# 可视化训练日志

训练模型时在`work_dirs`目录生成记录训练日志，解析其中损失函数、评估指标等信息，并可视化。

设置Matplotlib中文字体

In [1]:

```
# # windows操作系统
import matplotlib
import matplotlib.pyplot as plt
plt.rcParams['font.sans-serif']=['SimHei']  # 用来正常显示中文标签
plt.rcParams['axes.unicode_minus']=False  # 用来正常显示负号
```

In [2]:

```
# Mac操作系统，参考 https://www.ngui.cc/51cto/show-727683.html
# 下载 simhei.ttf 字体文件
# !wget https://zihao-openmmlab.obs.cn-east-3.myhuaweicloud.com/20220716-mmclassification/datase
```

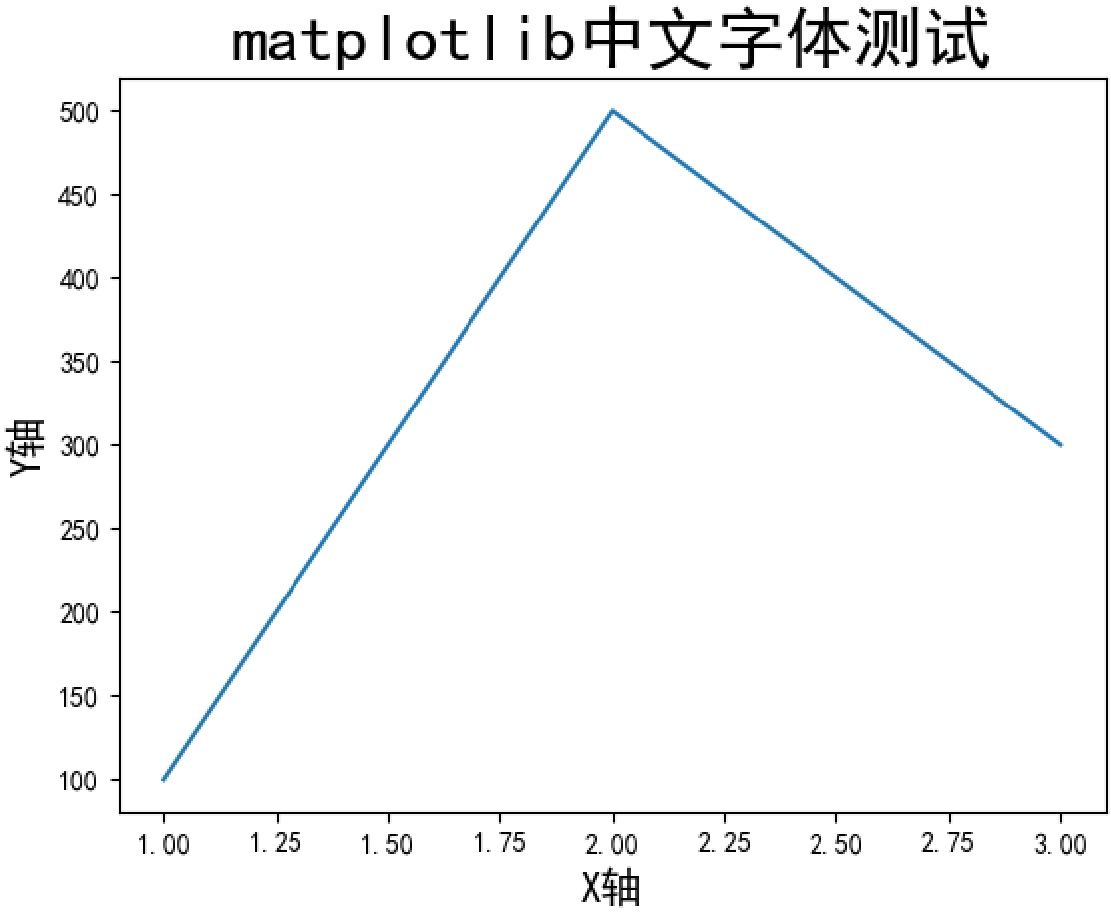
In [3]:

```
# Linux操作系统，例如 云GPU平台：https://featurize.cn/?s=d7ce99f842414bfcaea5662a97581bd1
# 如果遇到 SSL 相关报错，重新运行本代码块即可
#!wget https://zihao-openmmlab.obs.cn-east-3.myhuaweicloud.com/20220716-mmclassification/dataset/
#!rm -rf /home/featurize/.cache/matplotlib

#import matplotlib
#import matplotlib.pyplot as plt
#matplotlib.rc("font",family='SimHei') # 中文字体
```

