

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
In [2]: data2 = pd.read_csv("NBAdata.csv", index_col = 0)
def sol(x):
    if x == "1 year":
        return 1
    elif x == "Rookie":
        return 0
    else:
        x = x[:-6]
        x = int(x)
        return x
data2['career_length'] = data2['career_length'].apply(lambda x:sol(x))
data2['height'] = data2['height'].apply(lambda x:x[:-2])
data2['weight'] = data2['weight'].apply(lambda x:x[:-2])
data2["career_length"] = pd.to_numeric(data2["career_length"], downcast="integer")
data2["height"] = pd.to_numeric(data2["height"], downcast="integer")
data2["weight"] = pd.to_numeric(data2["weight"], downcast="integer")
data2["nba_debut"] = pd.to_numeric(data2["nba_debut"], downcast="integer")

data2["last_year"] = data2.apply(lambda x:x["nba_debut"]+x["career_length"]-1, axis=1)

data2 = data2.drop(data2[data2.nba_debut > 2021].index)
data2 = data2.drop(data2[data2.height < 160].index)
data2 = data2.drop(data2[data2.height > 232].index)
data2 = data2.drop(data2[data2.weight < 80].index)
data2 = data2.drop(data2[data2.weight > 140].index)
```

```
In [3]: # def is_center(x):
#     if x == "Center":
#         return 1
#     else:
#         return 0
# def is_pg(x):
#     if x == "Point Guard":
#         return 1
#     else:
#         return 0
# def is_pf(x):
#     if x == "Power Forward":
#         return 1
#     else:
#         return 0
# def is_sg(x):
#     if x == "Shooting Guard":
#         return 1
#     else:
#         return 0
# def is_sf(x):
#     if x == "Small Forward":
#         return 1
#     else:
#         return 0
# def status(x):
#     if x <= 2021:
#         return 1
#     else:
#         return 0
# def location(x):
#     if x == "Center":
#         return 0
#     elif x == "Point Guard":
#         return 1
#     elif x == "Power Forward":
#         return 2
#     elif x == "Shooting Guard":
#         return 3
#     else:
#         return 4
# data2['KM_Center'] = data2['Position'].apply(lambda x:is_center(x))
# data2['KM_pg'] = data2['Position'].apply(lambda x:is_pg(x))
# data2['KM_pf'] = data2['Position'].apply(lambda x:is_pf(x))
# data2['KM_sg'] = data2['Position'].apply(lambda x:is_sg(x))
# data2['KM_sf'] = data2['Position'].apply(lambda x:is_sf(x))
# data2['status'] = data2['last_year'].apply(lambda x:status(x))
# data2['location'] = data2['Position'].apply(lambda x:location(x))
```

```
In [4]: def location(x):
    if x == "Center":
        return 0
    elif x == "Point Guard":
        return 1
    elif x == "Power Forward":
        return 2
    elif x == "Shooting Guard":
        return 3
    else:
        return 4
def status(x):
    if x <= 2021:
        return 1
    else:
        return 0

data2["罚球命中率"] = data2["per game FT%"]
data2["场均出手数"] = data2["per game FGA"]
data2["场均进攻篮板数"] = data2["per game ORB"]
data2["场均助攻数"] = data2["per game AST"]
data2["三分命中率"] = data2["per game 3P%"]
data2["二分命中率"] = data2["per game 2P%"]
data2["场均得分"] = data2["per game PTS"]
data2["场均防守篮板数"] = data2["per game DRB"]
data2["场均抢断数"] = data2["per game STL"]
data2["场均盖帽数"] = data2["per game BLK"]
data2["场均失误数"] = data2["per game TOV"]
data2["场均犯规数"] = data2["per game PF"]
data2["进入NBA年龄"] = data2.apply(lambda x: x["nba_debut"] - (2023 - x['age']), axis=1)
data2['位置'] = data2['Position'].apply(lambda x: location(x))
data2["身高"] = data2["height"]
data2["体重"] = data2["weight"]
def zt(x):
    if x == 1:
        return True
    else:
        return False
data2['状态'] = data2['last_year'].apply(lambda x: status(x))
data2["生涯长度"] = data2["career_length"]
plt.rcParams['font.sans-serif'] = ['SimHei']
```

In [5]:

```
data = data2.copy()
data.head()
```

Out[5]:

	career_length	nba_debut	height	weight	age	Position	per game Lg	per game G	per game GS	per game MI
--	---------------	-----------	--------	--------	-----	----------	-------------	------------	-------------	-------------

name										
Alaa Abdelnaby	5	1990	208	108	55	Power Forward	NBA	256	53	12.
Shareef Abdur-Rahim	12	1996	206	102	47	Center	NBA	830	704	34.
álex Abrines	3	2016	198	90	30	Shooting Guard	NBA	174	16	16.
Precious Achiuwa	2	2020	203	102	24	Center	NBA	179	43	19.
Quincy Acy	7	2012	201	108	33	Power Forward	NBA	337	60	16.

5 rows × 77 columns



In [6]:

```
data.shape
```

Out[6]:

```
(2461, 77)
```

In [7]:

```
data.isnull().sum()
```

Out[7]:

career_length	0
nba_debut	0
height	0
weight	0
age	0
..	
位置	0
身高	0
体重	0
状态	0
生涯长度	0

Length: 77, dtype: int64

Data Visualization

In [8]: data.shape

Out[8]: (2461, 77)

In [9]:

```
from pyecharts.charts import Pie
from pyecharts import options as opts
```

```
def tranform_fans(x):
    if x <= 1:
        return '<1年'
    elif x <= 4:
        return '2年-4年'
    elif x <= 6:
        return '5年-6年'
    elif x <= 8:
        return '7年-8年'
    elif x <= 10:
        return '8年-10年'
    elif x <= 12:
        return '10年-12年'
    else:
        return '>12年'

def pie_chart():
    data['生涯长度范围'] = data['career_length'].apply(lambda x:tranform_fans(x) )
    data_t = data['生涯长度范围'].value_counts()
    data_pairs= [list(z) for z in zip(data_t.index.tolist(), data_t.values.tolist())]

    pie = (
        Pie()
            .add(' ', data_pairs, rosetype="radius", radius=[90, 150])
            .set_series_opts(label_opts=opts.LabelOpts(formatter='{}: {}'))
            .set_global_opts(
                legend_opts=opts.LegendOpts(is_show=False),
                title_opts=opts.TitleOpts(title="球员生涯长度饼图",
                                          pos_left="center",
                                          pos_top="20"),
            )
    )
    return pie

pie_rank = pie_chart()
pie_rank.render_notebook()
```

Out[9]:

```
In [15]: def short(x):
    if x <= 4:
        return 1
    else:
        return 0
def mid(x):
    if x <= 15 and x > 4:
        return 1
    else:
        return 0

def long(x):
    if x > 15:
        return 1
    else:
        return 0

data = data.drop(data[data.状态 == 0].index)
print(data.shape)
data['短联盟寿命成员'] = data['career_length'].apply(lambda x:short(x) )
data['正常联盟寿命成员'] = data['career_length'].apply(lambda x:mid(x) )
data['长联盟寿命成员'] = data['career_length'].apply(lambda x:long(x) )
```

(2412, 81)

```
In [16]: def location(x):
    if x == "Center":
        return "中锋"
    elif x == "Point Guard":
        return "控球后卫"
    elif x == "Power Forward":
        return "大前锋"
    elif x == "Shooting Guard":
        return "得分后卫"
    else:
        return "小前锋"
data['位置']=data['Position'].apply(lambda x:location(x) )
short = data.groupby('位置')['短联盟寿命成员'].sum()
mid = data.groupby('位置')['正常联盟寿命成员'].sum()
long = data.groupby('位置')['长联盟寿命成员'].sum()

df2 = pd.concat([short, mid, long], join='inner', axis=1)
df2.columns = ['短联盟寿命成员', '正常联盟寿命成员', '长联盟寿命成员']
df2
```

Out[16]: 短联盟寿命成员 正常联盟寿命成员 长联盟寿命成员

位置			
中锋	162	345	43
大前锋	226	242	15
小前锋	285	236	20
得分后卫	355	204	13
控球后卫	172	87	7

```
In [17]: x =df2.iloc[:, 0].index.tolist()
df2["sum"] = df2.apply(lambda x:sum(x), axis=1)
df2["y1"] = df2.apply(lambda x:(x["短联盟寿命成员"]/x["sum"])*100, axis=1)
df2["y2"] = df2.apply(lambda x:(x["正常联盟寿命成员"]/x["sum"])*100, axis=1)
df2["y3"] = df2.apply(lambda x:(x["长联盟寿命成员"]/x["sum"])*100, axis=1)
y1=df2["y1"]
y2=df2["y2"]
y3=df2["y3"]
```

In [18]: df2

Out[18]:

位置	短联盟寿命成员	正常联盟寿命成员	长联盟寿命成员	sum	y1	y2	y3
中锋	162	345	43	550	29.454545	62.727273	7.818182
大前锋	226	242	15	483	46.790890	50.103520	3.105590
小前锋	285	236	20	541	52.680222	43.622921	3.696858
得分后卫	355	204	13	572	62.062937	35.664336	2.272727
控球后卫	172	87	7	266	64.661654	32.706767	2.631579

In [20]: from pyecharts.charts import Bar

```

def cc():
    bar = Bar()
    bar.add_xaxis(x) # x轴标签# stack="stack1"表示堆叠, 否则是上一部分那种普通柱状图
    bar.add_yaxis("短联盟寿命成员", y1.values.tolist(), stack="stack1", category_gap='')
    bar.add_yaxis("正常联盟寿命成员", y2.values.tolist(), stack="stack1", category_gap='')
    bar.add_yaxis("长联盟寿命成员", y3.values.tolist(), stack="stack1", category_gap='')
    bar.set_series_opts(label_opts=opts.LabelOpts(is_show=False))
    bar.set_global_opts(
        title_opts=opts.TitleOpts(
            title=""
        ),
        yaxis_opts=opts.AxisOpts(
            name="占比",# 当bar的y值超出max_时, bar会顶到头。但是因为显示数字所以Ok
            max_=100,# 添加单位
            axislabel_opts=opts.LabelOpts(formatter="{value} %")
        )
    )

    return bar
barchart = cc()
barchart.render_notebook()

```

Out[20]:

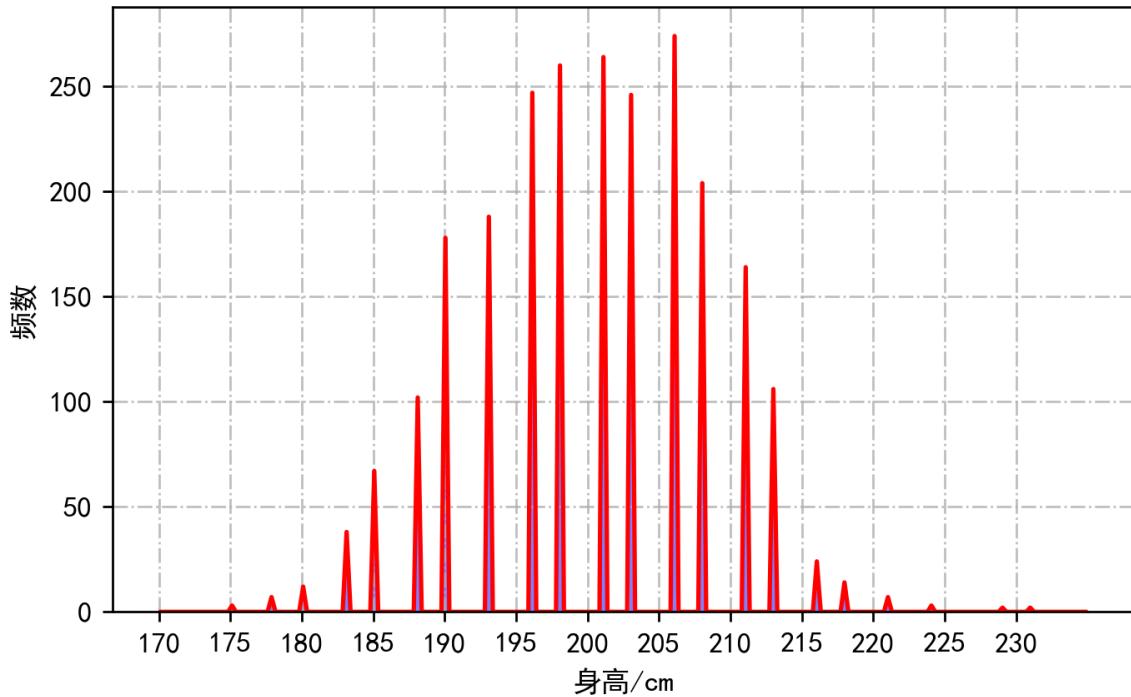
In [21]:

```
plt.figure()
x = data['height'].values.tolist()
width = 235

plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize']=(5.5, 5)
n, bins, patches = plt.hist(x, bins = width, range=(170, width), color='blue', alpha=0.5)
plt.subplots_adjust(bottom=0.3, left=0.2)

plt.grid(alpha=0.8, linestyle='-.')
plt.xlabel('身高/cm')
plt.ylabel('频数')
plt.xticks(np.arange(0, width, 5))
plt.plot(bins[0:width]+((bins[1]-bins[0])/2), n, color='red')
plt.show()
```

<Figure size 640x480 with 0 Axes>

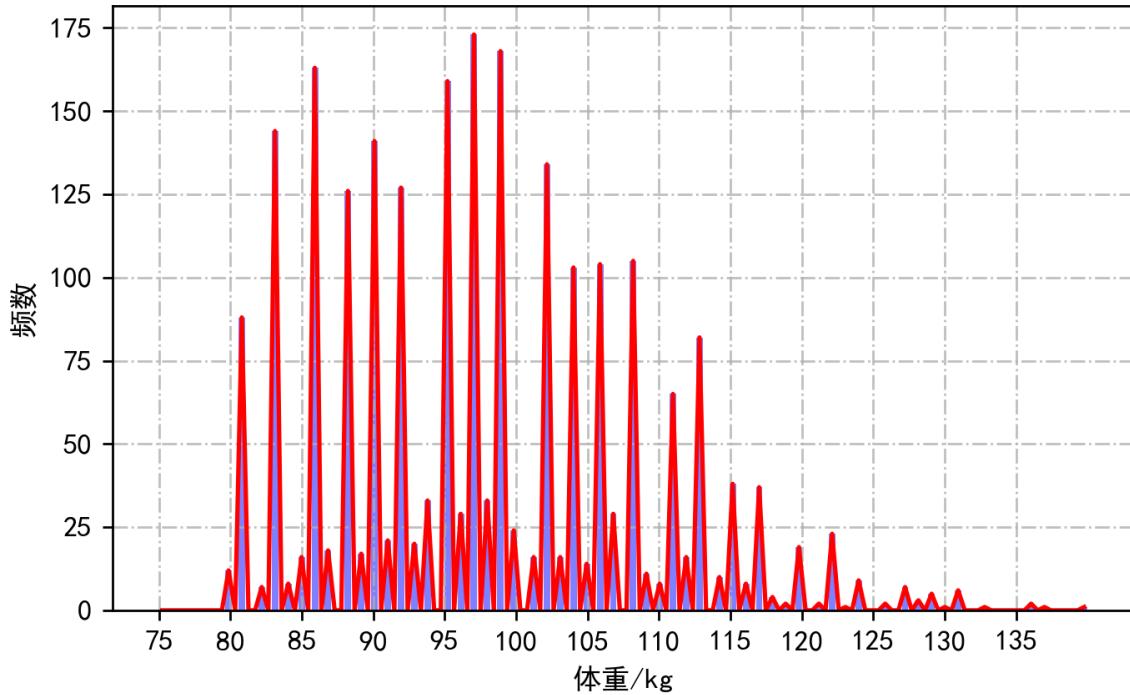


In [22]:

```
plt.figure()
x = data['weight'].values.tolist()
width = 140

plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize']=(5.5, 5)
n, bins, patches = plt.hist(x, bins = width, range=(75, width), color='blue', alpha=0.5)
plt.subplots_adjust(bottom=0.3, left=0.2)
plt.grid(alpha=0.8, linestyle='-.')
plt.xlabel('体重/kg')
plt.ylabel('频数')
plt.xticks(np.arange(0, width, 5))
plt.plot(bins[0:width]+((bins[1]-bins[0])/2), n, color='red')#利用返回值来绘制区间中点线
plt.show()
```

<Figure size 550x500 with 0 Axes>



In [38]:

```

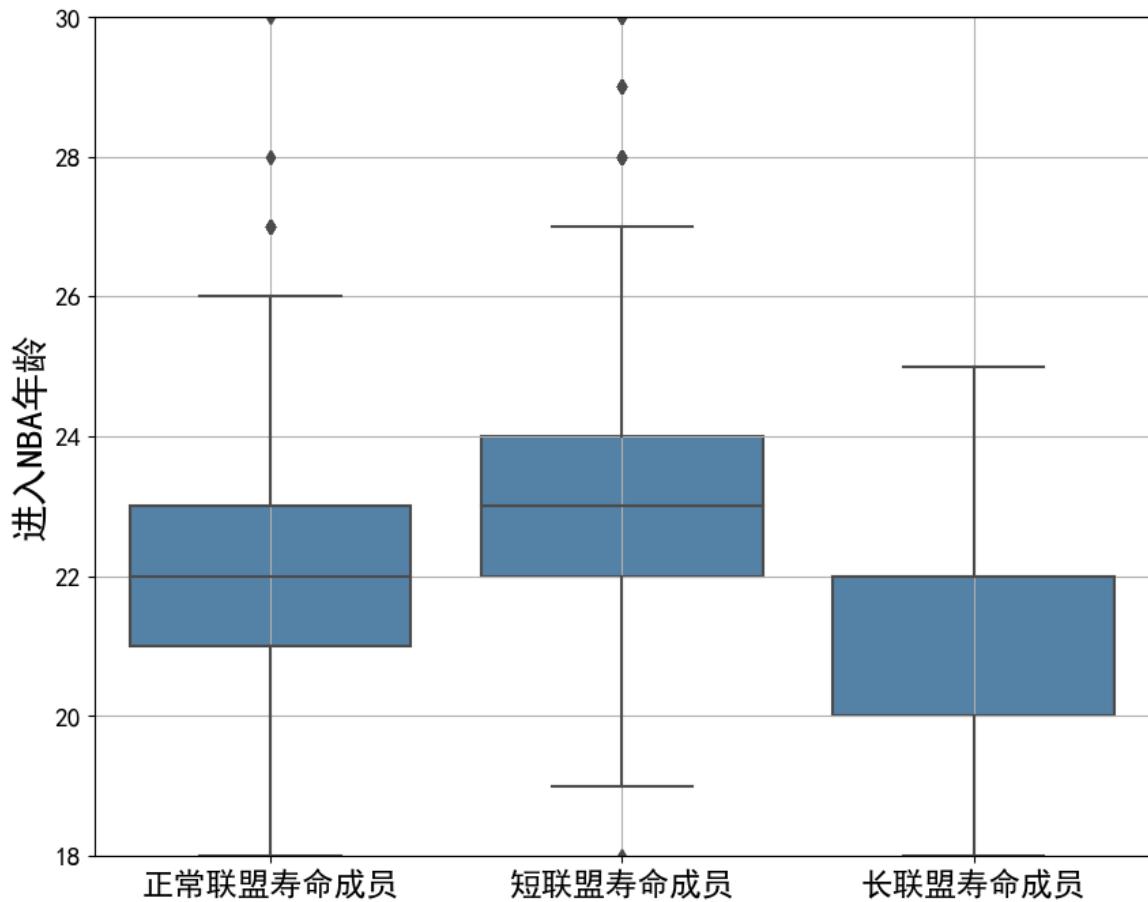
from pyecharts.charts import Line
from decimal import Decimal
import numpy as np
def overlap_bar_line(x, y1, y2, title) -> Bar:
    bar = (
        Bar() # 初始化柱状图，并设置主题
        .add_xaxis(x) # 设置横坐标
        .add_yaxis("身高", y1, bar_width=20) # 设置左纵坐标
        .extend_axis(
            yaxis=opts.AxisOpts(
                axislabel_opts=opts.Label0pts(formatter="{value}kg"), interval=10
            )
        ) # 增加右纵坐标设置
        .set_series_opts(label_opts=opts.Label0pts(is_show=True)) # 柱状图上的数字是
        .set_global_opts(
            title_opts=opts.Title0pts(title=title),
            yaxis_opts=opts.AxisOpts(
                axislabel_opts=opts.Label0pts(formatter="{value}cm"), interval=20, ma
            ),
            xaxis_opts=opts.AxisOpts(
                axislabel_opts=opts.Label0pts(
                    is_show=True, position="top", color="black", interval=0, rotate=15
                )
            ),
        ) # 整体格式设置
    )
    line = (
        Line().add_xaxis(x).add_yaxis("体重", y2, yaxis_index=1, z_level=1)
    ) # 增加右纵坐标数值
    bar.overlap(line)
    return bar
attr = ['中锋', '控球后卫', '大前锋', '得分后卫', '小前锋']
data_mean1 = data.groupby(by='位置').agg({'身高': 'mean'})
data_mean2 = data.groupby(by='位置').agg({'体重': 'mean'})
label11 = np.round(data_mean1['身高'].values.tolist(), 2)
label11 = list(label11)
label12 = np.round(data_mean2['体重'].values.tolist(), 2)
label12 = list(label12)
overlap_bar_line(attr, label11, label12, "").render_notebook()

```

Out[38]:

```
In [24]: import seaborn as sns
def career_sort(x):
    if x <= 4:
        return '短联盟寿命成员'
    elif x <= 15:
        return '正常联盟寿命成员'
    else:
        return '长联盟寿命成员'
data['生涯长度分类'] = data['career_length'].apply(lambda x:career_sort(x) )
plt.figure(figsize=(4, 5), dpi=250)
plt.rcParams['figure.figsize']=(5.5, 5)
plt.figure(figsize=(10, 8))
sns.boxplot(x='生涯长度分类', y='进入NBA年龄', data=data, color='steelblue')
plt.grid()
plt.xlabel('')
plt.ylabel('进入NBA年龄', fontsize=20)
plt.ylim(18, 30)
plt.xticks(rotation=0, fontsize=17)
plt.yticks(fontsize=14)
plt.title(' ', fontsize=20)
plt.show()
```

<Figure size 1000x1250 with 0 Axes>

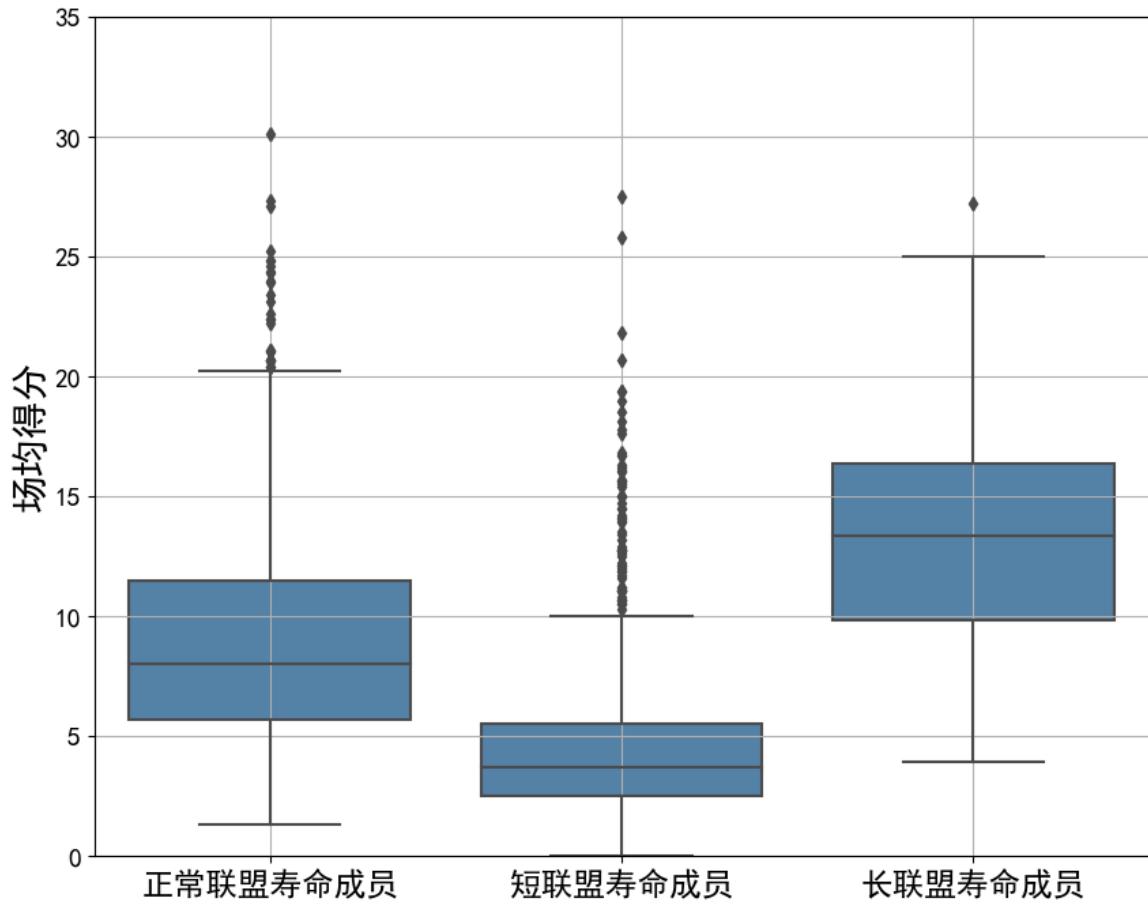


