

## (1) light\_data\_3.4/result/3.8:

改变激活函数，看看对性能的影响。

### 1. /mix\_amp:

三层非线性层，隐藏层点数 80，snr=37。

min batch size 从 400 改成 80，snr=37

```
Threenonlinear ,  
ini learningRate = 1.000000e-02 ,  
min batch size = 80 ,  
DropPeriod = 5 ,  
DropFactor = 0.100000 ,  
amp begin = 40 , amp end = 40 , amp step = 2  
data_num = 100  
validationFrequency has changed from floor(size(xTrain{1},2)/100 to floor(numel(xTrain)/miniBatchSize/5) (9 to 6)  
Hidden Units = 80
```

#### 1.1 mix\_amp/Threenonlinear1:

三个激活函数都是 Relu:

NMSE = -17.220556;

#### 1.2 mix\_amp/Threenonlinear2:

激活函数 Tanh—Relu—Relu:

NMSE = -17.285571;

#### 1.3 mix\_amp/Threenonlinear3:

激活函数 Tanh—Tanh—Relu:

NMSE = -17.238873;

#### 1.4 mix\_amp/Threenonlinear4:

三个激活函数都是 Tanh:

NMSE = -16.433472;

#### 1.5 mix\_amp/Threenonlinear5:

激活函数 Relu—Tanh—Tanh:

NMSE = -17.229657;

#### 1.6 mix\_amp/Threenonlinear6:

激活函数 Relu—Relu—Tanh:

NMSE = -17.083551;

#### 1.7 mix\_amp/Threenonlinear7:

激活函数 Sigmoid—Relu—Relu:

NMSE = -16.881597;

1.8 mix\_amp/Threenonlinear8:  
激活函数 Sigmoid—Sigmoid—Relu:  
NMSE = -16.554001;

1.9 mix\_amp/Threenonlinear9:  
三个激活函数都是 Sigmoid:  
NMSE = -16.402398;

1.10 mix\_amp/Threenonlinear10:  
激活函数 Relu—Sigmoid—Sigmoid:  
NMSE = -16.303190;

1.11 mix\_amp/Threenonlinear11:  
激活函数 Relu—Relu—Sigmoid:  
NMSE = -16.571896;

## (2) light\_data\_3.8/result/3.8:

1. /rand\_bias0.3: 采样率 10M，均匀分布，偏置电流 0.3A。

1.1 /norm\_LS: 用 LS 算法，求出各个 snr 信号的 NMSE。LS 估计时用的信号是归一化之后的信号。

1.2 /single\_amp: 单一 snr 数据作为训练数据，且数据归一化。发送信号是均匀分布的随机信号，采样率为 10M，偏置电流 0.3A。

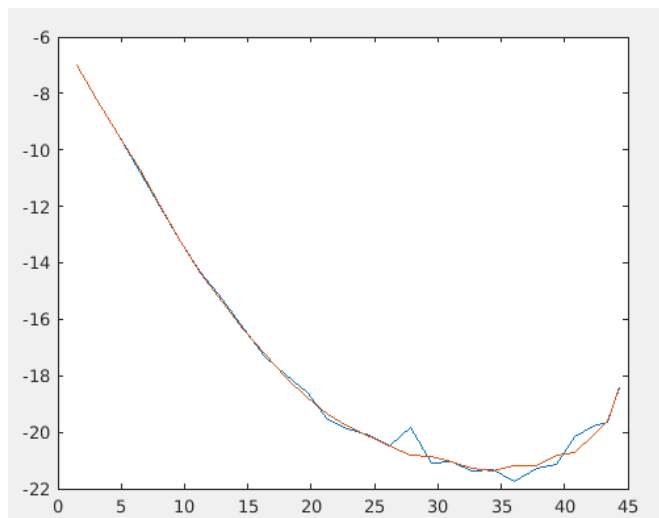
```
Threenonlinear ,  
ini learningRate = 1.000000e-02 ,  
min batch size = 200 ,  
DropPeriod = 12 ,  
DropFactor = 0.100000 ,  
amp begin = -8 , amp end = 46 , amp step = 2  
data_num = 100  
validationFrequency is floor(size(xTrain{1},2)/miniBatchSize  
Hidden Units = 40
```

### 1.3 /mix\_amp:

#### 1.3.1 mix\_amp/Twononlinear1 (两层非线性层, 更改 Hidden Units)

蓝线是测试集 NMSE, 红线是用训练集 xTrain 测试出来的 NMSE

```
Twononlinear ,  
ini learningRate = 1.000000e-02 ,  
min batch size = 400 ,  
DropPeriod = 5 ,  
DropFactor = 0.100000 ,  
amp begin = -4 , amp end = 50 , amp step = 2  
data_num = 100  
validationFrequency is floor(numel(xTrain)/miniBatchSize/4)  
Hidden Units = 25
```



### 2. /rand\_bias0.6: 采样率 10M, 均匀分布, 偏置电流 0.6A。

2.1 /norm\_LS: 用 LS 算法, 求出各个 snr 信号的 NMSE。LS 估计时用的信号是归一化之后的信号。

2.2 /single\_amp: 单一 snr 数据作为训练数据, 且数据归一化。发送信号是均匀分布的随机信号, 采样率为 10M, 偏置电流 0.6A。

```
Threenonlinear ,  
ini learningRate = 1.000000e-02 ,  
min batch size = 200 ,  
DropPeriod = 12 ,  
DropFactor = 0.100000 ,  
amp begin = -4 , amp end = 50 , amp step = 2  
data_num = 100  
validationFrequency is floor(size(xTrain{1},2)/miniBatchSize  
Hidden Units = 40
```

## 2.3 /mix\_amp:

### 2.3.1 mix\_amp/Twoononlinear1 (两层非线性层, 更改 Hidden Units)

```
Twoononlinear ,  
ini learningRate = 1.000000e-02 ,  
min batch size = 400 ,  
DropPeriod = 5 ,  
DropFactor = 0.100000 ,  
amp begin = -4 , amp end = 50 , amp step = 2  
data_num = 100  
validationFrequency is floor(numel(xTrain)/miniBatchSize/4)  
Hidden Units = 25
```

