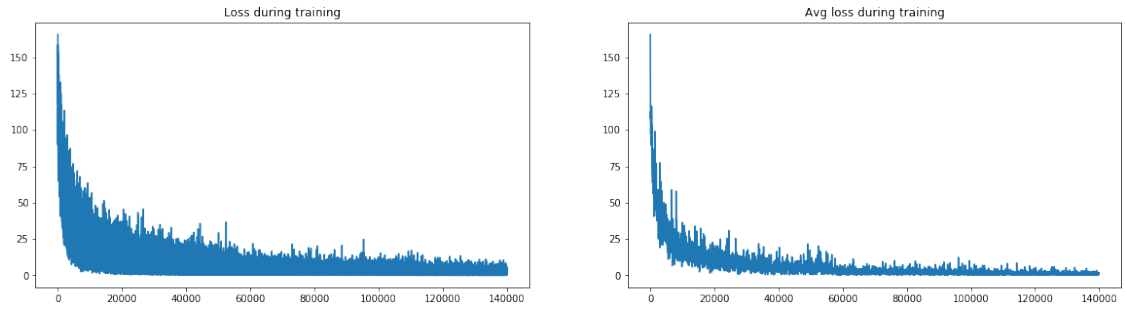
[59]:
```
loss_log_tdsv = torch.load('./log_const_lr/tdsv/loss.log')
```

[60]:
```
fig, axes = plt.subplots(1, 2, figsize=(20, 5))
axes[0].plot(loss_log_tisv['loss'])
axes[1].plot(loss_log_tisv['total_loss'])

axes[0].set_title("Loss during training")
axes[1].set_title("Avg loss during training")

print("Final Loss: {}; Avg loss: {}".format(loss_log_tisv['loss'][-1],␣
 ↪loss_log_tisv['total_loss'][-1]))
```

```
Final Loss: 1.35565185546875; Avg loss: 1.268243408203125
```



### 1.1.2 TD-SV ERR

[79]:
```
EER_log_tdsv = torch.load('./log_const_lr/EER/tdsv/EER.eer')
print("Avg EER for TD-SV is {}".format(EER_log_tdsv["avg_EER_log"][-1]))
```

```
Avg EER for TD-SV is 0.02408068842832344
```

## 1.2 TI-SV

### 1.2.1 TI-SV Loss

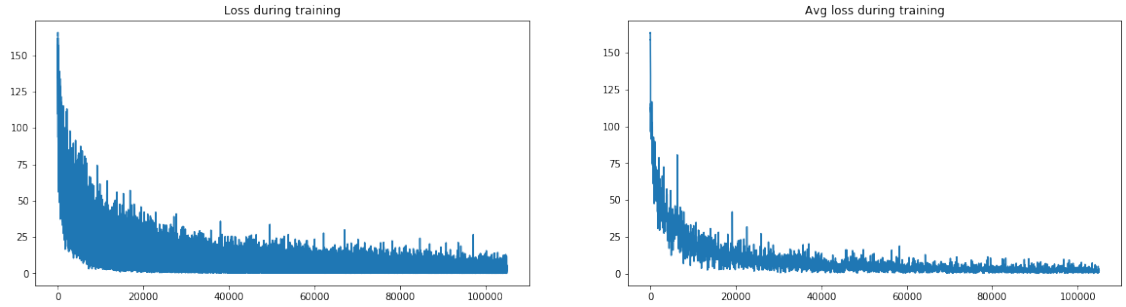
[62]:
```
loss_log_tisv = torch.load('./log_const_lr/tisv/loss.log')
```

[63]:
```
fig, axes = plt.subplots(1, 2, figsize=(20, 5))
axes[0].plot(loss_log_tisv['loss'])
axes[1].plot(loss_log_tisv['total_loss'])

axes[0].set_title("Loss during training")
axes[1].set_title("Avg loss during training")

print("Final Loss: {}; Avg loss: {}".format(loss_log_tdsv['loss'][-1],␣
 ↪loss_log_tdsv['total_loss'][-1]))
```

```
Final Loss: 1.3204524517059326; Avg loss: 2.5933795539700255
```




### 1.2.2 TI-SV EER

[84]:
```
EER_log_tisv = torch.load('./log_const_lr/EER/tisv/EER.eer')
print("Avg EER for TI-SV is {}".format(EER_log_tisv["avg_EER_log"][-1]))
```

```
Avg EER for TI-SV is 0.04112244994945027
```