```
In [25]: df3 = data.groupby(by='生涯长度分类').agg({'三分命中率':'mean','二分命中率':'mean'}).  
11 = df3['生涯长度分类'].tolist()  
12 = np.round(df3['三分命中率'].values.tolist(),2)  
13 = np.round(df3['二分命中率'].values.tolist(),2)  
12 = list(12)  
13 = list(13)  
bar = (  
    Bar()  
    .add_xaxis(11)  
    .add_yaxis("三分命中率", 12)  
    .add_yaxis("二分命中率", 13)  
    .set_global_opts(title_opts=opts.TitleOpts(title=""),  
                     toolbox_opts=opts.ToolboxOpts(),)  
)  
bar.render_notebook()
```

Out[25]:

```
In [26]: plt.figure(figsize=(4, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5.5, 5)
plt.figure(figsize=(10, 8))
sns.boxplot(x='生涯长度分类', y='场均得分', data=data, color='steelblue')
plt.grid()
plt.xlabel('')
plt.ylabel('场均得分', fontsize=20)
plt.ylim(0, 35)
plt.xticks(rotation=0, fontsize=17)
plt.yticks(fontsize=14)
plt.title(' ', fontsize=20)
plt.show()
```

<Figure size 1000x1250 with 0 Axes>



```
In [27]: df3 = data.groupby(by='生涯长度分类').agg({“三分命中率”: ‘mean’, ‘二分命中率’: ‘mean’, ‘罚球命中率’: ‘mean’, ‘场均出手数’: ‘mean’, ‘场均进攻篮板数’: ‘mean’, ‘场均助攻数’: ‘mean’})
11 = df3[‘生涯长度分类’].tolist()
12 = np.round(df3[‘三分命中率’].values.tolist(), 2)
13 = np.round(df3[‘二分命中率’].values.tolist(), 2)
14 = np.round(df3[‘罚球命中率’].values.tolist(), 2)
15 = np.round(df3[‘场均出手数’].values.tolist(), 2)
16 = np.round(df3[‘场均进攻篮板数’].values.tolist(), 2)
17 = np.round(df3[‘场均助攻数’].values.tolist(), 2)
12 = list(12)
13 = list(13)
14 = list(14)
15 = list(15)
16 = list(16)
17 = list(17)
bar = (
    Bar()
    .add_xaxis(11)
    .add_yaxis(“三分命中率”, 12)
    .add_yaxis(“二分命中率”, 13)
    .add_yaxis(“罚球命中率”, 14)
    .add_yaxis(“场均出手数”, 15)
    .add_yaxis(“场均进攻篮板数”, 16)
    .add_yaxis(“场均助攻数”, 17)
    .set_global_opts(title_opts=opts.TitleOpts(title=""),
                      toolbox_opts=opts.ToolboxOpts())
)
bar.render_notebook()
```



Out[27]:

```
In [28]: df4 = data.groupby(by='生涯长度分类').agg({'场均防守篮板数': 'mean', '场均抢断数': 'mean',
11 = df4['生涯长度分类'].tolist()
12 = np.round(df4['场均防守篮板数'].values.tolist(), 2)
13 = np.round(df4['场均抢断数'].values.tolist(), 2)
14 = np.round(df4['场均盖帽数'].values.tolist(), 2)

12 = list(12)
13 = list(13)
14 = list(14)

bar = (
    Bar()
    .add_xaxis(11)
    .add_yaxis("场均防守篮板数", 12)
    .add_yaxis("场均抢断数", 13)
    .add_yaxis("场均盖帽数", 14)

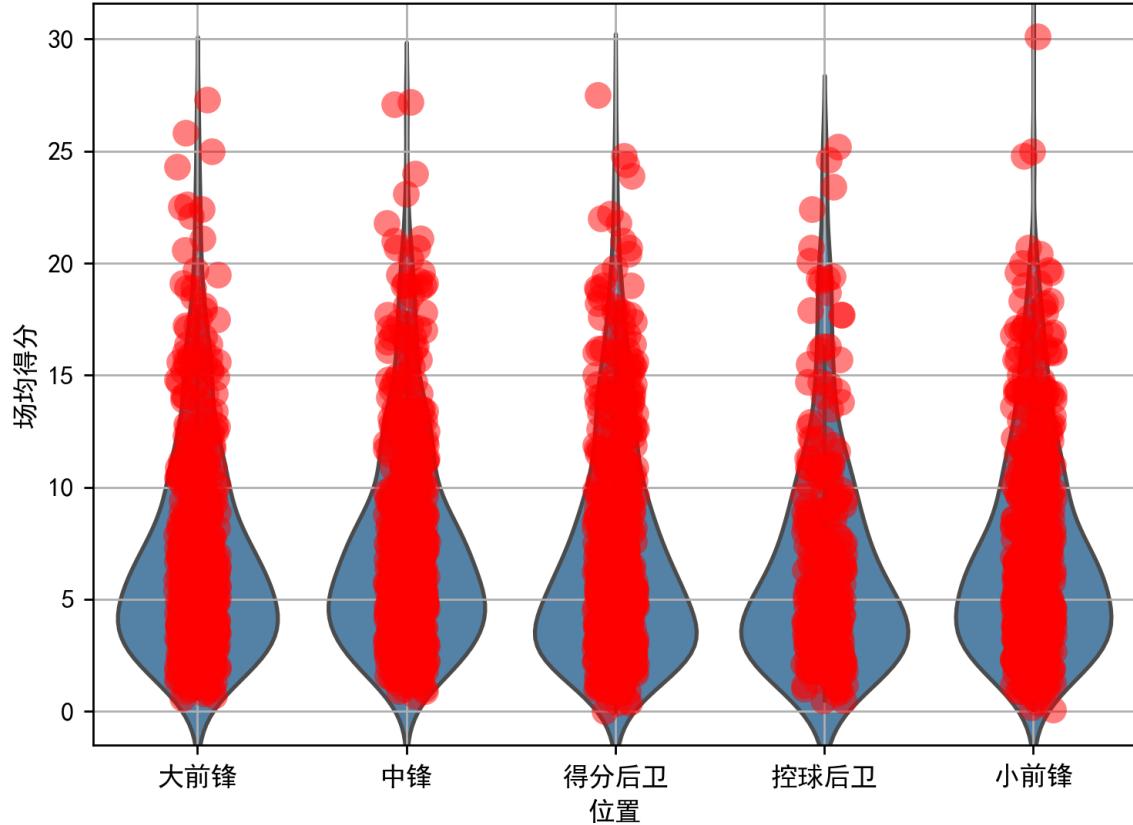
    .set_global_opts(title_opts=opts.TitleOpts(title=""),
                      toolbox_opts=opts.BrushOpts(), )
)
bar.render_notebook()
```

Out[28]:

```
In [29]: df5 = data.groupby(by='生涯长度分类').agg({'场均失误数': 'mean', '场均犯规数': 'mean' })
11 = df5.iloc[:, 0].index.tolist()
12 = np.round(df5['场均失误数'].values.tolist(), 2)
13 = np.round(df5['场均犯规数'].values.tolist(), 2)
12 = list(12)
13 = list(13)
bar = (
    Bar()
    .add_xaxis(11)
    .add_yaxis("场均失误数", 12)
    .add_yaxis("场均犯规数", 13)
    .set_global_opts(
        title_opts=opts.TitleOpts(title=""),
        toolbox_opts=opts.BrushOpts(),
        axis_opts=opts.AxisOpts(
            axislabel_opts=opts.LabelOpts(is_show=True, interval=0, rotate=15)
        )
    )
)
bar.render_notebook()
```

Out[29]:

```
In [30]: plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5.5, 5)
sns.violinplot(x='位置', y='场均得分', data=data, color='steelblue')
# 加入经过抖动处理的数据点
sns.stripplot(x='位置', y='场均得分', data=data, jitter=True,
               color='r', s=10, alpha=0.5)
plt.grid()
plt.xlabel('位置')
plt.ylabel('场均得分')
plt.title('')
plt.show()
```



In [31]:

```
df = data
leida = df.loc[df.index.intersection(['Tim Duncan', 'Hakeem Olajuwon', 'Michael Jordan',
# leida = leida.loc[:, ['场均得分', '场均助攻数', '场均进攻篮板数', '场均防守篮板数', '场均抢断数', '场均盖帽数']])
leida.drop(leida.columns[0:6], axis=1, inplace=True)
leida.drop(leida.columns[2:4], axis=1, inplace=True)
leida.drop(leida.columns[6:19], axis=1, inplace=True)
leida.head()
```

Out[31]:

	场均进攻篮板数	场均助攻数	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	生涯长度分类
name							
Larry Bird	2.0	6.3	24.3	8.0	1.7	0.8	正常联盟寿命成员
Tim Duncan	2.8	3.0	19.0	8.1	0.7	2.2	长联盟寿命成员
Magic Johnson	1.8	11.2	19.5	5.5	1.9	0.4	正常联盟寿命成员
Michael Jordan	1.6	5.3	30.1	4.7	2.3	0.8	正常联盟寿命成员
Hakeem Olajuwon	3.3	2.5	21.8	7.8	1.7	3.1	长联盟寿命成员

In [32]:

leida

Out[32]:

	场均进攻篮板数	场均助攻数	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	生涯长度分类
name							
Larry Bird	2.0	6.3	24.3	8.0	1.7	0.8	正常联盟寿命成员
Tim Duncan	2.8	3.0	19.0	8.1	0.7	2.2	长联盟寿命成员
Magic Johnson	1.8	11.2	19.5	5.5	1.9	0.4	正常联盟寿命成员
Michael Jordan	1.6	5.3	30.1	4.7	2.3	0.8	正常联盟寿命成员
Hakeem Olajuwon	3.3	2.5	21.8	7.8	1.7	3.1	长联盟寿命成员

```
In [33]: from pyecharts.charts import Radar
v1 = [leida.loc['Tim Duncan', :].values.tolist()]
v2 = [leida.loc['Hakeem Olajuwon', :].values.tolist()]
v3 = [leida.loc['Michael Jordan', :].values.tolist()]
v4 = [leida.loc['Larry Bird', :].values.tolist()]
v5 = [leida.loc['Magic Johnson', :].values.tolist()]
radar3 = (
    Radar()
    .add_schema(
        schema=[
            opts.RadarIndicatorItem(name='进攻篮板', max_=4),
            opts.RadarIndicatorItem(name='助攻', max_=12),
            opts.RadarIndicatorItem(name='得分', max_=35),
            opts.RadarIndicatorItem(name='防守篮板', max_=10),
            opts.RadarIndicatorItem(name='抢断', max_=5),
            opts.RadarIndicatorItem(name='盖帽', max_=4),
        ]
    )
    .add('Tim Duncan', v1, linestyle_opts=opts.LineStyleOpts(color="red", width=2))
    .add('Hakeem Olajuwon', v2, linestyle_opts=opts.LineStyleOpts(color="black", width=2))
    .add('Michael Jordan', v3, linestyle_opts=opts.LineStyleOpts(color="blue", width=2))
    .add('Larry Bird', v4, linestyle_opts=opts.LineStyleOpts(color="yellow", width=2))
    .add('Magic Johnson', v5, linestyle_opts=opts.LineStyleOpts(color="green", width=2))
    .set_global_opts(title_opts=opts.TitleOpts(title=''))
)
radar3.render_notebook()
```

Out[33]:

```
In [34]: astdata = data.groupby(by='Position').agg({'场均助攻数': 'mean'})
astdata['percent'] = (astdata['场均助攻数'] / astdata['场均助攻数'].sum()) * 100
astdata
```

Out[34]:

	场均助攻数	percent
Position		
Center	0.988727	12.256137
Point Guard	2.850752	35.337555
Power Forward	1.097308	13.602096
Shooting Guard	1.833741	22.730822
Small Forward	1.296673	16.073390

RSF

```
In [35]: import numpy as np
import pandas as pd
from lifelines import KaplanMeierFitter
import matplotlib.pyplot as plt
```

```
In [36]: data2 = pd.read_csv("NBA球员信息2.csv", index_col = 0)
def sol(x):
    if x == "1 year":
        return 1
    elif x == "Rookie":
        return 0
    else:
        x = x[:-6]
        x = int(x)
        return x
data2['career_length'] = data2['career_length'].apply(lambda x:sol(x))
data2['height'] = data2['height'].apply(lambda x:x[:-2])
data2['weight'] = data2['weight'].apply(lambda x:x[:-2])
data2["career_length"] = pd.to_numeric(data2["career_length"], downcast="integer")
data2["height"] = pd.to_numeric(data2["height"], downcast="integer")
data2["weight"] = pd.to_numeric(data2["weight"], downcast="integer")
data2["nba_debut"] = pd.to_numeric(data2["nba_debut"], downcast="integer")

data2["last_year"] = data2.apply(lambda x:x["nba_debut"]+x["career_length"]-1, axis=1)
data2 = data2.drop(data2[data2.last_year > 2022].index)
data2 = data2.drop(data2[data2.nba_debut > 2021].index)
data2 = data2.drop(data2[data2.height < 160].index)
data2 = data2.drop(data2[data2.height > 232].index)
data2 = data2.drop(data2[data2.weight < 80].index)
data2 = data2.drop(data2[data2.weight > 140].index)
```

```
In [34]: def location(x):
    if x == "Center":
        return 0
    elif x == "Point Guard":
        return 1
    elif x == "Power Forward":
        return 2
    elif x == "Shooting Guard":
        return 3
    else:
        return 4
def status(x):
    if x <= 2021:
        return 1
    else:
        return 0

data2["罚球命中率"] = data2["per game FT%"]
data2["场均出手数"] = data2["per game FGA"]
data2["场均进攻篮板数"] = data2["per game ORB"]
data2["场均助攻数"] = data2["per game AST"]
data2["三分命中率"] = data2["per game 3P%"]
data2["二分命中率"] = data2["per game 2P%"]
data2["场均得分"] = data2["per game PTS"]
data2["场均防守篮板数"] = data2["per game DRB"]
data2["场均抢断数"] = data2["per game STL"]
data2["场均盖帽数"] = data2["per game BLK"]
data2["场均失误数"] = data2["per game TOV"]
data2["场均犯规数"] = data2["per game PF"]
data2["进入NBA年龄"] = data2.apply(lambda x: x["nba_debut"] - (2023 - x['age']), axis=1)
data2['位置'] = data2['Position'].apply(lambda x: location(x))
data2["身高"] = data2["height"]
data2["体重"] = data2["weight"]
def zt(x):
    if x == 1:
        return True
    else:
        return False
data2['状态'] = data2['last_year'].apply(lambda x: status(x))
data2["生涯长度"] = data2["career_length"]
plt.rcParams['font.sans-serif'] = ['SimHei']
```

In [35]: `data2.head()`

Out[35]:

	career_length	nba_debut	height	weight	age	Position	per game Lg	per game G	per game GS	per game MI
name										
Alaa Abdelnaby	5	1990	208	108	55	Power Forward	NBA	256	53	12.
Shareef Abdur- Rahim	12	1996	206	102	47	Center	NBA	830	704	34.
álex Abrines	3	2016	198	90	30	Shooting Guard	NBA	174	16	16.
Precious Achiuwa	2	2020	203	102	24	Center	NBA	179	43	19.
Quincy Acy	7	2012	201	108	33	Power Forward	NBA	337	60	16.

5 rows × 77 columns

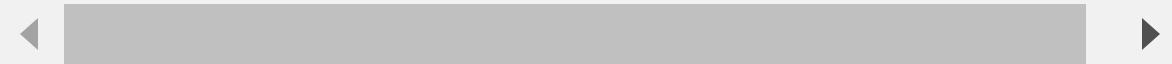


In [36]: `# data2['场均上场时间'] = data2['per game MP']
data2['罚球命中率'] = data2['per game FT%']
data2['进入NBA年龄'] = data2['nba_debut']
data2.shape`

```
In [37]: data2.drop(data2.columns[0:60], axis=1, inplace=True)
data2.dropna(inplace=True)
data2.head(5)
```

Out[37]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	场均犯规数	进入NBA年龄	位置	身高	体重	状态
name																
Alaa Abdelnaby	4.8	1.1	0.3	0.000	0.503	5.7	2.2	0.3	0.3	1.0	1.9	22	2	208	108	1
Shareef Abdur- Rahim	13.9	2.3	2.5	0.297	0.480	18.1	5.3	1.0	0.8	2.6	2.8	20	0	206	102	1
álex Abrines	4.5	0.3	0.5	0.368	0.443	5.3	1.1	0.5	0.1	0.4	1.7	23	3	198	90	1
Precious Achiuwa	6.5	1.7	0.9	0.321	0.508	7.7	3.6	0.5	0.5	1.0	1.9	21	0	203	102	1
Quincy Acy	3.9	0.9	0.6	0.350	0.506	4.9	2.6	0.4	0.4	0.6	2.0	22	2	201	108	1



```
In [38]: # pip install --pre tensorflow==2.2 -i https://pypi.tuna.tsinghua.edu.cn/simple
```

```
In [ ]: # pip install protobuf==3.19.0
```

```
In [45]: import tensorflow as tf
#tf.__version__
#tf.test.is_gpu_available()
import sys
sys.path.append('test/KwaiSurvival')
import pandas as pd
from DeepSurv import *
# from DeepHit import *
# from DeepMultiTasks import *
df = data2.copy()
label = '生涯长度'
event = '状态'

# 初始化 - 第一个模型 DeepSurv
ds = DeepSurv(df, label, event)

# 训练
epochs = 2500
ds.train(epochs)

# 模型保存 - 这里代码没写，感觉这版代码是个实验版本的
ds.model.save('path_to_my_model_DeepSurv.h5')

# 预测
scores = ds.predict_score(ds.X) # 1019 ,4
```

Epoch 1/2500
10/10 [=====] - 0s 904us/step - loss: 1181.8542 - nll_los
s: 1181.8542
Epoch 2/2500
10/10 [=====] - 0s 857us/step - loss: 1147.3303 - nll_los
s: 1147.3303
Epoch 3/2500
10/10 [=====] - 0s 963us/step - loss: 1128.1135 - nll_los
s: 1128.1135
Epoch 4/2500
10/10 [=====] - 0s 922us/step - loss: 1118.8917 - nll_los
s: 1118.8917
Epoch 5/2500
10/10 [=====] - 0s 1ms/step - loss: 1111.3035 - nll_loss:
1111.3035
Epoch 6/2500
10/10 [=====] - 0s 822us/step - loss: 1104.2712 - nll_los
s: 1104.2712
Epoch 7/2500
10/10 [=====] - 0s 877us/step - loss: 1097.5227 - nll_los
s: 1097.5227
Epoch 8/2500
10/10 [=====] - 0s 795us/step - loss: 1092.1013 - nll_los
s: 1092.1013
Epoch 9/2500
10/10 [=====] - 0s 784us/step - loss: 1089.7222 - nll_los
s: 1089.7222
Epoch 10/2500
10/10 [=====] - 0s 922us/step - loss: 1088.5400 - nll_los
s: 1088.5400
Epoch 11/2500
10/10 [=====] - 0s 882us/step - loss: 1087.8710 - nll_los
s: 1087.8710
Epoch 12/2500
10/10 [=====] - 0s 795us/step - loss: 1086.4493 - nll_los
s: 1086.4493
Epoch 13/2500
10/10 [=====] - 0s 816us/step - loss: 1086.2600 - nll_los
s: 1086.2600
Epoch 14/2500
10/10 [=====] - 0s 800us/step - loss: 1085.7665 - nll_los
s: 1085.7665
Epoch 15/2500
10/10 [=====] - 0s 887us/step - loss: 1085.2686 - nll_los
s: 1085.2686
Epoch 16/2500
10/10 [=====] - 0s 921us/step - loss: 1084.8652 - nll_los
s: 1084.8652
Epoch 17/2500
10/10 [=====] - 0s 987us/step - loss: 1084.4685 - nll_los
s: 1084.4685
Epoch 18/2500
10/10 [=====] - 0s 893us/step - loss: 1083.1970 - nll_los
s: 1083.1970
Epoch 19/2500
10/10 [=====] - 0s 837us/step - loss: 1083.1510 - nll_los
s: 1083.1510

```
Epoch 20/2500
10/10 [=====] - 0s 879us/step - loss: 1082.9945 - nll_loss: 1082.9945
Epoch 21/2500
10/10 [=====] - 0s 840us/step - loss: 1083.2777 - nll_loss: 1083.2777
Epoch 22/2500
10/10 [=====] - 0s 829us/step - loss: 1082.8932 - nll_loss: 1082.8932
Epoch 23/2500
10/10 [=====] - 0s 873us/step - loss: 1083.4615 - nll_loss: 1083.4615
Epoch 24/2500
10/10 [=====] - 0s 859us/step - loss: 1083.4075 - nll_loss: 1083.4075
Epoch 25/2500
10/10 [=====] - 0s 878us/step - loss: 1080.8348 - nll_loss: 1080.8348
Epoch 26/2500
10/10 [=====] - 0s 874us/step - loss: 1081.5780 - nll_loss: 1081.5780
Epoch 27/2500
10/10 [=====] - 0s 881us/step - loss: 1082.3342 - nll_loss: 1082.3342
Epoch 28/2500
10/10 [=====] - 0s 871us/step - loss: 1079.7560 - nll_loss: 1079.7560
Epoch 29/2500
10/10 [=====] - 0s 2ms/step - loss: 1080.3737 - nll_loss: 1080.3737
Epoch 30/2500
10/10 [=====] - 0s 950us/step - loss: 1081.3409 - nll_loss: 1081.3409
Epoch 31/2500
10/10 [=====] - 0s 978us/step - loss: 1081.5090 - nll_loss: 1081.5090
Epoch 32/2500
10/10 [=====] - 0s 995us/step - loss: 1080.7235 - nll_loss: 1080.7235
Epoch 33/2500
10/10 [=====] - 0s 869us/step - loss: 1081.7484 - nll_loss: 1081.7484
Epoch 34/2500
10/10 [=====] - 0s 939us/step - loss: 1080.8525 - nll_loss: 1080.8525
Epoch 35/2500
10/10 [=====] - 0s 977us/step - loss: 1078.9419 - nll_loss: 1078.9419
Epoch 36/2500
10/10 [=====] - 0s 821us/step - loss: 1080.0494 - nll_loss: 1080.0494
Epoch 37/2500
10/10 [=====] - 0s 895us/step - loss: 1077.9656 - nll_loss: 1077.9656
Epoch 38/2500
10/10 [=====] - 0s 845us/step - loss: 1079.3975 - nll_loss: 1079.3975
```

```
Epoch 39/2500
10/10 [=====] - 0s 676us/step - loss: 1080.5358 - nll_loss: 1080.5358
Epoch 40/2500
10/10 [=====] - 0s 888us/step - loss: 1079.4165 - nll_loss: 1079.4165
Epoch 41/2500
10/10 [=====] - 0s 514us/step - loss: 1078.7820 - nll_loss: 1078.7820
Epoch 42/2500
10/10 [=====] - 0s 759us/step - loss: 1079.6632 - nll_loss: 1079.6632
Epoch 43/2500
10/10 [=====] - 0s 877us/step - loss: 1077.9281 - nll_loss: 1077.9281
Epoch 44/2500
10/10 [=====] - 0s 909us/step - loss: 1077.7006 - nll_loss: 1077.7006
Epoch 45/2500
10/10 [=====] - 0s 861us/step - loss: 1077.1400 - nll_loss: 1077.1400
Epoch 46/2500
10/10 [=====] - 0s 843us/step - loss: 1078.0608 - nll_loss: 1078.0608
Epoch 47/2500
10/10 [=====] - 0s 943us/step - loss: 1077.4187 - nll_loss: 1077.4187
Epoch 48/2500
10/10 [=====] - 0s 946us/step - loss: 1076.3053 - nll_loss: 1076.3053
Epoch 49/2500
10/10 [=====] - 0s 871us/step - loss: 1075.8613 - nll_loss: 1075.8613
Epoch 50/2500
10/10 [=====] - 0s 948us/step - loss: 1074.3953 - nll_loss: 1074.3953
Epoch 51/2500
10/10 [=====] - 0s 815us/step - loss: 1075.2335 - nll_loss: 1075.2335
Epoch 52/2500
10/10 [=====] - 0s 844us/step - loss: 1074.9651 - nll_loss: 1074.9651
Epoch 53/2500
10/10 [=====] - 0s 908us/step - loss: 1074.8075 - nll_loss: 1074.8075
Epoch 54/2500
10/10 [=====] - 0s 894us/step - loss: 1073.6121 - nll_loss: 1073.6121
Epoch 55/2500
10/10 [=====] - 0s 1ms/step - loss: 1074.8516 - nll_loss: 1074.8516
Epoch 56/2500
10/10 [=====] - 0s 923us/step - loss: 1073.8751 - nll_loss: 1073.8751
Epoch 57/2500
10/10 [=====] - 0s 1ms/step - loss: 1074.9612 - nll_loss: 1074.9612
```

