deep_ensembles

1. 西班牙数据集

train index: [6426, 10427] train_len: 4000

test index: [14389, 15390] test_len: 1000

- **输入特征：**

```
'wind_speed', 'sin(wd)', 'cos(wd)', 【t期】
'wind_speed-1', 'sin(wd)-1','cos(wd)-1', 'wind_power-1'【t-1期】
```

- **输出：**wind_power

网络结构：

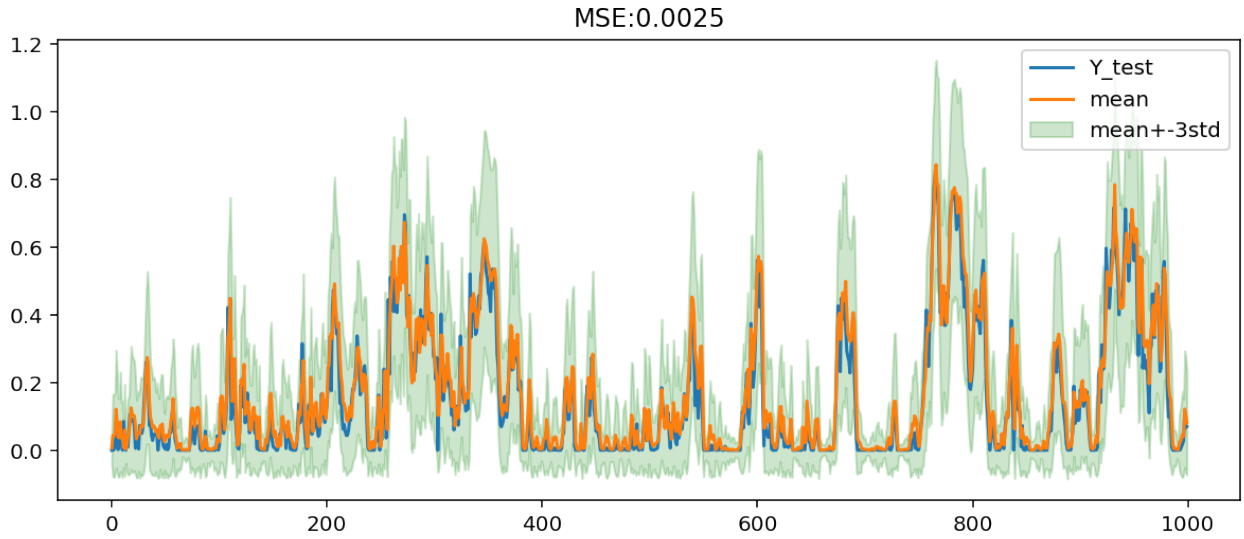
- 输入层节点：7
- 隐藏层 1 节点：50
- 隐藏层 2 节点：50
- 输出层节点：2（mean、var）
- cost function：NLL

参数设置：

```
    parser = argparse.ArgumentParser()
    # Ensemble size
    parser.add_argument('--ensemble_size', type=int, default=5,
                        help='Size of the ensemble')
    # Maximum number of iterations
    parser.add_argument('--max_iter', type=int, default=5000,
                        help='Maximum number of iterations')
    # Batch size
    parser.add_argument('--batch_size', type=int, default=10,
                        help='Size of batch')
    # Epsilon for adversarial input perturbation
    parser.add_argument('--epsilon', type=float, default=1e-2,
                        help='Epsilon for adversarial input perturbation')
    # Alpha for trade-off between likelihood score and adversarial score
    parser.add_argument('--alpha', type=float, default=0.5,
```

```
                        help='Trade off parameter for likelihood score and adversarial score')
    # Learning rate
    parser.add_argument('--learning_rate', type=float, default=0.005,
                        help='Learning rate for the optimization')
    # Gradient clipping value
    parser.add_argument('--grad_clip', type=float, default=100.,
                        help='clip gradients at this value')
    # Learning rate decay
    parser.add_argument('--decay_rate', type=float, default=0.99,
                        help='Decay rate for learning rate')
    # Dropout rate (keep prob)
    parser.add_argument('--keep_prob', type=float, default=0.8,
                        help='Keep probability for dropout')
```

test mse: 0.0025145908564548863



2. 美国数据集

train index: [3001, 7002] train_len: 4000

test index: [2000, 3001] test_len: 1000

- **输入特征：**

```
'wind_speed', 'sin(wd)', 'cos(wd)', 【t期】
'wind_speed-1', 'sin(wd)-1','cos(wd)-1', 'wind_power-1'【t-1期】
```