# 2 Step learning rate with 2000 epochs

Decrease lr to half every 800 epochs

## 2.1 TD-SV

### 2.1.1 TD-SV Loss

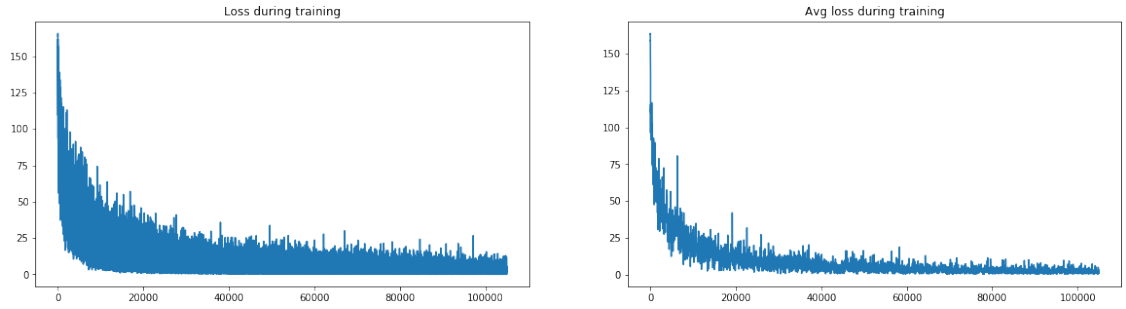
[65]:
```
loss_log_tdsv = torch.load('./log/loss/tdsv/loss.loss')
```

[66]:
```
fig, axes = plt.subplots(1, 2, figsize=(20, 5))
axes[0].plot(loss_log_tisv['loss'])
axes[1].plot(loss_log_tisv['total_loss'])

axes[0].set_title("Loss during training")
axes[1].set_title("Avg loss during training")

print("Final Loss: {}; Avg loss: {}".format(loss_log_tisv['loss'][-1],␣
↪loss_log_tisv['total_loss'][-1]))
```

```
Final Loss: 0.2689208984375; Avg loss: 2.120063999720982
```




### 2.1.2 TD-SV ERR

[91]:
```
EER_log_tdsv = torch.load('./log/EER_final_model/tdsv/EER.eer')
print("Avg EER for TD-SV using final model is {}".
↪format(EER_log_tdsv["avg_EER_log"][-1]))
```

```
Avg EER for TD-SV using final model is 0.024537037641965544
```

[92]:
```
EER_log_tdsv = torch.load('./log/EER_optim_model/tdsv/EER.eer')
print("Avg EER for TD-SV using optim model is {}".
↪format(EER_log_tdsv["avg_EER_log"][-1]))
```

```
Avg EER for TD-SV using optim model is 0.02425264612323156
```

## 2.2 TI-SV

### 2.2.1 TI-SV Loss

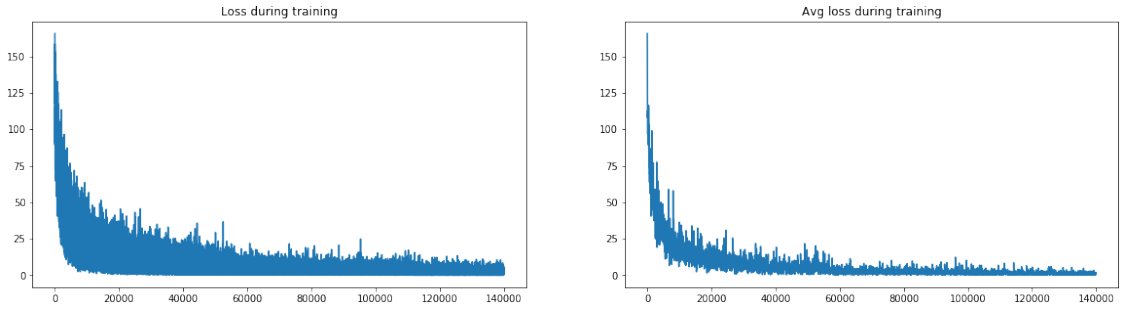
[68]:
```
loss_log_tisv = torch.load('./log/loss/tisv/loss.loss')
```

[69]:
```
fig, axes = plt.subplots(1, 2, figsize=(20, 5))
axes[0].plot(loss_log_tisv['loss'])
axes[1].plot(loss_log_tisv['total_loss'])

axes[0].set_title("Loss during training")
axes[1].set_title("Avg loss during training")

print("Final Loss: {}; Avg loss: {}".format(loss_log_tdsv['loss'][-1],␣
 ↪loss_log_tdsv['total_loss'][-1]))
```

```
Final Loss: 1.9604518413543701; Avg loss: 2.488234414859694
```




### 2.2.2 TI-SV EER

[89]:
```
EER_log_tisv = torch.load('./log/EER_final_model/tisv/EER.eer')
print("Avg EER for TI-SV using final model is {}".
 ↪format(EER_log_tisv["avg_EER_log"][-1]))
```

```
Avg EER for TI-SV using final model is 0.03900510319009689
```

[90]:
```
EER_log_tisv = torch.load('./log/EER_optim_model/tisv/EER.eer')
print("Avg EER for TI-SV using optim model is {}".
 ↪format(EER_log_tisv["avg_EER_log"][-1]))
```

```
Avg EER for TI-SV using optim model is 0.03979591946450196
```

# 3 Other available replication in Github

Only TI-SV is implemented in their repo.

[71]:
```
EER_log_tisv = torch.load('./checkpoint_git/EER/tisv/EER.eer')
print("Avg EER for TI-SV is {}".format(EER_log_tisv["avg_EER_log"][-1]))
```

```
Avg EER for TI-SV is 0.05742347076801317
```

[ ]:
```

```