```
Epoch 58/2500
10/10 [=====] - 0s 1ms/step - loss: 1073.9364 - nll_loss: 1073.9364
Epoch 59/2500
10/10 [=====] - 0s 783us/step - loss: 1075.5344 - nll_loss: 1075.5344
Epoch 60/2500
10/10 [=====] - 0s 983us/step - loss: 1074.0605 - nll_loss: 1074.0605
Epoch 61/2500
10/10 [=====] - 0s 1ms/step - loss: 1073.9385 - nll_loss: 1073.9385
Epoch 62/2500
10/10 [=====] - 0s 665us/step - loss: 1073.7487 - nll_loss: 1073.7487
Epoch 63/2500
10/10 [=====] - 0s 888us/step - loss: 1075.2990 - nll_loss: 1075.2990
Epoch 64/2500
10/10 [=====] - 0s 985us/step - loss: 1071.3231 - nll_loss: 1071.3231
Epoch 65/2500
10/10 [=====] - 0s 912us/step - loss: 1071.3722 - nll_loss: 1071.3722
Epoch 66/2500
10/10 [=====] - 0s 919us/step - loss: 1071.2659 - nll_loss: 1071.2659
Epoch 67/2500
10/10 [=====] - 0s 936us/step - loss: 1071.8488 - nll_loss: 1071.8488
Epoch 68/2500
10/10 [=====] - 0s 946us/step - loss: 1072.5979 - nll_loss: 1072.5979
Epoch 69/2500
10/10 [=====] - 0s 776us/step - loss: 1071.0823 - nll_loss: 1071.0823
Epoch 70/2500
10/10 [=====] - 0s 1ms/step - loss: 1071.2697 - nll_loss: 1071.2697
Epoch 71/2500
10/10 [=====] - 0s 836us/step - loss: 1071.3245 - nll_loss: 1071.3245
Epoch 72/2500
10/10 [=====] - 0s 568us/step - loss: 1071.3939 - nll_loss: 1071.3939
Epoch 73/2500
10/10 [=====] - 0s 940us/step - loss: 1069.7745 - nll_loss: 1069.7745
Epoch 74/2500
10/10 [=====] - 0s 814us/step - loss: 1070.8254 - nll_loss: 1070.8254
Epoch 75/2500
10/10 [=====] - 0s 939us/step - loss: 1070.1046 - nll_loss: 1070.1046
Epoch 76/2500
10/10 [=====] - 0s 538us/step - loss: 1070.0430 - nll_loss: 1070.0430
```

```
Epoch 77/2500
10/10 [=====] - 0s 918us/step - loss: 1070.6118 - nll_loss: 1070.6118
Epoch 78/2500
10/10 [=====] - 0s 962us/step - loss: 1071.3079 - nll_loss: 1071.3079
Epoch 79/2500
10/10 [=====] - 0s 842us/step - loss: 1072.4099 - nll_loss: 1072.4099
Epoch 80/2500
10/10 [=====] - 0s 952us/step - loss: 1070.4250 - nll_loss: 1070.4250
Epoch 81/2500
10/10 [=====] - 0s 867us/step - loss: 1068.4055 - nll_loss: 1068.4055
Epoch 82/2500
10/10 [=====] - 0s 1ms/step - loss: 1068.8284 - nll_loss: 1068.8284
Epoch 83/2500
10/10 [=====] - 0s 814us/step - loss: 1068.0007 - nll_loss: 1068.0007
Epoch 84/2500
10/10 [=====] - 0s 893us/step - loss: 1069.8350 - nll_loss: 1069.8350
Epoch 85/2500
10/10 [=====] - 0s 877us/step - loss: 1068.9417 - nll_loss: 1068.9417
Epoch 86/2500
10/10 [=====] - 0s 1ms/step - loss: 1069.1827 - nll_loss: 1069.1827
Epoch 87/2500
10/10 [=====] - 0s 1ms/step - loss: 1067.2905 - nll_loss: 1067.2905
Epoch 88/2500
10/10 [=====] - 0s 899us/step - loss: 1066.9266 - nll_loss: 1066.9266
Epoch 89/2500
10/10 [=====] - 0s 897us/step - loss: 1068.6522 - nll_loss: 1068.6522
Epoch 90/2500
10/10 [=====] - 0s 957us/step - loss: 1065.3990 - nll_loss: 1065.3990
Epoch 91/2500
10/10 [=====] - 0s 1ms/step - loss: 1066.2395 - nll_loss: 1066.2395
Epoch 92/2500
10/10 [=====] - 0s 1ms/step - loss: 1066.7004 - nll_loss: 1066.7004
Epoch 93/2500
10/10 [=====] - 0s 890us/step - loss: 1070.2482 - nll_loss: 1070.2482
Epoch 94/2500
10/10 [=====] - 0s 889us/step - loss: 1068.7533 - nll_loss: 1068.7533
Epoch 95/2500
10/10 [=====] - 0s 865us/step - loss: 1068.1697 - nll_loss: 1068.1697
```

```
Epoch 96/2500
10/10 [=====] - 0s 883us/step - loss: 1066.5844 - nll_loss: 1066.5844
Epoch 97/2500
10/10 [=====] - 0s 1ms/step - loss: 1066.1882 - nll_loss: 1066.1882
Epoch 98/2500
10/10 [=====] - 0s 688us/step - loss: 1067.2081 - nll_loss: 1067.2081
Epoch 99/2500
10/10 [=====] - 0s 923us/step - loss: 1066.7483 - nll_loss: 1066.7483
Epoch 100/2500
10/10 [=====] - 0s 905us/step - loss: 1067.9208 - nll_loss: 1067.9208
Epoch 101/2500
10/10 [=====] - 0s 974us/step - loss: 1067.7723 - nll_loss: 1067.7723
Epoch 102/2500
10/10 [=====] - 0s 896us/step - loss: 1067.8964 - nll_loss: 1067.8964
Epoch 103/2500
10/10 [=====] - 0s 942us/step - loss: 1070.0161 - nll_loss: 1070.0161
Epoch 104/2500
10/10 [=====] - 0s 808us/step - loss: 1066.2815 - nll_loss: 1066.2815
Epoch 105/2500
10/10 [=====] - 0s 839us/step - loss: 1066.7882 - nll_loss: 1066.7882
Epoch 106/2500
10/10 [=====] - 0s 1ms/step - loss: 1064.6073 - nll_loss: 1064.6073
Epoch 107/2500
10/10 [=====] - 0s 983us/step - loss: 1063.2058 - nll_loss: 1063.2058
Epoch 108/2500
10/10 [=====] - 0s 962us/step - loss: 1064.7236 - nll_loss: 1064.7236
Epoch 109/2500
10/10 [=====] - 0s 1ms/step - loss: 1064.5681 - nll_loss: 1064.5681
Epoch 110/2500
10/10 [=====] - 0s 1ms/step - loss: 1067.4568 - nll_loss: 1067.4568
Epoch 111/2500
10/10 [=====] - 0s 944us/step - loss: 1065.9681 - nll_loss: 1065.9681
Epoch 112/2500
10/10 [=====] - 0s 970us/step - loss: 1067.0439 - nll_loss: 1067.0439
Epoch 113/2500
10/10 [=====] - 0s 1ms/step - loss: 1063.8860 - nll_loss: 1063.8860
Epoch 114/2500
10/10 [=====] - 0s 847us/step - loss: 1063.6836 - nll_loss: 1063.6836
```

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Epoch 115/2500
10/10 [=====] - 0s 889us/step - loss: 1064.9408 - nll_loss: 1064.9408
Epoch 116/2500
10/10 [=====] - 0s 935us/step - loss: 1065.0414 - nll_loss: 1065.0414
Epoch 117/2500
10/10 [=====] - 0s 1ms/step - loss: 1066.6653 - nll_loss: 1066.6653
Epoch 118/2500
10/10 [=====] - 0s 1ms/step - loss: 1066.4860 - nll_loss: 1066.4860
Epoch 119/2500
10/10 [=====] - 0s 904us/step - loss: 1064.3259 - nll_loss: 1064.3259
Epoch 120/2500
10/10 [=====] - 0s 828us/step - loss: 1065.4604 - nll_loss: 1065.4604
Epoch 121/2500
10/10 [=====] - 0s 840us/step - loss: 1065.2078 - nll_loss: 1065.2078
Epoch 122/2500
10/10 [=====] - 0s 918us/step - loss: 1065.7257 - nll_loss: 1065.7257
Epoch 123/2500
10/10 [=====] - 0s 858us/step - loss: 1063.5615 - nll_loss: 1063.5615
Epoch 124/2500
10/10 [=====] - 0s 1ms/step - loss: 1065.9771 - nll_loss: 1065.9771
Epoch 125/2500
10/10 [=====] - 0s 612us/step - loss: 1063.4430 - nll_loss: 1063.4430
Epoch 126/2500
10/10 [=====] - 0s 837us/step - loss: 1066.0205 - nll_loss: 1066.0205
Epoch 127/2500
10/10 [=====] - 0s 866us/step - loss: 1064.4464 - nll_loss: 1064.4464
Epoch 128/2500
10/10 [=====] - 0s 914us/step - loss: 1062.9037 - nll_loss: 1062.9037
Epoch 129/2500
10/10 [=====] - 0s 720us/step - loss: 1064.8591 - nll_loss: 1064.8591
Epoch 130/2500
10/10 [=====] - 0s 803us/step - loss: 1063.4280 - nll_loss: 1063.4280
Epoch 131/2500
10/10 [=====] - 0s 759us/step - loss: 1062.1282 - nll_loss: 1062.1282
Epoch 132/2500
10/10 [=====] - 0s 730us/step - loss: 1060.3079 - nll_loss: 1060.3079
Epoch 133/2500
10/10 [=====] - 0s 875us/step - loss: 1065.2600 - nll_loss: 1065.2600
```

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Epoch 134/2500
10/10 [=====] - 0s 835us/step - loss: 1064.8513 - nll_los
s: 1064.8513
Epoch 135/2500
10/10 [=====] - 0s 846us/step - loss: 1059.8828 - nll_los
s: 1059.8828
Epoch 136/2500
10/10 [=====] - 0s 858us/step - loss: 1063.0663 - nll_los
s: 1063.0663
Epoch 137/2500
10/10 [=====] - 0s 904us/step - loss: 1062.1644 - nll_los
s: 1062.1644
Epoch 138/2500
10/10 [=====] - 0s 845us/step - loss: 1062.1047 - nll_los
s: 1062.1047
Epoch 139/2500
10/10 [=====] - 0s 805us/step - loss: 1063.3529 - nll_los
s: 1063.3529
Epoch 140/2500
10/10 [=====] - 0s 923us/step - loss: 1063.2941 - nll_los
s: 1063.2941
Epoch 141/2500
10/10 [=====] - 0s 775us/step - loss: 1063.1254 - nll_los
s: 1063.1254
Epoch 142/2500
10/10 [=====] - 0s 890us/step - loss: 1063.6481 - nll_los
s: 1063.6481
Epoch 143/2500
10/10 [=====] - 0s 813us/step - loss: 1065.0181 - nll_los
s: 1065.0181
Epoch 144/2500
10/10 [=====] - 0s 833us/step - loss: 1064.5383 - nll_los
s: 1064.5383
Epoch 145/2500
10/10 [=====] - 0s 913us/step - loss: 1065.2312 - nll_los
s: 1065.2312
Epoch 146/2500
10/10 [=====] - 0s 865us/step - loss: 1062.8406 - nll_los
s: 1062.8406
Epoch 147/2500
10/10 [=====] - 0s 948us/step - loss: 1061.8059 - nll_los
s: 1061.8059
Epoch 148/2500
10/10 [=====] - 0s 833us/step - loss: 1062.5647 - nll_los
s: 1062.5647
Epoch 149/2500
10/10 [=====] - 0s 811us/step - loss: 1064.6187 - nll_los
s: 1064.6187
Epoch 150/2500
10/10 [=====] - 0s 900us/step - loss: 1062.7841 - nll_los
s: 1062.7841
Epoch 151/2500
```

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10/10 [=====] - 0s 929us/step - loss: 1065.3103 - nll_los  
s: 1065.3103  
Epoch 152/2500  
10/10 [=====] - 0s 872us/step - loss: 1061.7045 - nll_los  
s: 1061.7045  
Epoch 153/2500  
10/10 [=====] - 0s 392us/step - loss: 1061.7126 - nll_los  
s: 1061.7126  
Epoch 154/2500  
10/10 [=====] - 0s 1ms/step - loss: 1061.1710 - nll_loss:  
1061.1710  
Epoch 155/2500  
10/10 [=====] - 0s 794us/step - loss: 1062.2166 - nll_los  
s: 1062.2166  
Epoch 156/2500  
10/10 [=====] - 0s 842us/step - loss: 1064.2500 - nll_los  
s: 1064.2500  
Epoch 157/2500  
10/10 [=====] - 0s 737us/step - loss: 1062.7753 - nll_los  
s: 1062.7753  
Epoch 158/2500  
10/10 [=====] - 0s 791us/step - loss: 1061.4265 - nll_los  
s: 1061.4265  
Epoch 159/2500  
10/10 [=====] - 0s 555us/step - loss: 1062.8750 - nll_los  
s: 1062.8750  
Epoch 160/2500  
10/10 [=====] - 0s 866us/step - loss: 1060.4027 - nll_los  
s: 1060.4027  
Epoch 161/2500  
10/10 [=====] - 0s 755us/step - loss: 1059.5073 - nll_los  
s: 1059.5073  
Epoch 162/2500  
10/10 [=====] - 0s 835us/step - loss: 1061.4587 - nll_los  
s: 1061.4587  
Epoch 163/2500  
10/10 [=====] - 0s 876us/step - loss: 1061.2722 - nll_los  
s: 1061.2722  
Epoch 164/2500  
10/10 [=====] - 0s 822us/step - loss: 1059.9475 - nll_los  
s: 1059.9475  
Epoch 165/2500  
10/10 [=====] - 0s 756us/step - loss: 1060.1042 - nll_los  
s: 1060.1042  
Epoch 166/2500  
10/10 [=====] - 0s 829us/step - loss: 1062.7275 - nll_los  
s: 1062.7275  
Epoch 167/2500  
10/10 [=====] - 0s 860us/step - loss: 1060.5948 - nll_los  
s: 1060.5948  
Epoch 168/2500  
10/10 [=====] - 0s 738us/step - loss: 1061.3934 - nll_los  
s: 1061.3934  
Epoch 169/2500  
10/10 [=====] - 0s 809us/step - loss: 1061.9615 - nll_los  
s: 1061.9615  
Epoch 170/2500
```

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10/10 [=====] - 0s 827us/step - loss: 1060.8839 - nll_los  
s: 1060.8839  
Epoch 171/2500  
10/10 [=====] - 0s 945us/step - loss: 1060.9000 - nll_los  
s: 1060.9000  
Epoch 172/2500  
10/10 [=====] - 0s 806us/step - loss: 1062.7747 - nll_los  
s: 1062.7747  
Epoch 173/2500  
10/10 [=====] - 0s 992us/step - loss: 1062.4065 - nll_los  
s: 1062.4065  
Epoch 174/2500  
10/10 [=====] - 0s 671us/step - loss: 1059.9365 - nll_los  
s: 1059.9365  
Epoch 175/2500  
10/10 [=====] - 0s 854us/step - loss: 1062.0645 - nll_los  
s: 1062.0645  
Epoch 176/2500  
10/10 [=====] - 0s 919us/step - loss: 1062.3320 - nll_los  
s: 1062.3320  
Epoch 177/2500  
10/10 [=====] - 0s 823us/step - loss: 1060.8779 - nll_los  
s: 1060.8779  
Epoch 178/2500  
10/10 [=====] - 0s 879us/step - loss: 1058.9154 - nll_los  
s: 1058.9154  
Epoch 179/2500  
10/10 [=====] - 0s 841us/step - loss: 1060.3865 - nll_los  
s: 1060.3865  
Epoch 180/2500  
10/10 [=====] - 0s 931us/step - loss: 1061.9091 - nll_los  
s: 1061.9091  
Epoch 181/2500  
10/10 [=====] - 0s 827us/step - loss: 1060.2103 - nll_los  
s: 1060.2103  
Epoch 182/2500  
10/10 [=====] - 0s 730us/step - loss: 1058.9642 - nll_los  
s: 1058.9642  
Epoch 183/2500  
10/10 [=====] - 0s 783us/step - loss: 1059.0446 - nll_los  
s: 1059.0446  
Epoch 184/2500  
10/10 [=====] - 0s 878us/step - loss: 1060.2026 - nll_los  
s: 1060.2026  
Epoch 185/2500  
10/10 [=====] - 0s 785us/step - loss: 1058.4617 - nll_los  
s: 1058.4617  
Epoch 186/2500  
10/10 [=====] - 0s 947us/step - loss: 1062.3171 - nll_los  
s: 1062.3171  
Epoch 187/2500  
10/10 [=====] - 0s 658us/step - loss: 1059.5817 - nll_los  
s: 1059.5817  
Epoch 188/2500  
10/10 [=====] - 0s 775us/step - loss: 1059.8904 - nll_los  
s: 1059.8904  
Epoch 189/2500
```

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10/10 [=====] - 0s 943us/step - loss: 1061.9469 - nll_los  
s: 1061.9469  
Epoch 190/2500  
10/10 [=====] - 0s 785us/step - loss: 1059.4486 - nll_los  
s: 1059.4486  
Epoch 191/2500  
10/10 [=====] - 0s 895us/step - loss: 1056.0592 - nll_los  
s: 1056.0592  
Epoch 192/2500  
10/10 [=====] - 0s 795us/step - loss: 1058.4736 - nll_los  
s: 1058.4736  
Epoch 193/2500  
10/10 [=====] - 0s 860us/step - loss: 1060.4904 - nll_los  
s: 1060.4904  
Epoch 194/2500  
10/10 [=====] - 0s 839us/step - loss: 1058.7590 - nll_los  
s: 1058.7590  
Epoch 195/2500  
10/10 [=====] - 0s 850us/step - loss: 1060.4470 - nll_los  
s: 1060.4470  
Epoch 196/2500  
10/10 [=====] - 0s 842us/step - loss: 1059.4487 - nll_los  
s: 1059.4487  
Epoch 197/2500  
10/10 [=====] - 0s 777us/step - loss: 1060.1169 - nll_los  
s: 1060.1169  
Epoch 198/2500  
10/10 [=====] - 0s 862us/step - loss: 1061.9724 - nll_los  
s: 1061.9724  
Epoch 199/2500  
10/10 [=====] - 0s 980us/step - loss: 1061.9210 - nll_los  
s: 1061.9210  
Epoch 200/2500  
10/10 [=====] - 0s 817us/step - loss: 1058.4783 - nll_los  
s: 1058.4783  
Epoch 201/2500  
10/10 [=====] - 0s 738us/step - loss: 1057.6912 - nll_los  
s: 1057.6912  
Epoch 202/2500  
10/10 [=====] - 0s 741us/step - loss: 1061.8699 - nll_los  
s: 1061.8699  
Epoch 203/2500  
10/10 [=====] - 0s 941us/step - loss: 1061.7233 - nll_los  
s: 1061.7233  
Epoch 204/2500  
10/10 [=====] - 0s 811us/step - loss: 1058.5933 - nll_los  
s: 1058.5933  
Epoch 205/2500  
10/10 [=====] - 0s 965us/step - loss: 1057.1217 - nll_los  
s: 1057.1217  
Epoch 206/2500  
10/10 [=====] - 0s 942us/step - loss: 1058.9021 - nll_los  
s: 1058.9021  
Epoch 207/2500  
10/10 [=====] - 0s 833us/step - loss: 1059.6771 - nll_los  
s: 1059.6771  
Epoch 208/2500
```

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10/10 [=====] - 0s 830us/step - loss: 1060.3864 - nll_los  
s: 1060.3864  
Epoch 209/2500  
10/10 [=====] - 0s 824us/step - loss: 1059.1219 - nll_los  
s: 1059.1219  
Epoch 210/2500  
10/10 [=====] - 0s 826us/step - loss: 1058.9966 - nll_los  
s: 1058.9966  
Epoch 211/2500  
10/10 [=====] - 0s 824us/step - loss: 1057.7260 - nll_los  
s: 1057.7260  
Epoch 212/2500  
10/10 [=====] - 0s 764us/step - loss: 1061.1744 - nll_los  
s: 1061.1744  
Epoch 213/2500  
10/10 [=====] - 0s 815us/step - loss: 1059.5933 - nll_los  
s: 1059.5933  
Epoch 214/2500  
10/10 [=====] - 0s 853us/step - loss: 1059.3972 - nll_los  
s: 1059.3972  
Epoch 215/2500  
10/10 [=====] - 0s 832us/step - loss: 1060.5681 - nll_los  
s: 1060.5681  
Epoch 216/2500  
10/10 [=====] - 0s 735us/step - loss: 1059.3077 - nll_los  
s: 1059.3077  
Epoch 217/2500  
10/10 [=====] - 0s 763us/step - loss: 1058.4395 - nll_los  
s: 1058.4395  
Epoch 218/2500  
10/10 [=====] - 0s 794us/step - loss: 1059.5688 - nll_los  
s: 1059.5688  
Epoch 219/2500  
10/10 [=====] - 0s 905us/step - loss: 1055.9001 - nll_los  
s: 1055.9001  
Epoch 220/2500  
10/10 [=====] - 0s 773us/step - loss: 1058.3724 - nll_los  
s: 1058.3724  
Epoch 221/2500  
10/10 [=====] - 0s 766us/step - loss: 1060.8101 - nll_los  
s: 1060.8101  
Epoch 222/2500  
10/10 [=====] - 0s 848us/step - loss: 1058.0635 - nll_los  
s: 1058.0635  
Epoch 223/2500  
10/10 [=====] - 0s 765us/step - loss: 1059.5701 - nll_los  
s: 1059.5701  
Epoch 224/2500  
10/10 [=====] - 0s 906us/step - loss: 1058.2664 - nll_los  
s: 1058.2664  
Epoch 225/2500  
10/10 [=====] - 0s 770us/step - loss: 1061.8903 - nll_los  
s: 1061.8903  
Epoch 226/2500  
10/10 [=====] - 0s 925us/step - loss: 1056.8026 - nll_los  
s: 1056.8026  
Epoch 227/2500
```

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10/10 [=====] - 0s 1ms/step - loss: 1059.6180 - nll_loss:  
1059.6180  
Epoch 228/2500  
10/10 [=====] - 0s 811us/step - loss: 1059.8186 - nll_los  
s: 1059.8186  
Epoch 229/2500  
10/10 [=====] - 0s 776us/step - loss: 1059.5769 - nll_los  
s: 1059.5769  
Epoch 230/2500  
10/10 [=====] - 0s 798us/step - loss: 1058.7236 - nll_los  
s: 1058.7236  
Epoch 231/2500  
10/10 [=====] - 0s 816us/step - loss: 1057.1543 - nll_los  
s: 1057.1543  
Epoch 232/2500  
10/10 [=====] - 0s 773us/step - loss: 1060.5067 - nll_los  
s: 1060.5067  
Epoch 233/2500  
10/10 [=====] - 0s 835us/step - loss: 1058.3788 - nll_los  
s: 1058.3788  
Epoch 234/2500  
10/10 [=====] - 0s 699us/step - loss: 1058.6522 - nll_los  
s: 1058.6522  
Epoch 235/2500  
10/10 [=====] - 0s 787us/step - loss: 1060.9086 - nll_los  
s: 1060.9086  
Epoch 236/2500  
10/10 [=====] - 0s 826us/step - loss: 1060.3617 - nll_los  
s: 1060.3617  
Epoch 237/2500  
10/10 [=====] - 0s 801us/step - loss: 1058.2697 - nll_los  
s: 1058.2697  
Epoch 238/2500  
10/10 [=====] - 0s 759us/step - loss: 1057.9335 - nll_los  
s: 1057.9335  
Epoch 239/2500  
10/10 [=====] - 0s 896us/step - loss: 1059.0168 - nll_los  
s: 1059.0168  
Epoch 240/2500  
10/10 [=====] - 0s 835us/step - loss: 1058.8591 - nll_los  
s: 1058.8591  
Epoch 241/2500  
10/10 [=====] - 0s 842us/step - loss: 1057.5524 - nll_los  
s: 1057.5524  
Epoch 242/2500  
10/10 [=====] - 0s 864us/step - loss: 1059.3450 - nll_los  
s: 1059.3450  
Epoch 243/2500  
10/10 [=====] - 0s 859us/step - loss: 1056.8425 - nll_los  
s: 1056.8425  
Epoch 244/2500  
10/10 [=====] - 0s 774us/step - loss: 1056.7994 - nll_los  
s: 1056.7994  
Epoch 245/2500  
10/10 [=====] - 0s 896us/step - loss: 1058.0308 - nll_los  
s: 1058.0308  
Epoch 246/2500
```