In [4]:

```
plt.plot([1,2,3], [100,500,300])
plt.title('matplotlib中文字体测试', fontsize=25)
plt.xlabel('X轴', fontsize=15)
plt.ylabel('Y轴', fontsize=15)
plt.show()
```



进入MMSegmentation主目录

In [5]:

```
import os
os.chdir('../mmsegmentation')
```

In [6]:

```
os.getcwd()
```

Out[6]:

```
'F:\\openprj\\openmmlab\\mmsegmentation'
```

导入工具包

In [7]:

```
import pandas as pd

import matplotlib.pyplot as plt
%matplotlib inline
```

载入训练日志

In [8]:

```
# 日志文件路径
log_path = 'work_dirs/WatermelonDataset/20230618_164041/vis_data/scalars.json'
```

In [9]:

```
with open(log_path, "r") as f:
    json_list = f.readlines()
```

In [10]:

```
len(json_list)
```

Out[10]:

```
37
```

In [11]:

```
eval(json_list[4])
```

Out[11]:

```
{'aAcc': 77.17,
 'mIoU': 30.39,
 'mAcc': 36.66,
 'data_time': 0.0020235538482666015,
 'time': 1.000400471687317,
 'step': 400}
```

In [14]:

```
df_train = pd.DataFrame()
df_test = pd.DataFrame()
for each in json_list[:-1]:
    if 'aAcc' in each:
        df_test = df_test._append(eval(each), ignore_index=True)
    else:
        df_train = df_train._append(eval(each), ignore_index=True)
```

In [15]:

```
df_train
```

Out[15]:

	lr	data_time	loss	decode.loss_ce	decode.acc_seg	aux.loss_ce	aux.acc_se
0	0.009978	0.004597	0.070999	0.048894	78.982544	0.022106	84.07592
1	0.009956	0.002907	0.070916	0.049309	78.790283	0.021607	71.54541
2	0.009933	0.004515	0.057149	0.040340	75.082397	0.016809	80.53588
3	0.009911	0.004500	0.064511	0.045709	83.215332	0.018802	83.94165
4	0.009889	0.004815	0.053202	0.037905	76.074219	0.015297	76.92260
5	0.009866	0.004038	0.059446	0.043067	75.851440	0.016378	78.46069
6	0.009844	0.004426	0.045284	0.032096	93.872070	0.013188	93.12744
7	0.009822	0.004208	0.041730	0.028803	82.296753	0.012927	79.43725
8	0.009800	0.003966	0.039809	0.027619	91.036987	0.012189	88.90991
9	0.009777	0.004436	0.042922	0.029852	76.623535	0.013070	75.73242
10	0.009755	0.005112	0.039224	0.027555	93.795776	0.011669	89.80407
11	0.009733	0.004876	0.046181	0.032239	87.136841	0.013942	85.83374
12	0.009710	0.004525	0.039535	0.027876	69.802856	0.011659	72.56469
13	0.009688	0.004076	0.046135	0.032734	72.006226	0.013401	72.01843
14	0.009665	0.004545	0.052215	0.036983	73.687744	0.015232	71.56372
15	0.009643	0.005259	0.042272	0.029735	80.181885	0.012538	82.40051
16	0.009621	0.005146	0.047673	0.033858	69.506836	0.013815	70.94726
17	0.009598	0.003594	0.037572	0.026547	83.227539	0.011025	83.44421
18	0.009576	0.004724	0.036619	0.026045	87.622070	0.010573	85.85205
19	0.009554	0.004663	0.034159	0.023713	88.894653	0.010446	86.25183
20	0.009531	0.004383	0.038316	0.026612	82.723999	0.011703	83.88061
21	0.009509	0.004436	0.040492	0.028850	95.074463	0.011642	94.71130
22	0.009486	0.004174	0.042220	0.030547	79.733276	0.011673	84.23767
23	0.009464	0.004934	0.033006	0.023010	88.305664	0.009997	83.74328
24	0.009442	0.003955	0.042181	0.029655	83.837891	0.012526	82.93151
25	0.009419	0.004709	0.046513	0.032589	89.263916	0.013924	88.54370
26	0.009397	0.004716	0.036073	0.025747	82.873535	0.010326	80.62439
27	0.009374	0.004934	0.033710	0.023279	77.749634	0.010431	77.58178
28	0.009352	0.004245	0.042599	0.030679	81.387329	0.011920	80.43823