- **输出：**wind_power

网络结构：

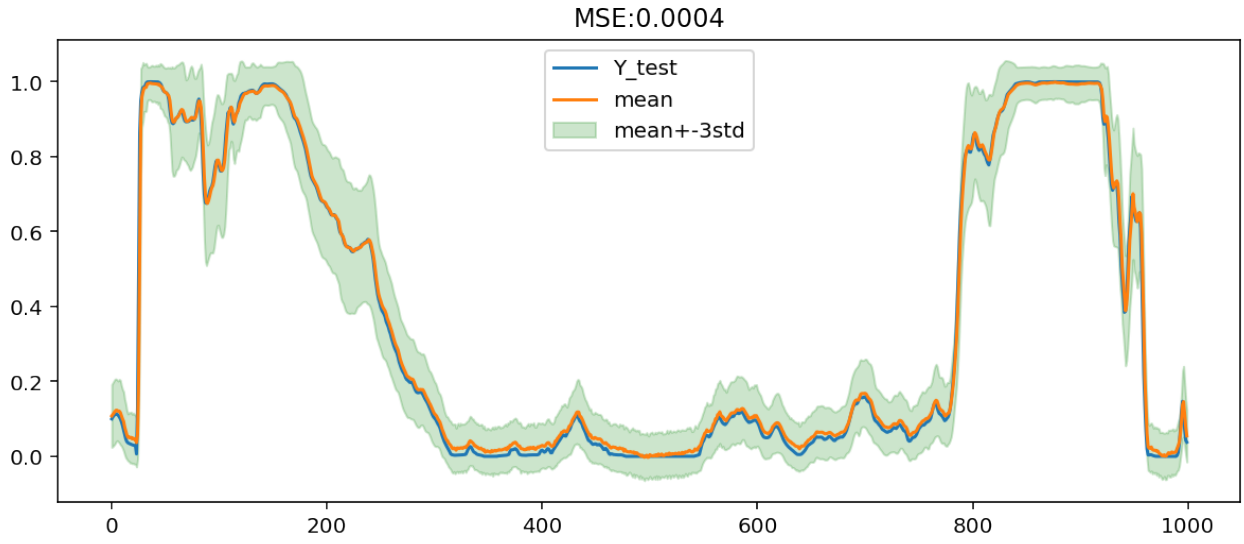
- 输入层节点：7
- 隐藏层 1 节点：50
- 隐藏层 2 节点：50

- 输出层节点：2（mean、var）
- cost function：NLL

参数设置：

```
    parser = argparse.ArgumentParser()
    # Ensemble size
    parser.add_argument('--ensemble_size', type=int, default=5,
                        help='Size of the ensemble')
    # Maximum number of iterations
    parser.add_argument('--max_iter', type=int, default=5000,
                        help='Maximum number of iterations')
    # Batch size
    parser.add_argument('--batch_size', type=int, default=10,
                        help='Size of batch')
    # Epsilon for adversarial input perturbation
    parser.add_argument('--epsilon', type=float, default=1e-2,
                        help='Epsilon for adversarial input perturbation')
    # Alpha for trade-off between likelihood score and adversarial score
    parser.add_argument('--alpha', type=float, default=0.5,
                        help='Trade off parameter for likelihood score and
adversarial score')
    # Learning rate
    parser.add_argument('--learning_rate', type=float, default=0.005,
                        help='Learning rate for the optimization')
    # Gradient clipping value
    parser.add_argument('--grad_clip', type=float, default=100.,
                        help='clip gradients at this value')
    # Learning rate decay
    parser.add_argument('--decay_rate', type=float, default=0.99,
                        help='Decay rate for learning rate')
    # Dropout rate (keep prob)
    parser.add_argument('--keep_prob', type=float, default=0.8,
                        help='Keep probability for dropout')
```

test mse : 0.00043997918992500905


MSE:0.0004
Y_test
mean
mean+-3std
1.0
0.8
0.6
0.4
0.2
0.0
0
200
400
600
800
1000