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10/10 [=====] - 0s 906us/step - loss: 1058.4309 - nll_los  
s: 1058.4309  
Epoch 247/2500  
10/10 [=====] - 0s 948us/step - loss: 1060.2898 - nll_los  
s: 1060.2898  
Epoch 248/2500  
10/10 [=====] - 0s 829us/step - loss: 1057.3876 - nll_los  
s: 1057.3876  
Epoch 249/2500  
10/10 [=====] - 0s 668us/step - loss: 1059.5686 - nll_los  
s: 1059.5686  
Epoch 250/2500  
10/10 [=====] - 0s 835us/step - loss: 1059.7310 - nll_los  
s: 1059.7310  
Epoch 251/2500  
10/10 [=====] - 0s 789us/step - loss: 1055.7863 - nll_los  
s: 1055.7863  
Epoch 252/2500  
10/10 [=====] - 0s 791us/step - loss: 1059.6295 - nll_los  
s: 1059.6295  
Epoch 253/2500  
10/10 [=====] - 0s 790us/step - loss: 1060.6633 - nll_los  
s: 1060.6633  
Epoch 254/2500  
10/10 [=====] - 0s 856us/step - loss: 1059.4233 - nll_los  
s: 1059.4233  
Epoch 255/2500  
10/10 [=====] - 0s 751us/step - loss: 1058.5691 - nll_los  
s: 1058.5691  
Epoch 256/2500  
10/10 [=====] - 0s 833us/step - loss: 1057.9857 - nll_los  
s: 1057.9857  
Epoch 257/2500  
10/10 [=====] - 0s 789us/step - loss: 1058.0302 - nll_los  
s: 1058.0302  
Epoch 258/2500  
10/10 [=====] - 0s 820us/step - loss: 1060.1725 - nll_los  
s: 1060.1725  
Epoch 259/2500  
10/10 [=====] - 0s 832us/step - loss: 1057.5626 - nll_los  
s: 1057.5626  
Epoch 260/2500  
10/10 [=====] - 0s 845us/step - loss: 1059.4260 - nll_los  
s: 1059.4260  
Epoch 261/2500  
10/10 [=====] - 0s 877us/step - loss: 1058.2933 - nll_los  
s: 1058.2933  
Epoch 262/2500  
10/10 [=====] - 0s 890us/step - loss: 1057.3448 - nll_los  
s: 1057.3448  
Epoch 263/2500  
10/10 [=====] - 0s 835us/step - loss: 1060.3330 - nll_los  
s: 1060.3330  
Epoch 264/2500  
10/10 [=====] - 0s 817us/step - loss: 1058.5129 - nll_los  
s: 1058.5129  
Epoch 265/2500
```

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10/10 [=====] - 0s 857us/step - loss: 1059.8391 - nll_los  
s: 1059.8391  
Epoch 266/2500  
10/10 [=====] - 0s 899us/step - loss: 1056.6907 - nll_los  
s: 1056.6907  
Epoch 267/2500  
10/10 [=====] - 0s 786us/step - loss: 1056.1375 - nll_los  
s: 1056.1375  
Epoch 268/2500  
10/10 [=====] - 0s 871us/step - loss: 1060.6620 - nll_los  
s: 1060.6620  
Epoch 269/2500  
10/10 [=====] - 0s 774us/step - loss: 1059.4020 - nll_los  
s: 1059.4020  
Epoch 270/2500  
10/10 [=====] - 0s 878us/step - loss: 1058.9730 - nll_los  
s: 1058.9730  
Epoch 271/2500  
10/10 [=====] - 0s 900us/step - loss: 1060.3306 - nll_los  
s: 1060.3306  
Epoch 272/2500  
10/10 [=====] - 0s 901us/step - loss: 1059.6223 - nll_los  
s: 1059.6223  
Epoch 273/2500  
10/10 [=====] - 0s 765us/step - loss: 1058.3831 - nll_los  
s: 1058.3831  
Epoch 274/2500  
10/10 [=====] - 0s 825us/step - loss: 1057.4235 - nll_los  
s: 1057.4235  
Epoch 275/2500  
10/10 [=====] - 0s 717us/step - loss: 1057.5895 - nll_los  
s: 1057.5895  
Epoch 276/2500  
10/10 [=====] - 0s 793us/step - loss: 1056.2117 - nll_los  
s: 1056.2117  
Epoch 277/2500  
10/10 [=====] - 0s 781us/step - loss: 1059.5750 - nll_los  
s: 1059.5750  
Epoch 278/2500  
10/10 [=====] - 0s 727us/step - loss: 1058.7153 - nll_los  
s: 1058.7153  
Epoch 279/2500  
10/10 [=====] - 0s 706us/step - loss: 1057.3147 - nll_los  
s: 1057.3147  
Epoch 280/2500  
10/10 [=====] - 0s 904us/step - loss: 1057.1414 - nll_los  
s: 1057.1414  
Epoch 281/2500  
10/10 [=====] - 0s 788us/step - loss: 1058.0764 - nll_los  
s: 1058.0764  
Epoch 282/2500  
10/10 [=====] - 0s 802us/step - loss: 1057.4170 - nll_los  
s: 1057.4170  
Epoch 283/2500  
10/10 [=====] - 0s 937us/step - loss: 1059.6727 - nll_los  
s: 1059.6727  
Epoch 284/2500
```

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10/10 [=====] - 0s 896us/step - loss: 1059.2236 - nll_loss:  
s: 1059.2236  
Epoch 285/2500  
10/10 [=====] - 0s 863us/step - loss: 1057.3737 - nll_loss:  
s: 1057.3737  
Epoch 286/2500  
10/10 [=====] - 0s 938us/step - loss: 1055.1997 - nll_loss:  
s: 1055.1997  
Epoch 287/2500  
10/10 [=====] - 0s 799us/step - loss: 1060.4899 - nll_loss:  
s: 1060.4899  
Epoch 288/2500  
10/10 [=====] - 0s 732us/step - loss: 1058.6061 - nll_loss:  
s: 1058.6061  
Epoch 289/2500  
10/10 [=====] - 0s 834us/step - loss: 1055.8220 - nll_loss:  
s: 1055.8220  
Epoch 290/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.0775 - nll_loss:  
1056.0775  
Epoch 291/2500  
10/10 [=====] - 0s 964us/step - loss: 1057.2560 - nll_loss:  
s: 1057.2560  
Epoch 292/2500  
10/10 [=====] - 0s 900us/step - loss: 1057.3792 - nll_loss:  
s: 1057.3792  
Epoch 293/2500  
10/10 [=====] - 0s 819us/step - loss: 1057.0018 - nll_loss:  
s: 1057.0018  
Epoch 294/2500  
10/10 [=====] - 0s 844us/step - loss: 1056.3760 - nll_loss:  
s: 1056.3760  
Epoch 295/2500  
10/10 [=====] - 0s 820us/step - loss: 1054.6309 - nll_loss:  
s: 1054.6309  
Epoch 296/2500  
10/10 [=====] - 0s 836us/step - loss: 1056.4609 - nll_loss:  
s: 1056.4609  
Epoch 297/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.9771 - nll_loss:  
1056.9771  
Epoch 298/2500  
10/10 [=====] - 0s 789us/step - loss: 1055.3746 - nll_loss:  
s: 1055.3746  
Epoch 299/2500
```

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10/10 [=====] - 0s 793us/step - loss: 1057.3127 - nll_los  
s: 1057.3127  
Epoch 300/2500  
10/10 [=====] - 0s 839us/step - loss: 1056.3619 - nll_los  
s: 1056.3619  
Epoch 301/2500  
10/10 [=====] - 0s 868us/step - loss: 1055.7782 - nll_los  
s: 1055.7782  
Epoch 302/2500  
10/10 [=====] - 0s 794us/step - loss: 1056.3905 - nll_los  
s: 1056.3905  
Epoch 303/2500  
10/10 [=====] - 0s 762us/step - loss: 1055.9559 - nll_los  
s: 1055.9559  
Epoch 304/2500  
10/10 [=====] - 0s 734us/step - loss: 1056.9620 - nll_los  
s: 1056.9620  
Epoch 305/2500  
10/10 [=====] - 0s 796us/step - loss: 1055.7941 - nll_los  
s: 1055.7941  
Epoch 306/2500  
10/10 [=====] - 0s 886us/step - loss: 1057.0592 - nll_los  
s: 1057.0592  
Epoch 307/2500  
10/10 [=====] - 0s 841us/step - loss: 1057.9186 - nll_los  
s: 1057.9186  
Epoch 308/2500  
10/10 [=====] - 0s 812us/step - loss: 1055.4646 - nll_los  
s: 1055.4646  
Epoch 309/2500  
10/10 [=====] - 0s 735us/step - loss: 1056.1808 - nll_los  
s: 1056.1808  
Epoch 310/2500  
10/10 [=====] - 0s 806us/step - loss: 1059.2144 - nll_los  
s: 1059.2144  
Epoch 311/2500  
10/10 [=====] - 0s 952us/step - loss: 1056.8401 - nll_los  
s: 1056.8401  
Epoch 312/2500  
10/10 [=====] - 0s 777us/step - loss: 1058.0359 - nll_los  
s: 1058.0359  
Epoch 313/2500  
10/10 [=====] - 0s 768us/step - loss: 1058.1086 - nll_los  
s: 1058.1086  
Epoch 314/2500  
10/10 [=====] - 0s 866us/step - loss: 1058.9011 - nll_los  
s: 1058.9011  
Epoch 315/2500  
10/10 [=====] - 0s 960us/step - loss: 1057.3425 - nll_los  
s: 1057.3425  
Epoch 316/2500  
10/10 [=====] - 0s 814us/step - loss: 1056.6649 - nll_los  
s: 1056.6649  
Epoch 317/2500  
10/10 [=====] - 0s 779us/step - loss: 1054.6887 - nll_los  
s: 1054.6887  
Epoch 318/2500
```

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10/10 [=====] - 0s 740us/step - loss: 1054.1219 - nll_los  
s: 1054.1219  
Epoch 319/2500  
10/10 [=====] - 0s 754us/step - loss: 1055.4266 - nll_los  
s: 1055.4266  
Epoch 320/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.9312 - nll_loss:  
1055.9312  
Epoch 321/2500  
10/10 [=====] - 0s 815us/step - loss: 1054.0955 - nll_los  
s: 1054.0955  
Epoch 322/2500  
10/10 [=====] - 0s 824us/step - loss: 1054.8004 - nll_los  
s: 1054.8004  
Epoch 323/2500  
10/10 [=====] - 0s 903us/step - loss: 1058.1847 - nll_los  
s: 1058.1847  
Epoch 324/2500  
10/10 [=====] - 0s 905us/step - loss: 1057.0258 - nll_los  
s: 1057.0258  
Epoch 325/2500  
10/10 [=====] - 0s 831us/step - loss: 1056.5012 - nll_los  
s: 1056.5012  
Epoch 326/2500  
10/10 [=====] - 0s 839us/step - loss: 1056.3301 - nll_los  
s: 1056.3301  
Epoch 327/2500  
10/10 [=====] - 0s 738us/step - loss: 1058.2018 - nll_los  
s: 1058.2018  
Epoch 328/2500  
10/10 [=====] - 0s 778us/step - loss: 1060.4708 - nll_los  
s: 1060.4708  
Epoch 329/2500  
10/10 [=====] - 0s 824us/step - loss: 1057.7435 - nll_los  
s: 1057.7435  
Epoch 330/2500  
10/10 [=====] - 0s 761us/step - loss: 1060.0975 - nll_los  
s: 1060.0975  
Epoch 331/2500  
10/10 [=====] - 0s 876us/step - loss: 1055.4875 - nll_los  
s: 1055.4875  
Epoch 332/2500  
10/10 [=====] - 0s 700us/step - loss: 1055.4231 - nll_los  
s: 1055.4231  
Epoch 333/2500  
10/10 [=====] - 0s 695us/step - loss: 1053.1528 - nll_los  
s: 1053.1528  
Epoch 334/2500  
10/10 [=====] - 0s 813us/step - loss: 1055.0422 - nll_los  
s: 1055.0422  
Epoch 335/2500  
10/10 [=====] - 0s 773us/step - loss: 1055.3290 - nll_los  
s: 1055.3290  
Epoch 336/2500  
10/10 [=====] - 0s 825us/step - loss: 1056.6963 - nll_los  
s: 1056.6963  
Epoch 337/2500
```

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10/10 [=====] - 0s 751us/step - loss: 1054.9506 - nll_los  
s: 1054.9506  
Epoch 338/2500  
10/10 [=====] - 0s 784us/step - loss: 1053.5477 - nll_los  
s: 1053.5477  
Epoch 339/2500  
10/10 [=====] - 0s 881us/step - loss: 1057.5231 - nll_los  
s: 1057.5231  
Epoch 340/2500  
10/10 [=====] - 0s 931us/step - loss: 1057.3042 - nll_los  
s: 1057.3042  
Epoch 341/2500  
10/10 [=====] - 0s 816us/step - loss: 1059.4215 - nll_los  
s: 1059.4215  
Epoch 342/2500  
10/10 [=====] - 0s 806us/step - loss: 1059.4225 - nll_los  
s: 1059.4225  
Epoch 343/2500  
10/10 [=====] - 0s 920us/step - loss: 1058.4095 - nll_los  
s: 1058.4095  
Epoch 344/2500  
10/10 [=====] - 0s 928us/step - loss: 1056.3644 - nll_los  
s: 1056.3644  
Epoch 345/2500  
10/10 [=====] - 0s 825us/step - loss: 1056.2239 - nll_los  
s: 1056.2239  
Epoch 346/2500  
10/10 [=====] - 0s 894us/step - loss: 1058.0793 - nll_los  
s: 1058.0793  
Epoch 347/2500  
10/10 [=====] - 0s 939us/step - loss: 1058.5564 - nll_los  
s: 1058.5564  
Epoch 348/2500  
10/10 [=====] - 0s 966us/step - loss: 1053.9000 - nll_los  
s: 1053.9000  
Epoch 349/2500  
10/10 [=====] - 0s 962us/step - loss: 1056.0728 - nll_los  
s: 1056.0728  
Epoch 350/2500  
10/10 [=====] - 0s 872us/step - loss: 1054.7006 - nll_los  
s: 1054.7006  
Epoch 351/2500  
10/10 [=====] - 0s 948us/step - loss: 1056.1942 - nll_los  
s: 1056.1942  
Epoch 352/2500  
10/10 [=====] - 0s 752us/step - loss: 1054.2239 - nll_los  
s: 1054.2239  
Epoch 353/2500  
10/10 [=====] - 0s 910us/step - loss: 1056.8488 - nll_los  
s: 1056.8488  
Epoch 354/2500  
10/10 [=====] - 0s 854us/step - loss: 1055.3204 - nll_los  
s: 1055.3204  
Epoch 355/2500  
10/10 [=====] - 0s 709us/step - loss: 1055.2991 - nll_los  
s: 1055.2991  
Epoch 356/2500
```

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10/10 [=====] - 0s 703us/step - loss: 1056.9849 - nll_los  
s: 1056.9849  
Epoch 357/2500  
10/10 [=====] - 0s 839us/step - loss: 1053.9283 - nll_los  
s: 1053.9283  
Epoch 358/2500  
10/10 [=====] - 0s 788us/step - loss: 1055.2068 - nll_los  
s: 1055.2068  
Epoch 359/2500  
10/10 [=====] - 0s 856us/step - loss: 1055.7539 - nll_los  
s: 1055.7539  
Epoch 360/2500  
10/10 [=====] - 0s 900us/step - loss: 1056.2047 - nll_los  
s: 1056.2047  
Epoch 361/2500  
10/10 [=====] - 0s 976us/step - loss: 1057.3845 - nll_los  
s: 1057.3845  
Epoch 362/2500  
10/10 [=====] - 0s 854us/step - loss: 1055.3025 - nll_los  
s: 1055.3025  
Epoch 363/2500  
10/10 [=====] - 0s 935us/step - loss: 1055.3312 - nll_los  
s: 1055.3312  
Epoch 364/2500  
10/10 [=====] - 0s 950us/step - loss: 1055.7151 - nll_los  
s: 1055.7151  
Epoch 365/2500  
10/10 [=====] - 0s 881us/step - loss: 1054.9895 - nll_los  
s: 1054.9895  
Epoch 366/2500  
10/10 [=====] - 0s 654us/step - loss: 1056.1013 - nll_los  
s: 1056.1013  
Epoch 367/2500  
10/10 [=====] - 0s 916us/step - loss: 1055.3103 - nll_los  
s: 1055.3103  
Epoch 368/2500  
10/10 [=====] - 0s 806us/step - loss: 1054.3464 - nll_los  
s: 1054.3464  
Epoch 369/2500  
10/10 [=====] - 0s 823us/step - loss: 1053.4896 - nll_los  
s: 1053.4896  
Epoch 370/2500  
10/10 [=====] - 0s 844us/step - loss: 1055.8854 - nll_los  
s: 1055.8854  
Epoch 371/2500  
10/10 [=====] - 0s 823us/step - loss: 1054.6675 - nll_los  
s: 1054.6675  
Epoch 372/2500  
10/10 [=====] - 0s 832us/step - loss: 1059.4396 - nll_los  
s: 1059.4396  
Epoch 373/2500  
10/10 [=====] - 0s 754us/step - loss: 1060.0343 - nll_los  
s: 1060.0343  
Epoch 374/2500  
10/10 [=====] - 0s 786us/step - loss: 1055.9199 - nll_los  
s: 1055.9199  
Epoch 375/2500
```

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10/10 [=====] - 0s 648us/step - loss: 1054.4764 - nll_loss:  
s: 1054.4764  
Epoch 376/2500  
10/10 [=====] - 0s 1ms/step - loss: 1053.6895 - nll_loss:  
1053.6895  
Epoch 377/2500  
10/10 [=====] - 0s 842us/step - loss: 1056.2739 - nll_loss:  
s: 1056.2739  
Epoch 378/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.8636 - nll_loss:  
1056.8636  
Epoch 379/2500  
10/10 [=====] - 0s 800us/step - loss: 1055.7297 - nll_loss:  
s: 1055.7297  
Epoch 380/2500  
10/10 [=====] - 0s 966us/step - loss: 1054.6969 - nll_loss:  
s: 1054.6969  
Epoch 381/2500  
10/10 [=====] - 0s 1ms/step - loss: 1053.5521 - nll_loss:  
1053.5521  
Epoch 382/2500  
10/10 [=====] - 0s 1ms/step - loss: 1052.3235 - nll_loss:  
1052.3235  
Epoch 383/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.3875 - nll_loss:  
1055.3875  
Epoch 384/2500  
10/10 [=====] - 0s 896us/step - loss: 1053.2963 - nll_loss:  
s: 1053.2963  
Epoch 385/2500  
10/10 [=====] - 0s 745us/step - loss: 1055.7417 - nll_loss:  
s: 1055.7417  
Epoch 386/2500  
10/10 [=====] - 0s 2ms/step - loss: 1053.5580 - nll_loss:  
1053.5580  
Epoch 387/2500  
10/10 [=====] - 0s 819us/step - loss: 1054.8011 - nll_loss:  
s: 1054.8011  
Epoch 388/2500  
10/10 [=====] - 0s 1ms/step - loss: 1054.1891 - nll_loss:  
1054.1891  
Epoch 389/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.9546 - nll_loss:  
1055.9546  
Epoch 390/2500  
10/10 [=====] - 0s 778us/step - loss: 1056.2607 - nll_loss:  
s: 1056.2607  
Epoch 391/2500  
10/10 [=====] - 0s 2ms/step - loss: 1055.8248 - nll_loss:  
1055.8248  
Epoch 392/2500  
10/10 [=====] - 0s 968us/step - loss: 1057.8425 - nll_loss:  
s: 1057.8425  
Epoch 393/2500  
10/10 [=====] - 0s 1ms/step - loss: 1057.4210 - nll_loss:  
1057.4210  
Epoch 394/2500
```

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10/10 [=====] - 0s 1ms/step - loss: 1058.2240 - nll_loss:  
1058.2240  
Epoch 395/2500  
10/10 [=====] - 0s 968us/step - loss: 1054.4818 - nll_los  
s: 1054.4818  
Epoch 396/2500  
10/10 [=====] - 0s 817us/step - loss: 1053.9498 - nll_los  
s: 1053.9498  
Epoch 397/2500  
10/10 [=====] - 0s 847us/step - loss: 1049.6964 - nll_los  
s: 1049.6964  
Epoch 398/2500  
10/10 [=====] - 0s 795us/step - loss: 1056.7465 - nll_los  
s: 1056.7465  
Epoch 399/2500  
10/10 [=====] - 0s 966us/step - loss: 1052.8368 - nll_los  
s: 1052.8368  
Epoch 400/2500  
10/10 [=====] - 0s 852us/step - loss: 1054.6312 - nll_los  
s: 1054.6312  
Epoch 401/2500  
10/10 [=====] - 0s 865us/step - loss: 1056.5016 - nll_los  
s: 1056.5016  
Epoch 402/2500  
10/10 [=====] - 0s 857us/step - loss: 1057.1339 - nll_los  
s: 1057.1339  
Epoch 403/2500  
10/10 [=====] - 0s 888us/step - loss: 1059.4656 - nll_los  
s: 1059.4656  
Epoch 404/2500  
10/10 [=====] - 0s 821us/step - loss: 1057.3015 - nll_los  
s: 1057.3015  
Epoch 405/2500  
10/10 [=====] - 0s 865us/step - loss: 1062.2961 - nll_los  
s: 1062.2961  
Epoch 406/2500  
10/10 [=====] - 0s 885us/step - loss: 1057.9178 - nll_los  
s: 1057.9178  
Epoch 407/2500  
10/10 [=====] - 0s 878us/step - loss: 1057.4227 - nll_los  
s: 1057.4227  
Epoch 408/2500  
10/10 [=====] - 0s 876us/step - loss: 1054.5238 - nll_los  
s: 1054.5238  
Epoch 409/2500  
10/10 [=====] - 0s 782us/step - loss: 1056.1844 - nll_los  
s: 1056.1844  
Epoch 410/2500  
10/10 [=====] - 0s 856us/step - loss: 1053.6873 - nll_los  
s: 1053.6873  
Epoch 411/2500  
10/10 [=====] - 0s 793us/step - loss: 1054.2360 - nll_los  
s: 1054.2360  
Epoch 412/2500  
10/10 [=====] - 0s 818us/step - loss: 1052.7113 - nll_los  
s: 1052.7113  
Epoch 413/2500
```

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10/10 [=====] - 0s 831us/step - loss: 1054.1396 - nll_los  
s: 1054.1396  
Epoch 414/2500  
10/10 [=====] - 0s 789us/step - loss: 1054.9768 - nll_los  
s: 1054.9768  
Epoch 415/2500  
10/10 [=====] - 0s 850us/step - loss: 1057.6309 - nll_los  
s: 1057.6309  
Epoch 416/2500  
10/10 [=====] - 0s 863us/step - loss: 1055.5875 - nll_los  
s: 1055.5875  
Epoch 417/2500  
10/10 [=====] - 0s 876us/step - loss: 1053.3381 - nll_los  
s: 1053.3381  
Epoch 418/2500  
10/10 [=====] - 0s 880us/step - loss: 1053.9991 - nll_los  
s: 1053.9991  
Epoch 419/2500  
10/10 [=====] - 0s 791us/step - loss: 1053.7866 - nll_los  
s: 1053.7866  
Epoch 420/2500  
10/10 [=====] - 0s 801us/step - loss: 1055.5399 - nll_los  
s: 1055.5399  
Epoch 421/2500  
10/10 [=====] - 0s 773us/step - loss: 1056.0916 - nll_los  
s: 1056.0916  
Epoch 422/2500  
10/10 [=====] - 0s 796us/step - loss: 1057.6345 - nll_los  
s: 1057.6345  
Epoch 423/2500  
10/10 [=====] - 0s 832us/step - loss: 1054.4039 - nll_los  
s: 1054.4039  
Epoch 424/2500  
10/10 [=====] - 0s 947us/step - loss: 1056.2660 - nll_los  
s: 1056.2660  
Epoch 425/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.8801 - nll_loss:  
1056.8801  
Epoch 426/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.8612 - nll_loss:  
1055.8612  
Epoch 427/2500  
10/10 [=====] - 0s 995us/step - loss: 1054.8281 - nll_los  
s: 1054.8281  
Epoch 428/2500  
10/10 [=====] - 0s 896us/step - loss: 1051.6174 - nll_los  
s: 1051.6174  
Epoch 429/2500  
10/10 [=====] - 0s 836us/step - loss: 1056.5708 - nll_los  
s: 1056.5708  
Epoch 430/2500  
10/10 [=====] - 0s 819us/step - loss: 1057.9836 - nll_los  
s: 1057.9836  
Epoch 431/2500  
10/10 [=====] - 0s 754us/step - loss: 1053.7684 - nll_los  
s: 1053.7684  
Epoch 432/2500
```