In [16]:

```
df_test
```

Out[16]:

	aAcc	mIoU	mAcc	data_time	time	step
0	77.17	30.39	36.66	0.002024	1.000400	400.0
1	72.17	33.53	42.70	0.003181	0.301038	800.0
2	86.24	44.13	49.63	0.002737	0.300659	1200.0
3	85.73	47.70	52.86	0.003232	0.302029	1600.0
4	88.80	52.71	57.78	0.003373	0.301780	2000.0
5	86.06	48.32	53.21	0.003115	0.301184	2400.0
6	89.70	57.98	63.51	0.002597	0.300276	2800.0

导出训练日志表格

In [17]:

```
df_train.to_csv('训练日志-训练集.csv', index=False)
df_test.to_csv('训练日志-测试集.csv', index=False)
```

可视化辅助函数

In [18]:

```
from matplotlib import colors as mcolors
import random
random.seed(124)
colors = ['b', 'g', 'r', 'c', 'm', 'y', 'k', 'tab:blue', 'tab:orange', 'tab:green', 'tab:red', '
markers = [".",",","o","v","^","<",">","1","2","3","4","8","s","p","P","*","h","H","+","x","X","
linestyle = ['--', '-.', '-']

def get_line_arg():
    '''
    随机产生一种绘图线型
    '''
    line_arg = {}
    line_arg['color'] = random.choice(colors)
    # line_arg['marker'] = random.choice(markers)
    line_arg['linestyle'] = random.choice(linestyle)
    line_arg['linewidth'] = random.randint(1, 4)
    # line_arg['markersize'] = random.randint(3, 5)
    return line_arg
```

训练集损失函数

In [19]:

```
metrics = ['loss', 'decode.loss_ce', 'aux.loss_ce']
```

In [20]:

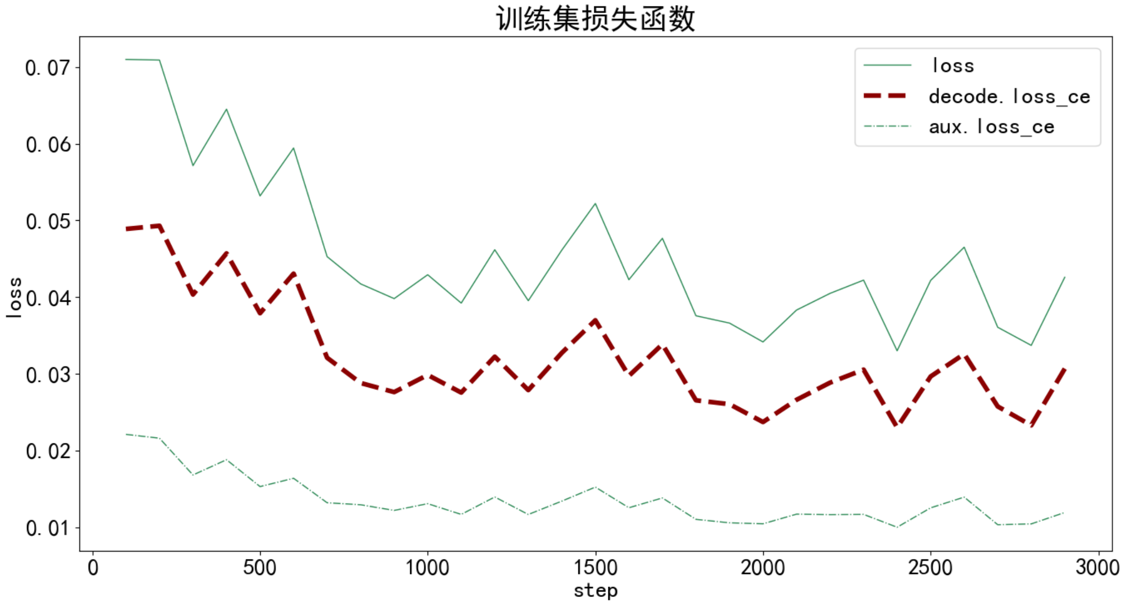
```
plt.figure(figsize=(16, 8))

x = df_train['step']
for y in metrics:
    plt.plot(x, df_train[y], label=y, **get_line_arg())

plt.tick_params(labelsize=20)
plt.xlabel('step', fontsize=20)
plt.ylabel('loss', fontsize=20)
plt.title('训练集损失函数', fontsize=25)
plt.savefig('训练集损失函数.pdf', dpi=120, bbox_inches='tight')

plt.legend(fontsize=20)

plt.show()
```



训练集准确率

In [21]:

```
df_train.columns
```

Out[21]:

```
Index(['lr', 'data_time', 'loss', 'decode.loss_ce', 'decode.acc_seg',
       'aux.loss_ce', 'aux.acc_seg', 'time', 'memory', 'step'],
      dtype='object')
```

In [22]:

```
metrics = ['decode.acc_seg', 'aux.acc_seg']
```

In [23]:

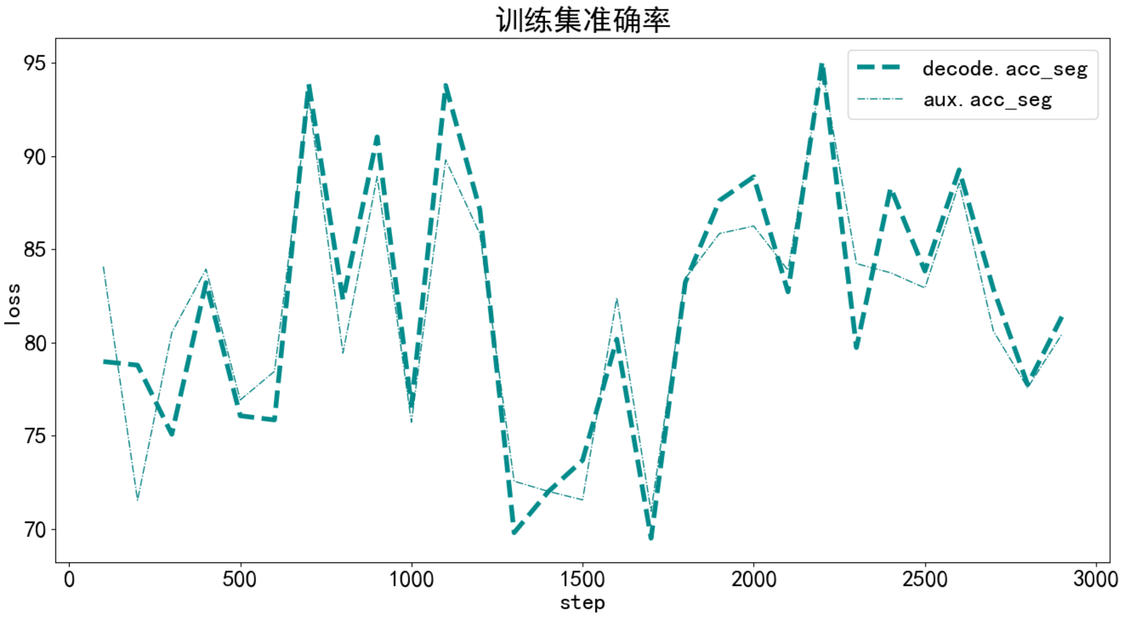
```
plt.figure(figsize=(16, 8))

x = df_train['step']
for y in metrics:
    plt.plot(x, df_train[y], label=y, **get_line_arg())

plt.tick_params(labelsize=20)
plt.xlabel('step', fontsize=20)
plt.ylabel('loss', fontsize=20)
plt.title('训练集准确率', fontsize=25)
plt.savefig('训练集准确率.pdf', dpi=120, bbox_inches='tight')

plt.legend(fontsize=20)

plt.show()
```