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10/10 [=====] - 0s 834us/step - loss: 1054.0360 - nll_los  
s: 1054.0360  
Epoch 433/2500  
10/10 [=====] - 0s 918us/step - loss: 1056.7966 - nll_los  
s: 1056.7966  
Epoch 434/2500  
10/10 [=====] - 0s 832us/step - loss: 1057.3472 - nll_los  
s: 1057.3472  
Epoch 435/2500  
10/10 [=====] - 0s 879us/step - loss: 1055.4725 - nll_los  
s: 1055.4725  
Epoch 436/2500  
10/10 [=====] - 0s 937us/step - loss: 1055.5564 - nll_los  
s: 1055.5564  
Epoch 437/2500  
10/10 [=====] - 0s 918us/step - loss: 1053.6505 - nll_los  
s: 1053.6505  
Epoch 438/2500  
10/10 [=====] - 0s 825us/step - loss: 1053.3480 - nll_los  
s: 1053.3480  
Epoch 439/2500  
10/10 [=====] - 0s 802us/step - loss: 1053.3156 - nll_los  
s: 1053.3156  
Epoch 440/2500  
10/10 [=====] - 0s 896us/step - loss: 1053.4086 - nll_los  
s: 1053.4086  
Epoch 441/2500  
10/10 [=====] - 0s 835us/step - loss: 1051.7258 - nll_los  
s: 1051.7258  
Epoch 442/2500  
10/10 [=====] - 0s 961us/step - loss: 1054.0258 - nll_los  
s: 1054.0258  
Epoch 443/2500  
10/10 [=====] - 0s 900us/step - loss: 1053.1809 - nll_los  
s: 1053.1809  
Epoch 444/2500  
10/10 [=====] - 0s 856us/step - loss: 1052.6199 - nll_los  
s: 1052.6199  
Epoch 445/2500  
10/10 [=====] - 0s 815us/step - loss: 1054.2443 - nll_los  
s: 1054.2443  
Epoch 446/2500  
10/10 [=====] - 0s 819us/step - loss: 1055.3792 - nll_los  
s: 1055.3792  
Epoch 447/2500
```

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10/10 [=====] - 0s 883us/step - loss: 1055.3542 - nll_los  
s: 1055.3542  
Epoch 448/2500  
10/10 [=====] - 0s 889us/step - loss: 1056.5397 - nll_los  
s: 1056.5397  
Epoch 449/2500  
10/10 [=====] - 0s 782us/step - loss: 1059.5404 - nll_los  
s: 1059.5404  
Epoch 450/2500  
10/10 [=====] - 0s 803us/step - loss: 1056.2996 - nll_los  
s: 1056.2996  
Epoch 451/2500  
10/10 [=====] - 0s 867us/step - loss: 1055.6282 - nll_los  
s: 1055.6282  
Epoch 452/2500  
10/10 [=====] - 0s 875us/step - loss: 1054.0123 - nll_los  
s: 1054.0123  
Epoch 453/2500  
10/10 [=====] - 0s 949us/step - loss: 1055.5305 - nll_los  
s: 1055.5305  
Epoch 454/2500  
10/10 [=====] - 0s 865us/step - loss: 1052.4475 - nll_los  
s: 1052.4475  
Epoch 455/2500  
10/10 [=====] - 0s 880us/step - loss: 1051.5540 - nll_los  
s: 1051.5540  
Epoch 456/2500  
10/10 [=====] - 0s 915us/step - loss: 1053.7378 - nll_los  
s: 1053.7378  
Epoch 457/2500  
10/10 [=====] - 0s 780us/step - loss: 1053.9109 - nll_los  
s: 1053.9109  
Epoch 458/2500  
10/10 [=====] - 0s 835us/step - loss: 1056.0875 - nll_los  
s: 1056.0875  
Epoch 459/2500  
10/10 [=====] - 0s 808us/step - loss: 1055.0302 - nll_los  
s: 1055.0302  
Epoch 460/2500  
10/10 [=====] - 0s 913us/step - loss: 1055.6165 - nll_los  
s: 1055.6165  
Epoch 461/2500  
10/10 [=====] - 0s 937us/step - loss: 1052.6809 - nll_los  
s: 1052.6809  
Epoch 462/2500  
10/10 [=====] - 0s 828us/step - loss: 1052.6318 - nll_los  
s: 1052.6318  
Epoch 463/2500  
10/10 [=====] - 0s 906us/step - loss: 1056.9355 - nll_los  
s: 1056.9355  
Epoch 464/2500  
10/10 [=====] - 0s 908us/step - loss: 1052.0491 - nll_los  
s: 1052.0491  
Epoch 465/2500  
10/10 [=====] - 0s 872us/step - loss: 1055.5479 - nll_los  
s: 1055.5479  
Epoch 466/2500
```

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10/10 [=====] - 0s 879us/step - loss: 1052.6311 - nll_los  
s: 1052.6311  
Epoch 467/2500  
10/10 [=====] - 0s 791us/step - loss: 1051.1580 - nll_los  
s: 1051.1580  
Epoch 468/2500  
10/10 [=====] - 0s 891us/step - loss: 1051.8776 - nll_los  
s: 1051.8776  
Epoch 469/2500  
10/10 [=====] - 0s 797us/step - loss: 1051.9418 - nll_los  
s: 1051.9418  
Epoch 470/2500  
10/10 [=====] - 0s 766us/step - loss: 1053.4973 - nll_los  
s: 1053.4973  
Epoch 471/2500  
10/10 [=====] - 0s 829us/step - loss: 1053.6606 - nll_los  
s: 1053.6606  
Epoch 472/2500  
10/10 [=====] - 0s 811us/step - loss: 1054.7129 - nll_los  
s: 1054.7129  
Epoch 473/2500  
10/10 [=====] - 0s 777us/step - loss: 1053.5293 - nll_los  
s: 1053.5293  
Epoch 474/2500  
10/10 [=====] - 0s 779us/step - loss: 1053.2214 - nll_los  
s: 1053.2214  
Epoch 475/2500  
10/10 [=====] - 0s 915us/step - loss: 1054.2513 - nll_los  
s: 1054.2513  
Epoch 476/2500  
10/10 [=====] - 0s 962us/step - loss: 1054.7878 - nll_los  
s: 1054.7878  
Epoch 477/2500  
10/10 [=====] - 0s 851us/step - loss: 1054.6407 - nll_los  
s: 1054.6407  
Epoch 478/2500  
10/10 [=====] - 0s 856us/step - loss: 1052.5930 - nll_los  
s: 1052.5930  
Epoch 479/2500  
10/10 [=====] - 0s 770us/step - loss: 1052.7571 - nll_los  
s: 1052.7571  
Epoch 480/2500  
10/10 [=====] - 0s 778us/step - loss: 1051.5964 - nll_los  
s: 1051.5964  
Epoch 481/2500  
10/10 [=====] - 0s 980us/step - loss: 1055.1044 - nll_los  
s: 1055.1044  
Epoch 482/2500  
10/10 [=====] - 0s 822us/step - loss: 1055.3479 - nll_los  
s: 1055.3479  
Epoch 483/2500  
10/10 [=====] - 0s 739us/step - loss: 1054.6919 - nll_los  
s: 1054.6919  
Epoch 484/2500  
10/10 [=====] - 0s 830us/step - loss: 1055.5182 - nll_los  
s: 1055.5182  
Epoch 485/2500
```

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10/10 [=====] - 0s 824us/step - loss: 1054.2952 - nll_los  
s: 1054.2952  
Epoch 486/2500  
10/10 [=====] - 0s 614us/step - loss: 1054.5623 - nll_los  
s: 1054.5623  
Epoch 487/2500  
10/10 [=====] - 0s 695us/step - loss: 1054.0530 - nll_los  
s: 1054.0530  
Epoch 488/2500  
10/10 [=====] - 0s 875us/step - loss: 1051.7115 - nll_los  
s: 1051.7115  
Epoch 489/2500  
10/10 [=====] - 0s 868us/step - loss: 1052.2045 - nll_los  
s: 1052.2045  
Epoch 490/2500  
10/10 [=====] - 0s 763us/step - loss: 1049.5020 - nll_los  
s: 1049.5020  
Epoch 491/2500  
10/10 [=====] - 0s 969us/step - loss: 1052.8805 - nll_los  
s: 1052.8805  
Epoch 492/2500  
10/10 [=====] - 0s 734us/step - loss: 1052.7892 - nll_los  
s: 1052.7892  
Epoch 493/2500  
10/10 [=====] - 0s 818us/step - loss: 1052.5442 - nll_los  
s: 1052.5442  
Epoch 494/2500  
10/10 [=====] - 0s 803us/step - loss: 1056.7722 - nll_los  
s: 1056.7722  
Epoch 495/2500  
10/10 [=====] - 0s 855us/step - loss: 1053.6322 - nll_los  
s: 1053.6322  
Epoch 496/2500  
10/10 [=====] - 0s 767us/step - loss: 1053.9934 - nll_los  
s: 1053.9934  
Epoch 497/2500  
10/10 [=====] - 0s 831us/step - loss: 1056.4731 - nll_los  
s: 1056.4731  
Epoch 498/2500  
10/10 [=====] - 0s 882us/step - loss: 1055.0459 - nll_los  
s: 1055.0459  
Epoch 499/2500  
10/10 [=====] - 0s 881us/step - loss: 1051.7230 - nll_los  
s: 1051.7230  
Epoch 500/2500  
10/10 [=====] - 0s 831us/step - loss: 1053.6451 - nll_los  
s: 1053.6451  
Epoch 501/2500  
10/10 [=====] - 0s 724us/step - loss: 1054.4648 - nll_los  
s: 1054.4648  
Epoch 502/2500  
10/10 [=====] - 0s 847us/step - loss: 1053.0892 - nll_los  
s: 1053.0892  
Epoch 503/2500  
10/10 [=====] - 0s 834us/step - loss: 1055.3088 - nll_los  
s: 1055.3088  
Epoch 504/2500
```

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10/10 [=====] - 0s 800us/step - loss: 1056.2839 - nll_los  
s: 1056.2839  
Epoch 505/2500  
10/10 [=====] - 0s 909us/step - loss: 1056.7664 - nll_los  
s: 1056.7664  
Epoch 506/2500  
10/10 [=====] - 0s 909us/step - loss: 1055.3429 - nll_los  
s: 1055.3429  
Epoch 507/2500  
10/10 [=====] - 0s 894us/step - loss: 1053.1354 - nll_los  
s: 1053.1354  
Epoch 508/2500  
10/10 [=====] - 0s 841us/step - loss: 1055.6682 - nll_los  
s: 1055.6682  
Epoch 509/2500  
10/10 [=====] - 0s 837us/step - loss: 1053.9022 - nll_los  
s: 1053.9022  
Epoch 510/2500  
10/10 [=====] - 0s 952us/step - loss: 1058.4120 - nll_los  
s: 1058.4120  
Epoch 511/2500  
10/10 [=====] - 0s 818us/step - loss: 1055.3545 - nll_los  
s: 1055.3545  
Epoch 512/2500  
10/10 [=====] - 0s 919us/step - loss: 1052.6707 - nll_los  
s: 1052.6707  
Epoch 513/2500  
10/10 [=====] - 0s 815us/step - loss: 1055.6152 - nll_los  
s: 1055.6152  
Epoch 514/2500  
10/10 [=====] - 0s 880us/step - loss: 1055.5587 - nll_los  
s: 1055.5587  
Epoch 515/2500  
10/10 [=====] - 0s 866us/step - loss: 1050.6624 - nll_los  
s: 1050.6624  
Epoch 516/2500  
10/10 [=====] - 0s 766us/step - loss: 1053.0005 - nll_los  
s: 1053.0005  
Epoch 517/2500  
10/10 [=====] - 0s 845us/step - loss: 1052.8748 - nll_los  
s: 1052.8748  
Epoch 518/2500  
10/10 [=====] - 0s 814us/step - loss: 1054.5038 - nll_los  
s: 1054.5038  
Epoch 519/2500  
10/10 [=====] - 0s 817us/step - loss: 1054.2638 - nll_los  
s: 1054.2638  
Epoch 520/2500  
10/10 [=====] - 0s 717us/step - loss: 1054.3352 - nll_los  
s: 1054.3352  
Epoch 521/2500  
10/10 [=====] - 0s 874us/step - loss: 1052.1570 - nll_los  
s: 1052.1570  
Epoch 522/2500  
10/10 [=====] - 0s 843us/step - loss: 1053.3099 - nll_los  
s: 1053.3099  
Epoch 523/2500
```

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10/10 [=====] - 0s 802us/step - loss: 1053.5647 - nll_los  
s: 1053.5647  
Epoch 524/2500  
10/10 [=====] - 0s 852us/step - loss: 1051.6548 - nll_los  
s: 1051.6548  
Epoch 525/2500  
10/10 [=====] - 0s 848us/step - loss: 1055.8702 - nll_los  
s: 1055.8702  
Epoch 526/2500  
10/10 [=====] - 0s 802us/step - loss: 1056.3014 - nll_los  
s: 1056.3014  
Epoch 527/2500  
10/10 [=====] - 0s 946us/step - loss: 1054.2458 - nll_los  
s: 1054.2458  
Epoch 528/2500  
10/10 [=====] - 0s 968us/step - loss: 1054.3566 - nll_los  
s: 1054.3566  
Epoch 529/2500  
10/10 [=====] - 0s 905us/step - loss: 1054.0464 - nll_los  
s: 1054.0464  
Epoch 530/2500  
10/10 [=====] - 0s 824us/step - loss: 1054.8843 - nll_los  
s: 1054.8843  
Epoch 531/2500  
10/10 [=====] - 0s 818us/step - loss: 1052.9905 - nll_los  
s: 1052.9905  
Epoch 532/2500  
10/10 [=====] - 0s 722us/step - loss: 1051.6519 - nll_los  
s: 1051.6519  
Epoch 533/2500  
10/10 [=====] - 0s 902us/step - loss: 1051.3418 - nll_los  
s: 1051.3418  
Epoch 534/2500  
10/10 [=====] - 0s 931us/step - loss: 1053.5243 - nll_los  
s: 1053.5243  
Epoch 535/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.1733 - nll_loss:  
1055.1733  
Epoch 536/2500  
10/10 [=====] - 0s 1ms/step - loss: 1055.1985 - nll_loss:  
1055.1985  
Epoch 537/2500  
10/10 [=====] - 0s 953us/step - loss: 1054.4924 - nll_los  
s: 1054.4924  
Epoch 538/2500  
10/10 [=====] - 0s 959us/step - loss: 1054.1976 - nll_los  
s: 1054.1976  
Epoch 539/2500  
10/10 [=====] - 0s 912us/step - loss: 1052.1439 - nll_los  
s: 1052.1439  
Epoch 540/2500  
10/10 [=====] - 0s 863us/step - loss: 1054.1564 - nll_los  
s: 1054.1564  
Epoch 541/2500  
10/10 [=====] - 0s 828us/step - loss: 1054.9729 - nll_los  
s: 1054.9729  
Epoch 542/2500
```

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10/10 [=====] - 0s 874us/step - loss: 1056.7996 - nll_los  
s: 1056.7996  
Epoch 543/2500  
10/10 [=====] - 0s 888us/step - loss: 1053.2963 - nll_los  
s: 1053.2963  
Epoch 544/2500  
10/10 [=====] - 0s 829us/step - loss: 1053.8557 - nll_los  
s: 1053.8557  
Epoch 545/2500  
10/10 [=====] - 0s 830us/step - loss: 1055.5432 - nll_los  
s: 1055.5432  
Epoch 546/2500  
10/10 [=====] - 0s 857us/step - loss: 1055.5095 - nll_los  
s: 1055.5095  
Epoch 547/2500  
10/10 [=====] - 0s 879us/step - loss: 1054.0323 - nll_los  
s: 1054.0323  
Epoch 548/2500  
10/10 [=====] - 0s 838us/step - loss: 1054.2067 - nll_los  
s: 1054.2067  
Epoch 549/2500  
10/10 [=====] - 0s 825us/step - loss: 1056.5105 - nll_los  
s: 1056.5105  
Epoch 550/2500  
10/10 [=====] - 0s 851us/step - loss: 1052.9196 - nll_los  
s: 1052.9196  
Epoch 551/2500  
10/10 [=====] - 0s 951us/step - loss: 1054.8147 - nll_los  
s: 1054.8147  
Epoch 552/2500  
10/10 [=====] - 0s 791us/step - loss: 1055.0750 - nll_los  
s: 1055.0750  
Epoch 553/2500  
10/10 [=====] - 0s 861us/step - loss: 1055.7390 - nll_los  
s: 1055.7390  
Epoch 554/2500  
10/10 [=====] - 0s 680us/step - loss: 1050.6396 - nll_los  
s: 1050.6396  
Epoch 555/2500  
10/10 [=====] - 0s 848us/step - loss: 1055.1840 - nll_los  
s: 1055.1840  
Epoch 556/2500  
10/10 [=====] - 0s 817us/step - loss: 1053.0349 - nll_los  
s: 1053.0349  
Epoch 557/2500  
10/10 [=====] - 0s 812us/step - loss: 1054.6379 - nll_los  
s: 1054.6379  
Epoch 558/2500  
10/10 [=====] - 0s 824us/step - loss: 1054.1230 - nll_los  
s: 1054.1230  
Epoch 559/2500  
10/10 [=====] - 0s 739us/step - loss: 1055.4633 - nll_los  
s: 1055.4633  
Epoch 560/2500  
10/10 [=====] - 0s 855us/step - loss: 1053.0793 - nll_los  
s: 1053.0793  
Epoch 561/2500
```

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10/10 [=====] - 0s 794us/step - loss: 1052.0466 - nll_los  
s: 1052.0466  
Epoch 562/2500  
10/10 [=====] - 0s 739us/step - loss: 1055.0012 - nll_los  
s: 1055.0012  
Epoch 563/2500  
10/10 [=====] - 0s 824us/step - loss: 1052.8895 - nll_los  
s: 1052.8895  
Epoch 564/2500  
10/10 [=====] - 0s 936us/step - loss: 1053.4785 - nll_los  
s: 1053.4785  
Epoch 565/2500  
10/10 [=====] - 0s 873us/step - loss: 1053.6694 - nll_los  
s: 1053.6694  
Epoch 566/2500  
10/10 [=====] - 0s 826us/step - loss: 1051.4325 - nll_los  
s: 1051.4325  
Epoch 567/2500  
10/10 [=====] - 0s 923us/step - loss: 1057.4493 - nll_los  
s: 1057.4493  
Epoch 568/2500  
10/10 [=====] - 0s 855us/step - loss: 1053.1626 - nll_los  
s: 1053.1626  
Epoch 569/2500  
10/10 [=====] - 0s 857us/step - loss: 1054.8474 - nll_los  
s: 1054.8474  
Epoch 570/2500  
10/10 [=====] - 0s 806us/step - loss: 1056.2957 - nll_los  
s: 1056.2957  
Epoch 571/2500  
10/10 [=====] - 0s 903us/step - loss: 1056.1077 - nll_los  
s: 1056.1077  
Epoch 572/2500  
10/10 [=====] - 0s 806us/step - loss: 1053.3103 - nll_los  
s: 1053.3103  
Epoch 573/2500  
10/10 [=====] - 0s 869us/step - loss: 1054.6113 - nll_los  
s: 1054.6113  
Epoch 574/2500  
10/10 [=====] - 0s 892us/step - loss: 1052.9625 - nll_los  
s: 1052.9625  
Epoch 575/2500  
10/10 [=====] - 0s 910us/step - loss: 1052.3328 - nll_los  
s: 1052.3328  
Epoch 576/2500  
10/10 [=====] - 0s 777us/step - loss: 1053.3280 - nll_los  
s: 1053.3280  
Epoch 577/2500  
10/10 [=====] - 0s 830us/step - loss: 1053.4883 - nll_los  
s: 1053.4883  
Epoch 578/2500  
10/10 [=====] - 0s 995us/step - loss: 1054.6931 - nll_los  
s: 1054.6931  
Epoch 579/2500  
10/10 [=====] - 0s 903us/step - loss: 1053.5916 - nll_los  
s: 1053.5916  
Epoch 580/2500
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10/10 [=====] - 0s 889us/step - loss: 1051.5740 - nll_los  
s: 1051.5740  
Epoch 581/2500  
10/10 [=====] - 0s 888us/step - loss: 1052.1871 - nll_los  
s: 1052.1871  
Epoch 582/2500  
10/10 [=====] - 0s 857us/step - loss: 1051.9208 - nll_los  
s: 1051.9208  
Epoch 583/2500  
10/10 [=====] - 0s 828us/step - loss: 1054.0735 - nll_los  
s: 1054.0735  
Epoch 584/2500  
10/10 [=====] - 0s 897us/step - loss: 1053.2373 - nll_los  
s: 1053.2373  
Epoch 585/2500  
10/10 [=====] - 0s 808us/step - loss: 1054.4243 - nll_los  
s: 1054.4243  
Epoch 586/2500  
10/10 [=====] - 0s 919us/step - loss: 1054.2878 - nll_los  
s: 1054.2878  
Epoch 587/2500  
10/10 [=====] - 0s 904us/step - loss: 1053.4304 - nll_los  
s: 1053.4304  
Epoch 588/2500  
10/10 [=====] - 0s 937us/step - loss: 1055.4924 - nll_los  
s: 1055.4924  
Epoch 589/2500  
10/10 [=====] - 0s 871us/step - loss: 1050.7102 - nll_los  
s: 1050.7102  
Epoch 590/2500  
10/10 [=====] - 0s 909us/step - loss: 1051.9473 - nll_los  
s: 1051.9473  
Epoch 591/2500  
10/10 [=====] - 0s 777us/step - loss: 1053.3220 - nll_los  
s: 1053.3220  
Epoch 592/2500  
10/10 [=====] - 0s 820us/step - loss: 1056.4407 - nll_los  
s: 1056.4407  
Epoch 593/2500  
10/10 [=====] - 0s 829us/step - loss: 1051.3845 - nll_los  
s: 1051.3845  
Epoch 594/2500  
10/10 [=====] - 0s 830us/step - loss: 1056.2380 - nll_los  
s: 1056.2380  
Epoch 595/2500
```

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10/10 [=====] - 0s 821us/step - loss: 1051.8176 - nll_los  
s: 1051.8176  
Epoch 596/2500  
10/10 [=====] - 0s 873us/step - loss: 1049.8953 - nll_los  
s: 1049.8953  
Epoch 597/2500  
10/10 [=====] - 0s 798us/step - loss: 1054.0289 - nll_los  
s: 1054.0289  
Epoch 598/2500  
10/10 [=====] - 0s 884us/step - loss: 1051.5603 - nll_los  
s: 1051.5603  
Epoch 599/2500  
10/10 [=====] - 0s 852us/step - loss: 1050.3479 - nll_los  
s: 1050.3479  
Epoch 600/2500  
10/10 [=====] - 0s 765us/step - loss: 1051.0238 - nll_los  
s: 1051.0238  
Epoch 601/2500  
10/10 [=====] - 0s 783us/step - loss: 1050.9462 - nll_los  
s: 1050.9462  
Epoch 602/2500  
10/10 [=====] - 0s 850us/step - loss: 1049.7754 - nll_los  
s: 1049.7754  
Epoch 603/2500  
10/10 [=====] - 0s 834us/step - loss: 1050.5620 - nll_los  
s: 1050.5620  
Epoch 604/2500  
10/10 [=====] - 0s 815us/step - loss: 1051.4193 - nll_los  
s: 1051.4193  
Epoch 605/2500  
10/10 [=====] - 0s 851us/step - loss: 1052.9303 - nll_los  
s: 1052.9303  
Epoch 606/2500  
10/10 [=====] - 0s 860us/step - loss: 1052.3778 - nll_los  
s: 1052.3778  
Epoch 607/2500  
10/10 [=====] - 0s 833us/step - loss: 1051.2197 - nll_los  
s: 1051.2197  
Epoch 608/2500  
10/10 [=====] - 0s 1ms/step - loss: 1052.2710 - nll_loss:  
1052.2710  
Epoch 609/2500  
10/10 [=====] - 0s 944us/step - loss: 1054.1331 - nll_los  
s: 1054.1331  
Epoch 610/2500  
10/10 [=====] - 0s 783us/step - loss: 1054.7043 - nll_los  
s: 1054.7043  
Epoch 611/2500  
10/10 [=====] - 0s 1ms/step - loss: 1053.5134 - nll_loss:  
1053.5134  
Epoch 612/2500  
10/10 [=====] - 0s 912us/step - loss: 1050.4872 - nll_los  
s: 1050.4872  
Epoch 613/2500  
10/10 [=====] - 0s 892us/step - loss: 1051.3168 - nll_los  
s: 1051.3168  
Epoch 614/2500
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10/10 [=====] - 0s 806us/step - loss: 1049.2566 - nll_loss:  
s: 1049.2566  
Epoch 615/2500  
10/10 [=====] - 0s 649us/step - loss: 1052.1488 - nll_loss:  
s: 1052.1488  
Epoch 616/2500  
10/10 [=====] - 0s 861us/step - loss: 1053.0437 - nll_loss:  
s: 1053.0437  
Epoch 617/2500  
10/10 [=====] - 0s 756us/step - loss: 1051.9077 - nll_loss:  
s: 1051.9077  
Epoch 618/2500  
10/10 [=====] - 0s 823us/step - loss: 1050.9519 - nll_loss:  
s: 1050.9519  
Epoch 619/2500  
10/10 [=====] - 0s 863us/step - loss: 1048.6182 - nll_loss:  
s: 1048.6182  
Epoch 620/2500  
10/10 [=====] - 0s 771us/step - loss: 1053.9789 - nll_loss:  
s: 1053.9789  
Epoch 621/2500  
10/10 [=====] - 0s 853us/step - loss: 1053.9121 - nll_loss:  
s: 1053.9121  
Epoch 622/2500  
10/10 [=====] - 0s 829us/step - loss: 1053.2136 - nll_loss:  
s: 1053.2136  
Epoch 623/2500  
10/10 [=====] - 0s 784us/step - loss: 1053.3284 - nll_loss:  
s: 1053.3284  
Epoch 624/2500  
10/10 [=====] - 0s 952us/step - loss: 1054.1591 - nll_loss:  
s: 1054.1591  
Epoch 625/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.8043 - nll_loss:  
s: 1051.8043  
Epoch 626/2500  
10/10 [=====] - 0s 876us/step - loss: 1054.0491 - nll_loss:  
s: 1054.0491  
Epoch 627/2500  
10/10 [=====] - 0s 812us/step - loss: 1054.8289 - nll_loss:  
s: 1054.8289  
Epoch 628/2500  
10/10 [=====] - 0s 806us/step - loss: 1053.7068 - nll_loss:  
s: 1053.7068  
Epoch 629/2500  
10/10 [=====] - 0s 989us/step - loss: 1053.3789 - nll_loss:  
s: 1053.3789  
Epoch 630/2500  
10/10 [=====] - 0s 896us/step - loss: 1051.7471 - nll_loss:  
s: 1051.7471  
Epoch 631/2500  
10/10 [=====] - 0s 851us/step - loss: 1049.9763 - nll_loss:  
s: 1049.9763  
Epoch 632/2500  
10/10 [=====] - 0s 764us/step - loss: 1054.1677 - nll_loss:  
s: 1054.1677  
Epoch 633/2500
```

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10/10 [=====] - 0s 800us/step - loss: 1049.4530 - nll_los  
s: 1049.4530  
Epoch 634/2500  
10/10 [=====] - 0s 932us/step - loss: 1053.2108 - nll_los  
s: 1053.2108  
Epoch 635/2500  
10/10 [=====] - 0s 983us/step - loss: 1054.5303 - nll_los  
s: 1054.5303  
Epoch 636/2500  
10/10 [=====] - 0s 890us/step - loss: 1055.4755 - nll_los  
s: 1055.4755  
Epoch 637/2500  
10/10 [=====] - 0s 862us/step - loss: 1052.5868 - nll_los  
s: 1052.5868  
Epoch 638/2500  
10/10 [=====] - 0s 837us/step - loss: 1052.9832 - nll_los  
s: 1052.9832  
Epoch 639/2500  
10/10 [=====] - 0s 830us/step - loss: 1052.2527 - nll_los  
s: 1052.2527  
Epoch 640/2500  
10/10 [=====] - 0s 871us/step - loss: 1053.1278 - nll_los  
s: 1053.1278  
Epoch 641/2500  
10/10 [=====] - 0s 840us/step - loss: 1053.3909 - nll_los  
s: 1053.3909  
Epoch 642/2500  
10/10 [=====] - 0s 848us/step - loss: 1054.4409 - nll_los  
s: 1054.4409  
Epoch 643/2500  
10/10 [=====] - 0s 824us/step - loss: 1054.7791 - nll_los  
s: 1054.7791  
Epoch 644/2500  
10/10 [=====] - 0s 879us/step - loss: 1053.7881 - nll_los  
s: 1053.7881  
Epoch 645/2500  
10/10 [=====] - 0s 1ms/step - loss: 1052.8365 - nll_loss:  
1052.8365  
Epoch 646/2500  
10/10 [=====] - 0s 764us/step - loss: 1055.1133 - nll_los  
s: 1055.1133  
Epoch 647/2500  
10/10 [=====] - 0s 743us/step - loss: 1054.4010 - nll_los  
s: 1054.4010  
Epoch 648/2500  
10/10 [=====] - 0s 774us/step - loss: 1051.5876 - nll_los  
s: 1051.5876  
Epoch 649/2500  
10/10 [=====] - 0s 852us/step - loss: 1053.4543 - nll_los  
s: 1053.4543  
Epoch 650/2500  
10/10 [=====] - 0s 763us/step - loss: 1052.3177 - nll_los  
s: 1052.3177  
Epoch 651/2500  
10/10 [=====] - 0s 873us/step - loss: 1053.1656 - nll_los  
s: 1053.1656  
Epoch 652/2500
```

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10/10 [=====] - 0s 753us/step - loss: 1051.9700 - nll_los  
s: 1051.9700  
Epoch 653/2500  
10/10 [=====] - 0s 856us/step - loss: 1051.7832 - nll_los  
s: 1051.7832  
Epoch 654/2500  
10/10 [=====] - 0s 942us/step - loss: 1052.1930 - nll_los  
s: 1052.1930  
Epoch 655/2500  
10/10 [=====] - 0s 886us/step - loss: 1050.0907 - nll_los  
s: 1050.0907  
Epoch 656/2500  
10/10 [=====] - 0s 885us/step - loss: 1050.5616 - nll_los  
s: 1050.5616  
Epoch 657/2500  
10/10 [=====] - 0s 862us/step - loss: 1052.8644 - nll_los  
s: 1052.8644  
Epoch 658/2500  
10/10 [=====] - 0s 915us/step - loss: 1054.0443 - nll_los  
s: 1054.0443  
Epoch 659/2500  
10/10 [=====] - 0s 899us/step - loss: 1050.4893 - nll_los  
s: 1050.4893  
Epoch 660/2500  
10/10 [=====] - 0s 735us/step - loss: 1051.3931 - nll_los  
s: 1051.3931  
Epoch 661/2500  
10/10 [=====] - 0s 830us/step - loss: 1054.6758 - nll_los  
s: 1054.6758  
Epoch 662/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.5808 - nll_loss:  
1056.5808  
Epoch 663/2500  
10/10 [=====] - 0s 897us/step - loss: 1055.9958 - nll_los  
s: 1055.9958  
Epoch 664/2500  
10/10 [=====] - 0s 1ms/step - loss: 1053.3789 - nll_loss:  
1053.3789  
Epoch 665/2500  
10/10 [=====] - 0s 1ms/step - loss: 1056.6331 - nll_loss:  
1056.6331  
Epoch 666/2500  
10/10 [=====] - 0s 814us/step - loss: 1052.0764 - nll_los  
s: 1052.0764  
Epoch 667/2500  
10/10 [=====] - 0s 790us/step - loss: 1051.3636 - nll_los  
s: 1051.3636  
Epoch 668/2500  
10/10 [=====] - 0s 858us/step - loss: 1050.5615 - nll_los  
s: 1050.5615  
Epoch 669/2500  
10/10 [=====] - 0s 871us/step - loss: 1051.3324 - nll_los  
s: 1051.3324  
Epoch 670/2500  
10/10 [=====] - 0s 1ms/step - loss: 1050.6021 - nll_loss:  
1050.6021  
Epoch 671/2500
```

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10/10 [=====] - 0s 1ms/step - loss: 1051.9231 - nll_loss:  
1051.9231  
Epoch 672/2500  
10/10 [=====] - 0s 806us/step - loss: 1054.2753 - nll_los  
s: 1054.2753  
Epoch 673/2500  
10/10 [=====] - 0s 898us/step - loss: 1052.9258 - nll_los  
s: 1052.9258  
Epoch 674/2500  
10/10 [=====] - 0s 967us/step - loss: 1051.7063 - nll_los  
s: 1051.7063  
Epoch 675/2500  
10/10 [=====] - 0s 928us/step - loss: 1049.9348 - nll_los  
s: 1049.9348  
Epoch 676/2500  
10/10 [=====] - 0s 908us/step - loss: 1052.8053 - nll_los  
s: 1052.8053  
Epoch 677/2500  
10/10 [=====] - 0s 869us/step - loss: 1051.3313 - nll_los  
s: 1051.3313  
Epoch 678/2500  
10/10 [=====] - 0s 794us/step - loss: 1054.0028 - nll_los  
s: 1054.0028  
Epoch 679/2500  
10/10 [=====] - 0s 968us/step - loss: 1053.6276 - nll_los  
s: 1053.6276  
Epoch 680/2500  
10/10 [=====] - 0s 746us/step - loss: 1052.3129 - nll_los  
s: 1052.3129  
Epoch 681/2500  
10/10 [=====] - 0s 737us/step - loss: 1053.7585 - nll_los  
s: 1053.7585  
Epoch 682/2500  
10/10 [=====] - 0s 812us/step - loss: 1052.8240 - nll_los  
s: 1052.8240  
Epoch 683/2500  
10/10 [=====] - 0s 914us/step - loss: 1050.3602 - nll_los  
s: 1050.3602  
Epoch 684/2500  
10/10 [=====] - 0s 753us/step - loss: 1051.2607 - nll_los  
s: 1051.2607  
Epoch 685/2500  
10/10 [=====] - 0s 829us/step - loss: 1052.5883 - nll_los  
s: 1052.5883  
Epoch 686/2500  
10/10 [=====] - 0s 912us/step - loss: 1052.9219 - nll_los  
s: 1052.9219  
Epoch 687/2500  
10/10 [=====] - 0s 940us/step - loss: 1051.9460 - nll_los  
s: 1051.9460  
Epoch 688/2500  
10/10 [=====] - 0s 940us/step - loss: 1052.3073 - nll_los  
s: 1052.3073  
Epoch 689/2500  
10/10 [=====] - 0s 917us/step - loss: 1051.5276 - nll_los  
s: 1051.5276  
Epoch 690/2500
```

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10/10 [=====] - 0s 921us/step - loss: 1054.5872 - nll_los  
s: 1054.5872  
Epoch 691/2500  
10/10 [=====] - 0s 812us/step - loss: 1052.6010 - nll_los  
s: 1052.6010  
Epoch 692/2500  
10/10 [=====] - 0s 877us/step - loss: 1053.8704 - nll_los  
s: 1053.8704  
Epoch 693/2500  
10/10 [=====] - 0s 820us/step - loss: 1053.0681 - nll_los  
s: 1053.0681  
Epoch 694/2500  
10/10 [=====] - 0s 856us/step - loss: 1052.6234 - nll_los  
s: 1052.6234  
Epoch 695/2500  
10/10 [=====] - 0s 846us/step - loss: 1051.8647 - nll_los  
s: 1051.8647  
Epoch 696/2500  
10/10 [=====] - 0s 852us/step - loss: 1050.7849 - nll_los  
s: 1050.7849  
Epoch 697/2500  
10/10 [=====] - 0s 877us/step - loss: 1054.0056 - nll_los  
s: 1054.0056  
Epoch 698/2500  
10/10 [=====] - 0s 1ms/step - loss: 1050.9752 - nll_loss:  
1050.9752  
Epoch 699/2500  
10/10 [=====] - 0s 841us/step - loss: 1050.2906 - nll_los  
s: 1050.2906  
Epoch 700/2500  
10/10 [=====] - 0s 803us/step - loss: 1053.4363 - nll_los  
s: 1053.4363  
Epoch 701/2500  
10/10 [=====] - 0s 639us/step - loss: 1054.7122 - nll_los  
s: 1054.7122  
Epoch 702/2500  
10/10 [=====] - 0s 933us/step - loss: 1055.6971 - nll_los  
s: 1055.6971  
Epoch 703/2500  
10/10 [=====] - 0s 897us/step - loss: 1054.0564 - nll_los  
s: 1054.0564  
Epoch 704/2500  
10/10 [=====] - 0s 797us/step - loss: 1049.0247 - nll_los  
s: 1049.0247  
Epoch 705/2500  
10/10 [=====] - 0s 799us/step - loss: 1050.6228 - nll_los  
s: 1050.6228  
Epoch 706/2500  
10/10 [=====] - 0s 829us/step - loss: 1050.7168 - nll_los  
s: 1050.7168  
Epoch 707/2500  
10/10 [=====] - 0s 865us/step - loss: 1050.9529 - nll_los  
s: 1050.9529  
Epoch 708/2500  
10/10 [=====] - 0s 796us/step - loss: 1052.6932 - nll_los  
s: 1052.6932  
Epoch 709/2500
```

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10/10 [=====] - 0s 875us/step - loss: 1052.1277 - nll_los  
s: 1052.1277  
Epoch 710/2500  
10/10 [=====] - 0s 785us/step - loss: 1051.4832 - nll_los  
s: 1051.4832  
Epoch 711/2500  
10/10 [=====] - 0s 894us/step - loss: 1050.3864 - nll_los  
s: 1050.3864  
Epoch 712/2500  
10/10 [=====] - 0s 893us/step - loss: 1052.1342 - nll_los  
s: 1052.1342  
Epoch 713/2500  
10/10 [=====] - 0s 822us/step - loss: 1052.3311 - nll_los  
s: 1052.3311  
Epoch 714/2500  
10/10 [=====] - 0s 836us/step - loss: 1058.1301 - nll_los  
s: 1058.1301  
Epoch 715/2500  
10/10 [=====] - 0s 827us/step - loss: 1057.7170 - nll_los  
s: 1057.7170  
Epoch 716/2500  
10/10 [=====] - 0s 836us/step - loss: 1052.1829 - nll_los  
s: 1052.1829  
Epoch 717/2500  
10/10 [=====] - 0s 787us/step - loss: 1051.7009 - nll_los  
s: 1051.7009  
Epoch 718/2500  
10/10 [=====] - 0s 788us/step - loss: 1050.3538 - nll_los  
s: 1050.3538  
Epoch 719/2500  
10/10 [=====] - 0s 893us/step - loss: 1051.4124 - nll_los  
s: 1051.4124  
Epoch 720/2500  
10/10 [=====] - 0s 832us/step - loss: 1051.8929 - nll_los  
s: 1051.8929  
Epoch 721/2500  
10/10 [=====] - 0s 847us/step - loss: 1050.8796 - nll_los  
s: 1050.8796  
Epoch 722/2500  
10/10 [=====] - 0s 841us/step - loss: 1051.8528 - nll_los  
s: 1051.8528  
Epoch 723/2500  
10/10 [=====] - 0s 786us/step - loss: 1052.9320 - nll_los  
s: 1052.9320  
Epoch 724/2500  
10/10 [=====] - 0s 836us/step - loss: 1050.4576 - nll_los  
s: 1050.4576  
Epoch 725/2500  
10/10 [=====] - 0s 803us/step - loss: 1050.4022 - nll_los  
s: 1050.4022  
Epoch 726/2500  
10/10 [=====] - 0s 844us/step - loss: 1051.6595 - nll_los  
s: 1051.6595  
Epoch 727/2500  
10/10 [=====] - 0s 842us/step - loss: 1051.4962 - nll_los  
s: 1051.4962  
Epoch 728/2500
```

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10/10 [=====] - 0s 845us/step - loss: 1052.2483 - nll_los  
s: 1052.2483  
Epoch 729/2500  
10/10 [=====] - 0s 870us/step - loss: 1050.0852 - nll_los  
s: 1050.0852  
Epoch 730/2500  
10/10 [=====] - 0s 696us/step - loss: 1051.4236 - nll_los  
s: 1051.4236  
Epoch 731/2500  
10/10 [=====] - 0s 859us/step - loss: 1054.9729 - nll_los  
s: 1054.9729  
Epoch 732/2500  
10/10 [=====] - 0s 930us/step - loss: 1052.1139 - nll_los  
s: 1052.1139  
Epoch 733/2500  
10/10 [=====] - 0s 922us/step - loss: 1052.5698 - nll_los  
s: 1052.5698  
Epoch 734/2500  
10/10 [=====] - 0s 954us/step - loss: 1051.4349 - nll_los  
s: 1051.4349  
Epoch 735/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.7332 - nll_loss:  
1051.7332  
Epoch 736/2500  
10/10 [=====] - 0s 834us/step - loss: 1052.5076 - nll_los  
s: 1052.5076  
Epoch 737/2500  
10/10 [=====] - 0s 856us/step - loss: 1050.9894 - nll_los  
s: 1050.9894  
Epoch 738/2500  
10/10 [=====] - 0s 928us/step - loss: 1050.7769 - nll_los  
s: 1050.7769  
Epoch 739/2500  
10/10 [=====] - 0s 802us/step - loss: 1052.1160 - nll_los  
s: 1052.1160  
Epoch 740/2500  
10/10 [=====] - 0s 917us/step - loss: 1055.0088 - nll_los  
s: 1055.0088  
Epoch 741/2500  
10/10 [=====] - 0s 833us/step - loss: 1051.9048 - nll_los  
s: 1051.9048  
Epoch 742/2500  
10/10 [=====] - 0s 896us/step - loss: 1053.8291 - nll_los  
s: 1053.8291  
Epoch 743/2500
```

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10/10 [=====] - 0s 841us/step - loss: 1054.9409 - nll_los  
s: 1054.9409  
Epoch 744/2500  
10/10 [=====] - 0s 907us/step - loss: 1054.0527 - nll_los  
s: 1054.0527  
Epoch 745/2500  
10/10 [=====] - 0s 530us/step - loss: 1050.7920 - nll_los  
s: 1050.7920  
Epoch 746/2500  
10/10 [=====] - 0s 734us/step - loss: 1050.8490 - nll_los  
s: 1050.8490  
Epoch 747/2500  
10/10 [=====] - 0s 801us/step - loss: 1052.8396 - nll_los  
s: 1052.8396  
Epoch 748/2500  
10/10 [=====] - 0s 866us/step - loss: 1054.0427 - nll_los  
s: 1054.0427  
Epoch 749/2500  
10/10 [=====] - 0s 915us/step - loss: 1051.9277 - nll_los  
s: 1051.9277  
Epoch 750/2500  
10/10 [=====] - 0s 679us/step - loss: 1051.1633 - nll_los  
s: 1051.1633  
Epoch 751/2500  
10/10 [=====] - 0s 912us/step - loss: 1051.3199 - nll_los  
s: 1051.3199  
Epoch 752/2500  
10/10 [=====] - 0s 769us/step - loss: 1050.4581 - nll_los  
s: 1050.4581  
Epoch 753/2500  
10/10 [=====] - 0s 955us/step - loss: 1050.2047 - nll_los  
s: 1050.2047  
Epoch 754/2500  
10/10 [=====] - 0s 938us/step - loss: 1049.9128 - nll_los  
s: 1049.9128  
Epoch 755/2500  
10/10 [=====] - 0s 935us/step - loss: 1049.5076 - nll_los  
s: 1049.5076  
Epoch 756/2500  
10/10 [=====] - 0s 812us/step - loss: 1048.4731 - nll_los  
s: 1048.4731  
Epoch 757/2500  
10/10 [=====] - 0s 829us/step - loss: 1051.6194 - nll_los  
s: 1051.6194  
Epoch 758/2500  
10/10 [=====] - 0s 750us/step - loss: 1050.8979 - nll_los  
s: 1050.8979  
Epoch 759/2500  
10/10 [=====] - 0s 817us/step - loss: 1052.9036 - nll_los  
s: 1052.9036  
Epoch 760/2500  
10/10 [=====] - 0s 885us/step - loss: 1052.4763 - nll_los  
s: 1052.4763  
Epoch 761/2500  
10/10 [=====] - 0s 827us/step - loss: 1049.3007 - nll_los  
s: 1049.3007  
Epoch 762/2500
```

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10/10 [=====] - 0s 747us/step - loss: 1051.4510 - nll_los  
s: 1051.4510  
Epoch 763/2500  
10/10 [=====] - 0s 786us/step - loss: 1054.1844 - nll_los  
s: 1054.1844  
Epoch 764/2500  
10/10 [=====] - 0s 901us/step - loss: 1049.8900 - nll_los  
s: 1049.8900  
Epoch 765/2500  
10/10 [=====] - 0s 821us/step - loss: 1051.4518 - nll_los  
s: 1051.4518  
Epoch 766/2500  
10/10 [=====] - 0s 825us/step - loss: 1052.1599 - nll_los  
s: 1052.1599  
Epoch 767/2500  
10/10 [=====] - 0s 832us/step - loss: 1053.1693 - nll_los  
s: 1053.1693  
Epoch 768/2500  
10/10 [=====] - 0s 980us/step - loss: 1054.3865 - nll_los  
s: 1054.3865  
Epoch 769/2500  
10/10 [=====] - 0s 839us/step - loss: 1049.0548 - nll_los  
s: 1049.0548  
Epoch 770/2500  
10/10 [=====] - 0s 791us/step - loss: 1050.4534 - nll_los  
s: 1050.4534  
Epoch 771/2500  
10/10 [=====] - 0s 794us/step - loss: 1051.0223 - nll_los  
s: 1051.0223  
Epoch 772/2500  
10/10 [=====] - 0s 921us/step - loss: 1048.3845 - nll_los  
s: 1048.3845  
Epoch 773/2500  
10/10 [=====] - 0s 859us/step - loss: 1057.8616 - nll_los  
s: 1057.8616  
Epoch 774/2500  
10/10 [=====] - 0s 733us/step - loss: 1058.3640 - nll_los  
s: 1058.3640  
Epoch 775/2500  
10/10 [=====] - 0s 837us/step - loss: 1056.1439 - nll_los  
s: 1056.1439  
Epoch 776/2500  
10/10 [=====] - 0s 780us/step - loss: 1051.8121 - nll_los  
s: 1051.8121  
Epoch 777/2500  
10/10 [=====] - 0s 891us/step - loss: 1052.6866 - nll_los  
s: 1052.6866  
Epoch 778/2500  
10/10 [=====] - 0s 747us/step - loss: 1055.6249 - nll_los  
s: 1055.6249  
Epoch 779/2500  
10/10 [=====] - 0s 870us/step - loss: 1050.8282 - nll_los  
s: 1050.8282  
Epoch 780/2500  
10/10 [=====] - 0s 831us/step - loss: 1048.6715 - nll_los  
s: 1048.6715  
Epoch 781/2500
```

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10/10 [=====] - 0s 875us/step - loss: 1053.6971 - nll_los  
s: 1053.6971  
Epoch 782/2500  
10/10 [=====] - 0s 838us/step - loss: 1051.3381 - nll_los  
s: 1051.3381  
Epoch 783/2500  
10/10 [=====] - 0s 932us/step - loss: 1053.7258 - nll_los  
s: 1053.7258  
Epoch 784/2500  
10/10 [=====] - 0s 885us/step - loss: 1050.9700 - nll_los  
s: 1050.9700  
Epoch 785/2500  
10/10 [=====] - 0s 837us/step - loss: 1052.0869 - nll_los  
s: 1052.0869  
Epoch 786/2500  
10/10 [=====] - 0s 928us/step - loss: 1049.9529 - nll_los  
s: 1049.9529  
Epoch 787/2500  
10/10 [=====] - 0s 843us/step - loss: 1049.1216 - nll_los  
s: 1049.1216  
Epoch 788/2500  
10/10 [=====] - 0s 814us/step - loss: 1047.8870 - nll_los  
s: 1047.8870  
Epoch 789/2500  
10/10 [=====] - 0s 883us/step - loss: 1051.2947 - nll_los  
s: 1051.2947  
Epoch 790/2500  
10/10 [=====] - 0s 832us/step - loss: 1054.3184 - nll_los  
s: 1054.3184  
Epoch 791/2500  
10/10 [=====] - 0s 847us/step - loss: 1052.0326 - nll_los  
s: 1052.0326  
Epoch 792/2500  
10/10 [=====] - 0s 803us/step - loss: 1050.6755 - nll_los  
s: 1050.6755  
Epoch 793/2500  
10/10 [=====] - 0s 943us/step - loss: 1052.9945 - nll_los  
s: 1052.9945  
Epoch 794/2500  
10/10 [=====] - 0s 891us/step - loss: 1052.1182 - nll_los  
s: 1052.1182  
Epoch 795/2500  
10/10 [=====] - 0s 961us/step - loss: 1052.2371 - nll_los  
s: 1052.2371  
Epoch 796/2500  
10/10 [=====] - 0s 802us/step - loss: 1050.5170 - nll_los  
s: 1050.5170  
Epoch 797/2500  
10/10 [=====] - 0s 787us/step - loss: 1049.7913 - nll_los  
s: 1049.7913  
Epoch 798/2500  
10/10 [=====] - 0s 979us/step - loss: 1053.9691 - nll_los  
s: 1053.9691  
Epoch 799/2500  
10/10 [=====] - 0s 770us/step - loss: 1051.6619 - nll_los  
s: 1051.6619  
Epoch 800/2500
```