测试集评估指标

In [24]:

```
df_test.columns
```

Out[24]:

```
Index(['aAcc', 'mIoU', 'mAcc', 'data_time', 'time', 'step'], dtype='object')
```

In [25]:

```
metrics = ['aAcc', 'mIoU', 'mAcc']
```

In [26]:

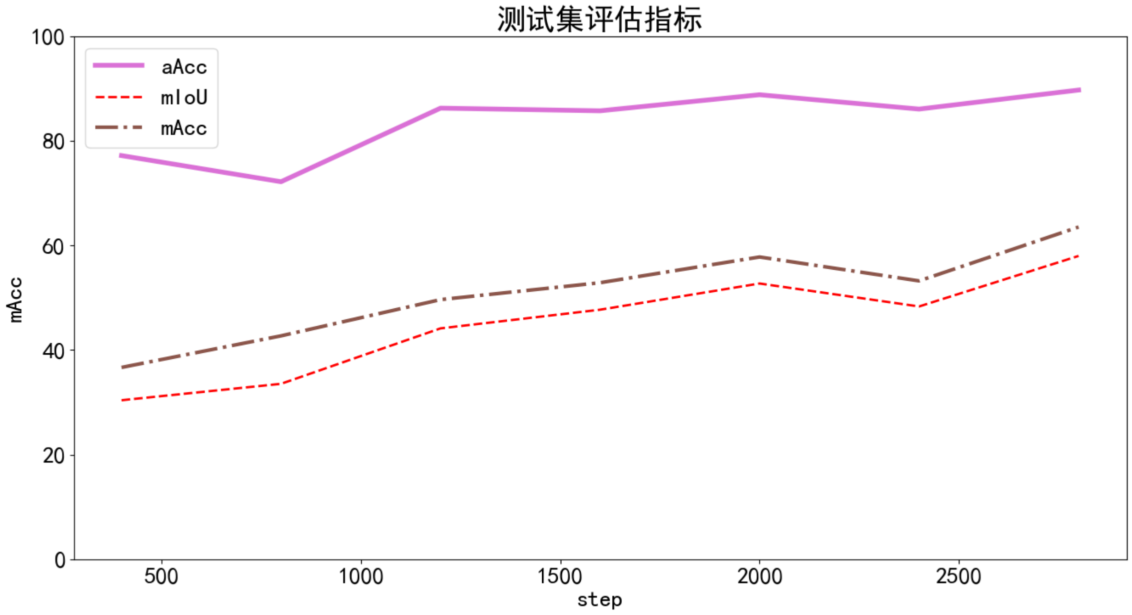
```
plt.figure(figsize=(16, 8))

x = df_test['step']
for y in metrics:
    plt.plot(x, df_test[y], label=y, **get_line_arg())

plt.tick_params(labelsize=20)
plt.ylim([0, 100])
plt.xlabel('step', fontsize=20)
plt.ylabel(y, fontsize=20)
plt.title('测试集评估指标', fontsize=25)
plt.savefig('测试集分类评估指标.pdf', dpi=120, bbox_inches='tight')

plt.legend(fontsize=20)

plt.show()
```



In [ ]:

```

```