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10/10 [=====] - 0s 816us/step - loss: 1051.7350 - nll_los  
s: 1051.7350  
Epoch 801/2500  
10/10 [=====] - 0s 836us/step - loss: 1049.4109 - nll_los  
s: 1049.4109  
Epoch 802/2500  
10/10 [=====] - 0s 860us/step - loss: 1049.7213 - nll_los  
s: 1049.7213  
Epoch 803/2500  
10/10 [=====] - 0s 837us/step - loss: 1050.2577 - nll_los  
s: 1050.2577  
Epoch 804/2500  
10/10 [=====] - 0s 810us/step - loss: 1051.1670 - nll_los  
s: 1051.1670  
Epoch 805/2500  
10/10 [=====] - 0s 804us/step - loss: 1051.3282 - nll_los  
s: 1051.3282  
Epoch 806/2500  
10/10 [=====] - 0s 889us/step - loss: 1053.7939 - nll_los  
s: 1053.7939  
Epoch 807/2500  
10/10 [=====] - 0s 883us/step - loss: 1051.2161 - nll_los  
s: 1051.2161  
Epoch 808/2500  
10/10 [=====] - 0s 815us/step - loss: 1051.2662 - nll_los  
s: 1051.2662  
Epoch 809/2500  
10/10 [=====] - 0s 830us/step - loss: 1051.0132 - nll_los  
s: 1051.0132  
Epoch 810/2500  
10/10 [=====] - 0s 865us/step - loss: 1050.0187 - nll_los  
s: 1050.0187  
Epoch 811/2500  
10/10 [=====] - 0s 983us/step - loss: 1050.4857 - nll_los  
s: 1050.4857  
Epoch 812/2500  
10/10 [=====] - 0s 876us/step - loss: 1051.6228 - nll_los  
s: 1051.6228  
Epoch 813/2500  
10/10 [=====] - 0s 834us/step - loss: 1049.2560 - nll_los  
s: 1049.2560  
Epoch 814/2500  
10/10 [=====] - 0s 833us/step - loss: 1050.9832 - nll_los  
s: 1050.9832  
Epoch 815/2500  
10/10 [=====] - 0s 786us/step - loss: 1051.3958 - nll_los  
s: 1051.3958  
Epoch 816/2500  
10/10 [=====] - 0s 932us/step - loss: 1051.1578 - nll_los  
s: 1051.1578  
Epoch 817/2500  
10/10 [=====] - 0s 880us/step - loss: 1049.1476 - nll_los  
s: 1049.1476  
Epoch 818/2500  
10/10 [=====] - 0s 857us/step - loss: 1049.7489 - nll_los  
s: 1049.7489  
Epoch 819/2500
```

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10/10 [=====] - 0s 842us/step - loss: 1053.6647 - nll_los  
s: 1053.6647  
Epoch 820/2500  
10/10 [=====] - 0s 738us/step - loss: 1052.6425 - nll_los  
s: 1052.6425  
Epoch 821/2500  
10/10 [=====] - 0s 855us/step - loss: 1053.8118 - nll_los  
s: 1053.8118  
Epoch 822/2500  
10/10 [=====] - 0s 831us/step - loss: 1050.7512 - nll_los  
s: 1050.7512  
Epoch 823/2500  
10/10 [=====] - 0s 859us/step - loss: 1050.3834 - nll_los  
s: 1050.3834  
Epoch 824/2500  
10/10 [=====] - 0s 805us/step - loss: 1052.3127 - nll_los  
s: 1052.3127  
Epoch 825/2500  
10/10 [=====] - 0s 1ms/step - loss: 1053.1010 - nll_loss:  
1053.1010  
Epoch 826/2500  
10/10 [=====] - 0s 985us/step - loss: 1053.5625 - nll_los  
s: 1053.5625  
Epoch 827/2500  
10/10 [=====] - 0s 690us/step - loss: 1050.9924 - nll_los  
s: 1050.9924  
Epoch 828/2500  
10/10 [=====] - 0s 1ms/step - loss: 1049.5168 - nll_loss:  
1049.5168  
Epoch 829/2500  
10/10 [=====] - 0s 906us/step - loss: 1052.9358 - nll_los  
s: 1052.9358  
Epoch 830/2500  
10/10 [=====] - 0s 814us/step - loss: 1052.1252 - nll_los  
s: 1052.1252  
Epoch 831/2500  
10/10 [=====] - 0s 823us/step - loss: 1050.4871 - nll_los  
s: 1050.4871  
Epoch 832/2500  
10/10 [=====] - 0s 857us/step - loss: 1052.8457 - nll_los  
s: 1052.8457  
Epoch 833/2500  
10/10 [=====] - 0s 879us/step - loss: 1051.5432 - nll_los  
s: 1051.5432  
Epoch 834/2500  
10/10 [=====] - 0s 770us/step - loss: 1051.0106 - nll_los  
s: 1051.0106  
Epoch 835/2500  
10/10 [=====] - 0s 884us/step - loss: 1051.1064 - nll_los  
s: 1051.1064  
Epoch 836/2500  
10/10 [=====] - 0s 883us/step - loss: 1054.8540 - nll_los  
s: 1054.8540  
Epoch 837/2500  
10/10 [=====] - 0s 811us/step - loss: 1052.5145 - nll_los  
s: 1052.5145  
Epoch 838/2500
```

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10/10 [=====] - 0s 828us/step - loss: 1053.8082 - nll_los  
s: 1053.8082  
Epoch 839/2500  
10/10 [=====] - 0s 818us/step - loss: 1053.1981 - nll_los  
s: 1053.1981  
Epoch 840/2500  
10/10 [=====] - 0s 893us/step - loss: 1052.0819 - nll_los  
s: 1052.0819  
Epoch 841/2500  
10/10 [=====] - 0s 855us/step - loss: 1050.3162 - nll_los  
s: 1050.3162  
Epoch 842/2500  
10/10 [=====] - 0s 931us/step - loss: 1051.2637 - nll_los  
s: 1051.2637  
Epoch 843/2500  
10/10 [=====] - 0s 853us/step - loss: 1049.3149 - nll_los  
s: 1049.3149  
Epoch 844/2500  
10/10 [=====] - 0s 863us/step - loss: 1051.6133 - nll_los  
s: 1051.6133  
Epoch 845/2500  
10/10 [=====] - 0s 903us/step - loss: 1052.2239 - nll_los  
s: 1052.2239  
Epoch 846/2500  
10/10 [=====] - 0s 752us/step - loss: 1050.2766 - nll_los  
s: 1050.2766  
Epoch 847/2500  
10/10 [=====] - 0s 868us/step - loss: 1052.7671 - nll_los  
s: 1052.7671  
Epoch 848/2500  
10/10 [=====] - 0s 815us/step - loss: 1051.9153 - nll_los  
s: 1051.9153  
Epoch 849/2500  
10/10 [=====] - 0s 847us/step - loss: 1049.5782 - nll_los  
s: 1049.5782  
Epoch 850/2500  
10/10 [=====] - 0s 904us/step - loss: 1052.0490 - nll_los  
s: 1052.0490  
Epoch 851/2500  
10/10 [=====] - 0s 747us/step - loss: 1052.0046 - nll_los  
s: 1052.0046  
Epoch 852/2500  
10/10 [=====] - 0s 850us/step - loss: 1052.3459 - nll_los  
s: 1052.3459  
Epoch 853/2500  
10/10 [=====] - 0s 850us/step - loss: 1051.3787 - nll_los  
s: 1051.3787  
Epoch 854/2500  
10/10 [=====] - 0s 871us/step - loss: 1050.6475 - nll_los  
s: 1050.6475  
Epoch 855/2500  
10/10 [=====] - 0s 858us/step - loss: 1052.7126 - nll_los  
s: 1052.7126  
Epoch 856/2500  
10/10 [=====] - 0s 857us/step - loss: 1053.6570 - nll_los  
s: 1053.6570  
Epoch 857/2500
```

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10/10 [=====] - 0s 913us/step - loss: 1053.2917 - nll_loss:  
s: 1053.2917  
Epoch 858/2500  
10/10 [=====] - 0s 878us/step - loss: 1050.3600 - nll_loss:  
s: 1050.3600  
Epoch 859/2500  
10/10 [=====] - 0s 806us/step - loss: 1050.2748 - nll_loss:  
s: 1050.2748  
Epoch 860/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.6617 - nll_loss:  
1051.6617  
Epoch 861/2500  
10/10 [=====] - 0s 827us/step - loss: 1050.8414 - nll_loss:  
s: 1050.8414  
Epoch 862/2500  
10/10 [=====] - 0s 859us/step - loss: 1052.5465 - nll_loss:  
s: 1052.5465  
Epoch 863/2500  
10/10 [=====] - 0s 834us/step - loss: 1049.8762 - nll_loss:  
s: 1049.8762  
Epoch 864/2500  
10/10 [=====] - 0s 826us/step - loss: 1051.9116 - nll_loss:  
s: 1051.9116  
Epoch 865/2500  
10/10 [=====] - 0s 942us/step - loss: 1051.7299 - nll_loss:  
s: 1051.7299  
Epoch 866/2500  
10/10 [=====] - 0s 833us/step - loss: 1051.7784 - nll_loss:  
s: 1051.7784  
Epoch 867/2500  
10/10 [=====] - 0s 898us/step - loss: 1054.3385 - nll_loss:  
s: 1054.3385  
Epoch 868/2500  
10/10 [=====] - 0s 787us/step - loss: 1054.4436 - nll_loss:  
s: 1054.4436  
Epoch 869/2500  
10/10 [=====] - 0s 943us/step - loss: 1052.2859 - nll_loss:  
s: 1052.2859  
Epoch 870/2500  
10/10 [=====] - 0s 837us/step - loss: 1052.2590 - nll_loss:  
s: 1052.2590  
Epoch 871/2500  
10/10 [=====] - 0s 836us/step - loss: 1050.6829 - nll_loss:  
s: 1050.6829  
Epoch 872/2500  
10/10 [=====] - 0s 871us/step - loss: 1052.2029 - nll_loss:  
s: 1052.2029  
Epoch 873/2500  
10/10 [=====] - 0s 790us/step - loss: 1053.1863 - nll_loss:  
s: 1053.1863  
Epoch 874/2500  
10/10 [=====] - 0s 871us/step - loss: 1052.9435 - nll_loss:  
s: 1052.9435  
Epoch 875/2500  
10/10 [=====] - 0s 793us/step - loss: 1051.0371 - nll_loss:  
s: 1051.0371  
Epoch 876/2500
```

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10/10 [=====] - 0s 920us/step - loss: 1051.4332 - nll_los  
s: 1051.4332  
Epoch 877/2500  
10/10 [=====] - 0s 790us/step - loss: 1051.5907 - nll_los  
s: 1051.5907  
Epoch 878/2500  
10/10 [=====] - 0s 750us/step - loss: 1054.2058 - nll_los  
s: 1054.2058  
Epoch 879/2500  
10/10 [=====] - 0s 917us/step - loss: 1053.0188 - nll_los  
s: 1053.0188  
Epoch 880/2500  
10/10 [=====] - 0s 853us/step - loss: 1050.0243 - nll_los  
s: 1050.0243  
Epoch 881/2500  
10/10 [=====] - 0s 834us/step - loss: 1052.8052 - nll_los  
s: 1052.8052  
Epoch 882/2500  
10/10 [=====] - 0s 834us/step - loss: 1053.4135 - nll_los  
s: 1053.4135  
Epoch 883/2500  
10/10 [=====] - 0s 813us/step - loss: 1050.9945 - nll_los  
s: 1050.9945  
Epoch 884/2500  
10/10 [=====] - 0s 866us/step - loss: 1052.2181 - nll_los  
s: 1052.2181  
Epoch 885/2500  
10/10 [=====] - 0s 780us/step - loss: 1051.3195 - nll_los  
s: 1051.3195  
Epoch 886/2500  
10/10 [=====] - 0s 864us/step - loss: 1050.5507 - nll_los  
s: 1050.5507  
Epoch 887/2500  
10/10 [=====] - 0s 873us/step - loss: 1049.9760 - nll_los  
s: 1049.9760  
Epoch 888/2500  
10/10 [=====] - 0s 869us/step - loss: 1050.6605 - nll_los  
s: 1050.6605  
Epoch 889/2500  
10/10 [=====] - 0s 895us/step - loss: 1050.9178 - nll_los  
s: 1050.9178  
Epoch 890/2500  
10/10 [=====] - 0s 937us/step - loss: 1051.6256 - nll_los  
s: 1051.6256  
Epoch 891/2500
```

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10/10 [=====] - 0s 882us/step - loss: 1052.7979 - nll_los  
s: 1052.7979  
Epoch 892/2500  
10/10 [=====] - 0s 806us/step - loss: 1050.7761 - nll_los  
s: 1050.7761  
Epoch 893/2500  
10/10 [=====] - 0s 774us/step - loss: 1049.7131 - nll_los  
s: 1049.7131  
Epoch 894/2500  
10/10 [=====] - 0s 965us/step - loss: 1050.8589 - nll_los  
s: 1050.8589  
Epoch 895/2500  
10/10 [=====] - 0s 792us/step - loss: 1054.3280 - nll_los  
s: 1054.3280  
Epoch 896/2500  
10/10 [=====] - 0s 824us/step - loss: 1053.6201 - nll_los  
s: 1053.6201  
Epoch 897/2500  
10/10 [=====] - 0s 793us/step - loss: 1050.0442 - nll_los  
s: 1050.0442  
Epoch 898/2500  
10/10 [=====] - 0s 895us/step - loss: 1049.6381 - nll_los  
s: 1049.6381  
Epoch 899/2500  
10/10 [=====] - 0s 907us/step - loss: 1050.3616 - nll_los  
s: 1050.3616  
Epoch 900/2500  
10/10 [=====] - 0s 808us/step - loss: 1051.5039 - nll_los  
s: 1051.5039  
Epoch 901/2500  
10/10 [=====] - 0s 761us/step - loss: 1050.2024 - nll_los  
s: 1050.2024  
Epoch 902/2500  
10/10 [=====] - 0s 784us/step - loss: 1047.7142 - nll_los  
s: 1047.7142  
Epoch 903/2500  
10/10 [=====] - 0s 798us/step - loss: 1050.2876 - nll_los  
s: 1050.2876  
Epoch 904/2500  
10/10 [=====] - 0s 843us/step - loss: 1052.6232 - nll_los  
s: 1052.6232  
Epoch 905/2500  
10/10 [=====] - 0s 798us/step - loss: 1049.7131 - nll_los  
s: 1049.7131  
Epoch 906/2500  
10/10 [=====] - 0s 803us/step - loss: 1050.5247 - nll_los  
s: 1050.5247  
Epoch 907/2500  
10/10 [=====] - 0s 863us/step - loss: 1051.5989 - nll_los  
s: 1051.5989  
Epoch 908/2500  
10/10 [=====] - 0s 1ms/step - loss: 1052.4731 - nll_los:  
1052.4731  
Epoch 909/2500  
10/10 [=====] - 0s 833us/step - loss: 1050.0747 - nll_los  
s: 1050.0747  
Epoch 910/2500
```

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10/10 [=====] - 0s 901us/step - loss: 1052.5922 - nll_los  
s: 1052.5922  
Epoch 911/2500  
10/10 [=====] - 0s 849us/step - loss: 1052.4635 - nll_los  
s: 1052.4635  
Epoch 912/2500  
10/10 [=====] - 0s 853us/step - loss: 1051.6007 - nll_los  
s: 1051.6007  
Epoch 913/2500  
10/10 [=====] - 0s 868us/step - loss: 1052.5575 - nll_los  
s: 1052.5575  
Epoch 914/2500  
10/10 [=====] - 0s 899us/step - loss: 1049.8872 - nll_los  
s: 1049.8872  
Epoch 915/2500  
10/10 [=====] - 0s 730us/step - loss: 1051.8306 - nll_los  
s: 1051.8306  
Epoch 916/2500  
10/10 [=====] - 0s 1ms/step - loss: 1048.6949 - nll_loss:  
1048.6949  
Epoch 917/2500  
10/10 [=====] - 0s 955us/step - loss: 1052.1248 - nll_los  
s: 1052.1248  
Epoch 918/2500  
10/10 [=====] - 0s 796us/step - loss: 1051.0189 - nll_los  
s: 1051.0189  
Epoch 919/2500  
10/10 [=====] - 0s 834us/step - loss: 1053.5383 - nll_los  
s: 1053.5383  
Epoch 920/2500  
10/10 [=====] - 0s 798us/step - loss: 1051.3942 - nll_los  
s: 1051.3942  
Epoch 921/2500  
10/10 [=====] - 0s 843us/step - loss: 1052.5676 - nll_los  
s: 1052.5676  
Epoch 922/2500  
10/10 [=====] - 0s 837us/step - loss: 1053.3323 - nll_los  
s: 1053.3323  
Epoch 923/2500  
10/10 [=====] - 0s 937us/step - loss: 1051.6124 - nll_los  
s: 1051.6124  
Epoch 924/2500  
10/10 [=====] - 0s 789us/step - loss: 1053.1292 - nll_los  
s: 1053.1292  
Epoch 925/2500  
10/10 [=====] - 0s 892us/step - loss: 1052.7964 - nll_los  
s: 1052.7964  
Epoch 926/2500  
10/10 [=====] - 0s 940us/step - loss: 1051.6609 - nll_los  
s: 1051.6609  
Epoch 927/2500  
10/10 [=====] - 0s 917us/step - loss: 1051.3285 - nll_los  
s: 1051.3285  
Epoch 928/2500  
10/10 [=====] - 0s 823us/step - loss: 1051.0543 - nll_los  
s: 1051.0543  
Epoch 929/2500
```

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10/10 [=====] - 0s 831us/step - loss: 1050.8511 - nll_los  
s: 1050.8511  
Epoch 930/2500  
10/10 [=====] - 0s 882us/step - loss: 1050.9141 - nll_los  
s: 1050.9141  
Epoch 931/2500  
10/10 [=====] - 0s 819us/step - loss: 1048.8370 - nll_los  
s: 1048.8370  
Epoch 932/2500  
10/10 [=====] - 0s 792us/step - loss: 1048.0217 - nll_los  
s: 1048.0217  
Epoch 933/2500  
10/10 [=====] - 0s 895us/step - loss: 1054.0529 - nll_los  
s: 1054.0529  
Epoch 934/2500  
10/10 [=====] - 0s 877us/step - loss: 1052.8000 - nll_los  
s: 1052.8000  
Epoch 935/2500  
10/10 [=====] - 0s 924us/step - loss: 1052.5022 - nll_los  
s: 1052.5022  
Epoch 936/2500  
10/10 [=====] - 0s 855us/step - loss: 1053.5505 - nll_los  
s: 1053.5505  
Epoch 937/2500  
10/10 [=====] - 0s 876us/step - loss: 1055.0081 - nll_los  
s: 1055.0081  
Epoch 938/2500  
10/10 [=====] - 0s 765us/step - loss: 1049.8146 - nll_los  
s: 1049.8146  
Epoch 939/2500  
10/10 [=====] - 0s 911us/step - loss: 1050.5422 - nll_los  
s: 1050.5422  
Epoch 940/2500  
10/10 [=====] - 0s 821us/step - loss: 1049.6125 - nll_los  
s: 1049.6125  
Epoch 941/2500  
10/10 [=====] - 0s 868us/step - loss: 1050.6833 - nll_los  
s: 1050.6833  
Epoch 942/2500  
10/10 [=====] - 0s 788us/step - loss: 1052.6399 - nll_los  
s: 1052.6399  
Epoch 943/2500  
10/10 [=====] - 0s 846us/step - loss: 1052.1908 - nll_los  
s: 1052.1908  
Epoch 944/2500  
10/10 [=====] - 0s 805us/step - loss: 1053.0507 - nll_los  
s: 1053.0507  
Epoch 945/2500  
10/10 [=====] - 0s 857us/step - loss: 1051.4602 - nll_los  
s: 1051.4602  
Epoch 946/2500  
10/10 [=====] - 0s 775us/step - loss: 1047.9984 - nll_los  
s: 1047.9984  
Epoch 947/2500  
10/10 [=====] - 0s 832us/step - loss: 1049.5464 - nll_los  
s: 1049.5464  
Epoch 948/2500
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10/10 [=====] - 0s 873us/step - loss: 1052.1331 - nll_los  
s: 1052.1331  
Epoch 949/2500  
10/10 [=====] - 0s 949us/step - loss: 1049.1267 - nll_los  
s: 1049.1267  
Epoch 950/2500  
10/10 [=====] - 0s 917us/step - loss: 1047.2809 - nll_los  
s: 1047.2809  
Epoch 951/2500  
10/10 [=====] - 0s 903us/step - loss: 1051.9535 - nll_los  
s: 1051.9535  
Epoch 952/2500  
10/10 [=====] - 0s 739us/step - loss: 1051.2472 - nll_los  
s: 1051.2472  
Epoch 953/2500  
10/10 [=====] - 0s 848us/step - loss: 1053.0953 - nll_los  
s: 1053.0953  
Epoch 954/2500  
10/10 [=====] - 0s 815us/step - loss: 1053.9724 - nll_los  
s: 1053.9724  
Epoch 955/2500  
10/10 [=====] - 0s 873us/step - loss: 1053.3834 - nll_los  
s: 1053.3834  
Epoch 956/2500  
10/10 [=====] - 0s 865us/step - loss: 1052.6047 - nll_los  
s: 1052.6047  
Epoch 957/2500  
10/10 [=====] - 0s 800us/step - loss: 1050.7216 - nll_los  
s: 1050.7216  
Epoch 958/2500  
10/10 [=====] - 0s 838us/step - loss: 1049.4353 - nll_los  
s: 1049.4353  
Epoch 959/2500  
10/10 [=====] - 0s 821us/step - loss: 1050.7350 - nll_los  
s: 1050.7350  
Epoch 960/2500  
10/10 [=====] - 0s 916us/step - loss: 1052.2169 - nll_los  
s: 1052.2169  
Epoch 961/2500  
10/10 [=====] - 0s 864us/step - loss: 1049.2474 - nll_los  
s: 1049.2474  
Epoch 962/2500  
10/10 [=====] - 0s 844us/step - loss: 1052.1331 - nll_los  
s: 1052.1331  
Epoch 963/2500  
10/10 [=====] - 0s 839us/step - loss: 1052.3639 - nll_los  
s: 1052.3639  
Epoch 964/2500  
10/10 [=====] - 0s 929us/step - loss: 1052.6505 - nll_los  
s: 1052.6505  
Epoch 965/2500  
10/10 [=====] - 0s 819us/step - loss: 1051.4235 - nll_los  
s: 1051.4235  
Epoch 966/2500  
10/10 [=====] - 0s 909us/step - loss: 1054.6564 - nll_los  
s: 1054.6564  
Epoch 967/2500
```

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10/10 [=====] - 0s 857us/step - loss: 1049.4817 - nll_loss:  
s: 1049.4817  
Epoch 968/2500  
10/10 [=====] - 0s 1ms/step - loss: 1050.4226 - nll_loss:  
1050.4226  
Epoch 969/2500  
10/10 [=====] - 0s 884us/step - loss: 1051.6117 - nll_loss:  
s: 1051.6117  
Epoch 970/2500  
10/10 [=====] - 0s 844us/step - loss: 1052.3595 - nll_loss:  
s: 1052.3595  
Epoch 971/2500  
10/10 [=====] - 0s 861us/step - loss: 1051.7131 - nll_loss:  
s: 1051.7131  
Epoch 972/2500  
10/10 [=====] - 0s 823us/step - loss: 1052.0656 - nll_loss:  
s: 1052.0656  
Epoch 973/2500  
10/10 [=====] - 0s 915us/step - loss: 1051.4539 - nll_loss:  
s: 1051.4539  
Epoch 974/2500  
10/10 [=====] - 0s 778us/step - loss: 1052.9696 - nll_loss:  
s: 1052.9696  
Epoch 975/2500  
10/10 [=====] - 0s 791us/step - loss: 1051.0046 - nll_loss:  
s: 1051.0046  
Epoch 976/2500  
10/10 [=====] - 0s 837us/step - loss: 1051.2318 - nll_loss:  
s: 1051.2318  
Epoch 977/2500  
10/10 [=====] - 0s 592us/step - loss: 1051.2224 - nll_loss:  
s: 1051.2224  
Epoch 978/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.9595 - nll_loss:  
1051.9595  
Epoch 979/2500  
10/10 [=====] - 0s 757us/step - loss: 1048.8326 - nll_loss:  
s: 1048.8326  
Epoch 980/2500  
10/10 [=====] - 0s 791us/step - loss: 1050.0844 - nll_loss:  
s: 1050.0844  
Epoch 981/2500  
10/10 [=====] - 0s 798us/step - loss: 1050.5436 - nll_loss:  
s: 1050.5436  
Epoch 982/2500  
10/10 [=====] - 0s 853us/step - loss: 1050.6827 - nll_loss:  
s: 1050.6827  
Epoch 983/2500  
10/10 [=====] - 0s 845us/step - loss: 1050.4391 - nll_loss:  
s: 1050.4391  
Epoch 984/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.0944 - nll_loss:  
1051.0944  
Epoch 985/2500  
10/10 [=====] - 0s 918us/step - loss: 1052.6025 - nll_loss:  
s: 1052.6025  
Epoch 986/2500
```

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10/10 [=====] - 0s 855us/step - loss: 1052.0317 - nll_loss:  
s: 1052.0317  
Epoch 987/2500  
10/10 [=====] - 0s 834us/step - loss: 1051.0712 - nll_loss:  
s: 1051.0712  
Epoch 988/2500  
10/10 [=====] - 0s 854us/step - loss: 1050.8787 - nll_loss:  
s: 1050.8787  
Epoch 989/2500  
10/10 [=====] - 0s 892us/step - loss: 1049.7992 - nll_loss:  
s: 1049.7992  
Epoch 990/2500  
10/10 [=====] - 0s 944us/step - loss: 1052.2297 - nll_loss:  
s: 1052.2297  
Epoch 991/2500  
10/10 [=====] - 0s 790us/step - loss: 1051.1364 - nll_loss:  
s: 1051.1364  
Epoch 992/2500  
10/10 [=====] - 0s 834us/step - loss: 1050.9421 - nll_loss:  
s: 1050.9421  
Epoch 993/2500  
10/10 [=====] - 0s 752us/step - loss: 1047.8055 - nll_loss:  
s: 1047.8055  
Epoch 994/2500  
10/10 [=====] - 0s 933us/step - loss: 1048.4811 - nll_loss:  
s: 1048.4811  
Epoch 995/2500  
10/10 [=====] - 0s 899us/step - loss: 1049.8542 - nll_loss:  
s: 1049.8542  
Epoch 996/2500  
10/10 [=====] - 0s 894us/step - loss: 1050.8547 - nll_loss:  
s: 1050.8547  
Epoch 997/2500  
10/10 [=====] - 0s 819us/step - loss: 1050.4661 - nll_loss:  
s: 1050.4661  
Epoch 998/2500  
10/10 [=====] - 0s 762us/step - loss: 1048.7830 - nll_loss:  
s: 1048.7830  
Epoch 999/2500  
10/10 [=====] - 0s 740us/step - loss: 1048.4290 - nll_loss:  
s: 1048.4290  
Epoch 1000/2500  
10/10 [=====] - 0s 745us/step - loss: 1047.1716 - nll_loss:  
s: 1047.1716  
Epoch 1001/2500  
10/10 [=====] - 0s 853us/step - loss: 1047.0898 - nll_loss:  
s: 1047.0898  
Epoch 1002/2500  
10/10 [=====] - 0s 849us/step - loss: 1051.5887 - nll_loss:  
s: 1051.5887  
Epoch 1003/2500  
10/10 [=====] - 0s 830us/step - loss: 1049.5670 - nll_loss:  
s: 1049.5670  
Epoch 1004/2500  
10/10 [=====] - 0s 1ms/step - loss: 1049.8031 - nll_loss:  
s: 1049.8031  
Epoch 1005/2500
```

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10/10 [=====] - 0s 891us/step - loss: 1049.5212 - nll_los  
s: 1049.5212  
Epoch 1006/2500  
10/10 [=====] - 0s 904us/step - loss: 1048.8433 - nll_los  
s: 1048.8433  
Epoch 1007/2500  
10/10 [=====] - 0s 756us/step - loss: 1053.3519 - nll_los  
s: 1053.3519  
Epoch 1008/2500  
10/10 [=====] - 0s 841us/step - loss: 1051.9891 - nll_los  
s: 1051.9891  
Epoch 1009/2500  
10/10 [=====] - 0s 814us/step - loss: 1051.9280 - nll_los  
s: 1051.9280  
Epoch 1010/2500  
10/10 [=====] - 0s 839us/step - loss: 1052.8456 - nll_los  
s: 1052.8456  
Epoch 1011/2500  
10/10 [=====] - 0s 815us/step - loss: 1051.7046 - nll_los  
s: 1051.7046  
Epoch 1012/2500  
10/10 [=====] - 0s 904us/step - loss: 1052.2617 - nll_los  
s: 1052.2617  
Epoch 1013/2500  
10/10 [=====] - 0s 759us/step - loss: 1051.5645 - nll_los  
s: 1051.5645  
Epoch 1014/2500  
10/10 [=====] - 0s 819us/step - loss: 1051.0990 - nll_los  
s: 1051.0990  
Epoch 1015/2500  
10/10 [=====] - 0s 735us/step - loss: 1049.9333 - nll_los  
s: 1049.9333  
Epoch 1016/2500  
10/10 [=====] - 0s 839us/step - loss: 1048.4781 - nll_los  
s: 1048.4781  
Epoch 1017/2500  
10/10 [=====] - 0s 770us/step - loss: 1049.5525 - nll_los  
s: 1049.5525  
Epoch 1018/2500  
10/10 [=====] - 0s 740us/step - loss: 1052.8199 - nll_los  
s: 1052.8199  
Epoch 1019/2500  
10/10 [=====] - 0s 843us/step - loss: 1050.2932 - nll_los  
s: 1050.2932  
Epoch 1020/2500  
10/10 [=====] - 0s 894us/step - loss: 1046.9070 - nll_los  
s: 1046.9070  
Epoch 1021/2500  
10/10 [=====] - 0s 856us/step - loss: 1051.6531 - nll_los  
s: 1051.6531  
Epoch 1022/2500  
10/10 [=====] - 0s 898us/step - loss: 1052.0823 - nll_los  
s: 1052.0823  
Epoch 1023/2500  
10/10 [=====] - 0s 909us/step - loss: 1050.2848 - nll_los  
s: 1050.2848  
Epoch 1024/2500
```

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10/10 [=====] - 0s 938us/step - loss: 1052.4370 - nll_los  
s: 1052.4370  
Epoch 1025/2500  
10/10 [=====] - 0s 843us/step - loss: 1053.5117 - nll_los  
s: 1053.5117  
Epoch 1026/2500  
10/10 [=====] - 0s 746us/step - loss: 1054.4283 - nll_los  
s: 1054.4283  
Epoch 1027/2500  
10/10 [=====] - 0s 939us/step - loss: 1052.7170 - nll_los  
s: 1052.7170  
Epoch 1028/2500  
10/10 [=====] - 0s 787us/step - loss: 1054.3951 - nll_los  
s: 1054.3951  
Epoch 1029/2500  
10/10 [=====] - 0s 806us/step - loss: 1048.3732 - nll_los  
s: 1048.3732  
Epoch 1030/2500  
10/10 [=====] - 0s 860us/step - loss: 1049.8898 - nll_los  
s: 1049.8898  
Epoch 1031/2500  
10/10 [=====] - 0s 827us/step - loss: 1050.8722 - nll_los  
s: 1050.8722  
Epoch 1032/2500  
10/10 [=====] - 0s 861us/step - loss: 1047.7972 - nll_los  
s: 1047.7972  
Epoch 1033/2500  
10/10 [=====] - 0s 732us/step - loss: 1053.8563 - nll_los  
s: 1053.8563  
Epoch 1034/2500  
10/10 [=====] - 0s 1ms/step - loss: 1050.4840 - nll_los:  
1050.4840  
Epoch 1035/2500  
10/10 [=====] - 0s 964us/step - loss: 1053.3793 - nll_los  
s: 1053.3793  
Epoch 1036/2500  
10/10 [=====] - 0s 914us/step - loss: 1052.1689 - nll_los  
s: 1052.1689  
Epoch 1037/2500  
10/10 [=====] - 0s 857us/step - loss: 1054.6177 - nll_los  
s: 1054.6177  
Epoch 1038/2500  
10/10 [=====] - 0s 835us/step - loss: 1051.0486 - nll_los  
s: 1051.0486  
Epoch 1039/2500
```

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10/10 [=====] - 0s 784us/step - loss: 1052.4972 - nll_los  
s: 1052.4972  
Epoch 1040/2500  
10/10 [=====] - 0s 849us/step - loss: 1053.3240 - nll_los  
s: 1053.3240  
Epoch 1041/2500  
10/10 [=====] - 0s 754us/step - loss: 1051.8867 - nll_los  
s: 1051.8867  
Epoch 1042/2500  
10/10 [=====] - 0s 852us/step - loss: 1053.3142 - nll_los  
s: 1053.3142  
Epoch 1043/2500  
10/10 [=====] - 0s 872us/step - loss: 1053.7089 - nll_los  
s: 1053.7089  
Epoch 1044/2500  
10/10 [=====] - 0s 948us/step - loss: 1050.8120 - nll_los  
s: 1050.8120  
Epoch 1045/2500  
10/10 [=====] - 0s 882us/step - loss: 1050.3259 - nll_los  
s: 1050.3259  
Epoch 1046/2500  
10/10 [=====] - 0s 811us/step - loss: 1048.9169 - nll_los  
s: 1048.9169  
Epoch 1047/2500  
10/10 [=====] - 0s 835us/step - loss: 1050.6205 - nll_los  
s: 1050.6205  
Epoch 1048/2500  
10/10 [=====] - 0s 813us/step - loss: 1049.5287 - nll_los  
s: 1049.5287  
Epoch 1049/2500  
10/10 [=====] - 0s 853us/step - loss: 1049.9561 - nll_los  
s: 1049.9561  
Epoch 1050/2500  
10/10 [=====] - 0s 807us/step - loss: 1050.3269 - nll_los  
s: 1050.3269  
Epoch 1051/2500  
10/10 [=====] - 0s 857us/step - loss: 1050.0188 - nll_los  
s: 1050.0188  
Epoch 1052/2500  
10/10 [=====] - 0s 833us/step - loss: 1052.0999 - nll_los  
s: 1052.0999  
Epoch 1053/2500  
10/10 [=====] - 0s 829us/step - loss: 1048.9067 - nll_los  
s: 1048.9067  
Epoch 1054/2500  
10/10 [=====] - 0s 875us/step - loss: 1049.8040 - nll_los  
s: 1049.8040  
Epoch 1055/2500  
10/10 [=====] - 0s 742us/step - loss: 1049.7434 - nll_los  
s: 1049.7434  
Epoch 1056/2500  
10/10 [=====] - 0s 910us/step - loss: 1047.3865 - nll_los  
s: 1047.3865  
Epoch 1057/2500  
10/10 [=====] - 0s 892us/step - loss: 1050.0546 - nll_los  
s: 1050.0546  
Epoch 1058/2500
```

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10/10 [=====] - 0s 1ms/step - loss: 1051.1803 - nll_loss:  
1051.1803  
Epoch 1059/2500  
10/10 [=====] - 0s 910us/step - loss: 1051.1617 - nll_los  
s: 1051.1617  
Epoch 1060/2500  
10/10 [=====] - 0s 882us/step - loss: 1049.1333 - nll_los  
s: 1049.1333  
Epoch 1061/2500  
10/10 [=====] - 0s 844us/step - loss: 1052.7639 - nll_los  
s: 1052.7639  
Epoch 1062/2500  
10/10 [=====] - 0s 877us/step - loss: 1048.9117 - nll_los  
s: 1048.9117  
Epoch 1063/2500  
10/10 [=====] - 0s 725us/step - loss: 1049.0658 - nll_los  
s: 1049.0658  
Epoch 1064/2500  
10/10 [=====] - 0s 789us/step - loss: 1050.8931 - nll_los  
s: 1050.8931  
Epoch 1065/2500  
10/10 [=====] - 0s 831us/step - loss: 1049.2039 - nll_los  
s: 1049.2039  
Epoch 1066/2500  
10/10 [=====] - 0s 738us/step - loss: 1048.7548 - nll_los  
s: 1048.7548  
Epoch 1067/2500  
10/10 [=====] - 0s 912us/step - loss: 1050.6267 - nll_los  
s: 1050.6267  
Epoch 1068/2500  
10/10 [=====] - 0s 886us/step - loss: 1051.6138 - nll_los  
s: 1051.6138  
Epoch 1069/2500  
10/10 [=====] - 0s 836us/step - loss: 1050.2213 - nll_los  
s: 1050.2213  
Epoch 1070/2500  
10/10 [=====] - 0s 841us/step - loss: 1050.7349 - nll_los  
s: 1050.7349  
Epoch 1071/2500  
10/10 [=====] - 0s 841us/step - loss: 1051.8042 - nll_los  
s: 1051.8042  
Epoch 1072/2500  
10/10 [=====] - 0s 898us/step - loss: 1049.9283 - nll_los  
s: 1049.9283  
Epoch 1073/2500  
10/10 [=====] - 0s 898us/step - loss: 1049.8215 - nll_los  
s: 1049.8215  
Epoch 1074/2500  
10/10 [=====] - 0s 916us/step - loss: 1051.1873 - nll_los  
s: 1051.1873  
Epoch 1075/2500  
10/10 [=====] - 0s 792us/step - loss: 1048.5571 - nll_los  
s: 1048.5571  
Epoch 1076/2500  
10/10 [=====] - 0s 767us/step - loss: 1049.9562 - nll_los  
s: 1049.9562  
Epoch 1077/2500
```

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10/10 [=====] - 0s 839us/step - loss: 1051.6195 - nll_los  
s: 1051.6195  
Epoch 1078/2500  
10/10 [=====] - 0s 844us/step - loss: 1051.8118 - nll_los  
s: 1051.8118  
Epoch 1079/2500  
10/10 [=====] - 0s 725us/step - loss: 1052.9677 - nll_los  
s: 1052.9677  
Epoch 1080/2500  
10/10 [=====] - 0s 835us/step - loss: 1050.3895 - nll_los  
s: 1050.3895  
Epoch 1081/2500  
10/10 [=====] - 0s 706us/step - loss: 1050.7539 - nll_los  
s: 1050.7539  
Epoch 1082/2500  
10/10 [=====] - 0s 773us/step - loss: 1049.6755 - nll_los  
s: 1049.6755  
Epoch 1083/2500  
10/10 [=====] - 0s 792us/step - loss: 1046.7084 - nll_los  
s: 1046.7084  
Epoch 1084/2500  
10/10 [=====] - 0s 854us/step - loss: 1048.9691 - nll_los  
s: 1048.9691  
Epoch 1085/2500  
10/10 [=====] - 0s 893us/step - loss: 1047.4447 - nll_los  
s: 1047.4447  
Epoch 1086/2500  
10/10 [=====] - 0s 820us/step - loss: 1051.7456 - nll_los  
s: 1051.7456  
Epoch 1087/2500  
10/10 [=====] - 0s 816us/step - loss: 1050.2062 - nll_los  
s: 1050.2062  
Epoch 1088/2500  
10/10 [=====] - 0s 904us/step - loss: 1049.4572 - nll_los  
s: 1049.4572  
Epoch 1089/2500  
10/10 [=====] - 0s 859us/step - loss: 1050.8340 - nll_los  
s: 1050.8340  
Epoch 1090/2500  
10/10 [=====] - 0s 770us/step - loss: 1050.7122 - nll_los  
s: 1050.7122  
Epoch 1091/2500  
10/10 [=====] - 0s 823us/step - loss: 1052.2070 - nll_los  
s: 1052.2070  
Epoch 1092/2500  
10/10 [=====] - 0s 883us/step - loss: 1050.0442 - nll_los  
s: 1050.0442  
Epoch 1093/2500  
10/10 [=====] - 0s 900us/step - loss: 1050.6129 - nll_los  
s: 1050.6129  
Epoch 1094/2500  
10/10 [=====] - 0s 921us/step - loss: 1048.4409 - nll_los  
s: 1048.4409  
Epoch 1095/2500  
10/10 [=====] - 0s 854us/step - loss: 1049.4865 - nll_los  
s: 1049.4865  
Epoch 1096/2500
```

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10/10 [=====] - 0s 795us/step - loss: 1048.2737 - nll_los  
s: 1048.2737  
Epoch 1097/2500  
10/10 [=====] - 0s 863us/step - loss: 1052.9688 - nll_los  
s: 1052.9688  
Epoch 1098/2500  
10/10 [=====] - 0s 936us/step - loss: 1052.2527 - nll_los  
s: 1052.2527  
Epoch 1099/2500  
10/10 [=====] - 0s 809us/step - loss: 1051.3546 - nll_los  
s: 1051.3546  
Epoch 1100/2500  
10/10 [=====] - 0s 730us/step - loss: 1047.2148 - nll_los  
s: 1047.2148  
Epoch 1101/2500  
10/10 [=====] - 0s 933us/step - loss: 1050.7878 - nll_los  
s: 1050.7878  
Epoch 1102/2500  
10/10 [=====] - 0s 907us/step - loss: 1052.4440 - nll_los  
s: 1052.4440  
Epoch 1103/2500  
10/10 [=====] - 0s 883us/step - loss: 1052.3831 - nll_los  
s: 1052.3831  
Epoch 1104/2500  
10/10 [=====] - 0s 768us/step - loss: 1053.5016 - nll_los  
s: 1053.5016  
Epoch 1105/2500  
10/10 [=====] - 0s 752us/step - loss: 1049.8418 - nll_los  
s: 1049.8418  
Epoch 1106/2500  
10/10 [=====] - 0s 790us/step - loss: 1050.4374 - nll_los  
s: 1050.4374  
Epoch 1107/2500  
10/10 [=====] - 0s 850us/step - loss: 1049.5500 - nll_los  
s: 1049.5500  
Epoch 1108/2500  
10/10 [=====] - 0s 1ms/step - loss: 1047.6018 - nll_los:  
1047.6018  
Epoch 1109/2500  
10/10 [=====] - 0s 894us/step - loss: 1050.3051 - nll_los  
s: 1050.3051  
Epoch 1110/2500  
10/10 [=====] - 0s 856us/step - loss: 1050.8442 - nll_los  
s: 1050.8442  
Epoch 1111/2500  
10/10 [=====] - 0s 871us/step - loss: 1048.4727 - nll_los  
s: 1048.4727  
Epoch 1112/2500  
10/10 [=====] - 0s 835us/step - loss: 1049.8098 - nll_los  
s: 1049.8098
```

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Epoch 1113/2500
10/10 [=====] - 0s 931us/step - loss: 1052.3103 - nll_loss: 1052.3103
Epoch 1114/2500
10/10 [=====] - 0s 876us/step - loss: 1050.1790 - nll_loss: 1050.1790
Epoch 1115/2500
10/10 [=====] - 0s 865us/step - loss: 1052.4044 - nll_loss: 1052.4044
Epoch 1116/2500
10/10 [=====] - 0s 788us/step - loss: 1050.0369 - nll_loss: 1050.0369
Epoch 1117/2500
10/10 [=====] - 0s 818us/step - loss: 1047.4724 - nll_loss: 1047.4724
Epoch 1118/2500
10/10 [=====] - 0s 875us/step - loss: 1048.6907 - nll_loss: 1048.6907
Epoch 1119/2500
10/10 [=====] - 0s 747us/step - loss: 1050.5258 - nll_loss: 1050.5258
Epoch 1120/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.1727 - nll_loss: 1049.1727
Epoch 1121/2500
10/10 [=====] - 0s 833us/step - loss: 1046.9149 - nll_loss: 1046.9149
Epoch 1122/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.4575 - nll_loss: 1048.4575
Epoch 1123/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.7450 - nll_loss: 1048.7450
Epoch 1124/2500
10/10 [=====] - 0s 908us/step - loss: 1052.2029 - nll_loss: 1052.2029
Epoch 1125/2500
10/10 [=====] - 0s 874us/step - loss: 1051.3448 - nll_loss: 1051.3448
Epoch 1126/2500
10/10 [=====] - 0s 770us/step - loss: 1049.3613 - nll_loss: 1049.3613
Epoch 1127/2500
10/10 [=====] - 0s 759us/step - loss: 1050.3859 - nll_loss: 1050.3859
Epoch 1128/2500
10/10 [=====] - 0s 864us/step - loss: 1050.0540 - nll_loss: 1050.0540
Epoch 1129/2500
10/10 [=====] - 0s 1ms/step - loss: 1050.5538 - nll_loss: 1050.5538
Epoch 1130/2500
10/10 [=====] - 0s 981us/step - loss: 1050.5872 - nll_loss: 1050.5872
Epoch 1131/2500
10/10 [=====] - 0s 878us/step - loss: 1052.2545 - nll_loss: 1052.2545
```

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Epoch 1132/2500
10/10 [=====] - 0s 796us/step - loss: 1051.6636 - nll_los
s: 1051.6636
Epoch 1133/2500
10/10 [=====] - 0s 889us/step - loss: 1047.2390 - nll_los
s: 1047.2390
Epoch 1134/2500
10/10 [=====] - 0s 851us/step - loss: 1051.6003 - nll_los
s: 1051.6003
Epoch 1135/2500
10/10 [=====] - 0s 838us/step - loss: 1053.7023 - nll_los
s: 1053.7023
Epoch 1136/2500
10/10 [=====] - 0s 884us/step - loss: 1052.0828 - nll_los
s: 1052.0828
Epoch 1137/2500
10/10 [=====] - 0s 843us/step - loss: 1051.6082 - nll_los
s: 1051.6082
Epoch 1138/2500
10/10 [=====] - 0s 728us/step - loss: 1054.1117 - nll_los
s: 1054.1117
Epoch 1139/2500
10/10 [=====] - 0s 826us/step - loss: 1049.3708 - nll_los
s: 1049.3708
Epoch 1140/2500
10/10 [=====] - 0s 897us/step - loss: 1050.9528 - nll_los
s: 1050.9528
Epoch 1141/2500
10/10 [=====] - 0s 881us/step - loss: 1046.5605 - nll_los
s: 1046.5605
Epoch 1142/2500
10/10 [=====] - 0s 734us/step - loss: 1049.5258 - nll_los
s: 1049.5258
Epoch 1143/2500
10/10 [=====] - 0s 816us/step - loss: 1050.8938 - nll_los
s: 1050.8938
Epoch 1144/2500
10/10 [=====] - 0s 856us/step - loss: 1047.6439 - nll_los
s: 1047.6439
Epoch 1145/2500
10/10 [=====] - 0s 684us/step - loss: 1048.4816 - nll_los
s: 1048.4816
Epoch 1146/2500
10/10 [=====] - 0s 889us/step - loss: 1051.5033 - nll_los
s: 1051.5033
Epoch 1147/2500
10/10 [=====] - 0s 885us/step - loss: 1051.1132 - nll_los
s: 1051.1132
Epoch 1148/2500
10/10 [=====] - 0s 954us/step - loss: 1049.6969 - nll_los
s: 1049.6969
Epoch 1149/2500
10/10 [=====] - 0s 810us/step - loss: 1048.2976 - nll_los
s: 1048.2976
Epoch 1150/2500
10/10 [=====] - 0s 856us/step - loss: 1051.9287 - nll_los
s: 1051.9287
```

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Epoch 1151/2500
10/10 [=====] - 0s 848us/step - loss: 1052.9661 - nll_los
s: 1052.9661
Epoch 1152/2500
10/10 [=====] - 0s 792us/step - loss: 1049.3229 - nll_los
s: 1049.3229
Epoch 1153/2500
10/10 [=====] - 0s 848us/step - loss: 1051.6954 - nll_los
s: 1051.6954
Epoch 1154/2500
10/10 [=====] - 0s 805us/step - loss: 1053.7831 - nll_los
s: 1053.7831
Epoch 1155/2500
10/10 [=====] - 0s 761us/step - loss: 1050.9850 - nll_los
s: 1050.9850
Epoch 1156/2500
10/10 [=====] - 0s 870us/step - loss: 1054.7753 - nll_los
s: 1054.7753
Epoch 1157/2500
10/10 [=====] - 0s 908us/step - loss: 1056.0465 - nll_los
s: 1056.0465
Epoch 1158/2500
10/10 [=====] - 0s 866us/step - loss: 1052.4824 - nll_los
s: 1052.4824
Epoch 1159/2500
10/10 [=====] - 0s 876us/step - loss: 1049.3798 - nll_los
s: 1049.3798
Epoch 1160/2500
10/10 [=====] - 0s 909us/step - loss: 1048.1768 - nll_los
s: 1048.1768
Epoch 1161/2500
10/10 [=====] - 0s 791us/step - loss: 1051.0010 - nll_los
s: 1051.0010
Epoch 1162/2500
10/10 [=====] - 0s 909us/step - loss: 1047.8997 - nll_los
s: 1047.8997
Epoch 1163/2500
10/10 [=====] - 0s 907us/step - loss: 1048.3455 - nll_los
s: 1048.3455
Epoch 1164/2500
10/10 [=====] - 0s 914us/step - loss: 1048.8601 - nll_los
s: 1048.8601
Epoch 1165/2500
10/10 [=====] - 0s 887us/step - loss: 1047.9094 - nll_los
s: 1047.9094
Epoch 1166/2500
10/10 [=====] - 0s 807us/step - loss: 1049.3259 - nll_los
s: 1049.3259
Epoch 1167/2500
10/10 [=====] - 0s 847us/step - loss: 1053.1511 - nll_los
s: 1053.1511
Epoch 1168/2500
10/10 [=====] - 0s 869us/step - loss: 1049.8053 - nll_los
s: 1049.8053
Epoch 1169/2500
10/10 [=====] - 0s 816us/step - loss: 1049.2667 - nll_los
s: 1049.2667
```

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Epoch 1170/2500
10/10 [=====] - 0s 803us/step - loss: 1049.8136 - nll_loss: 1049.8136
Epoch 1171/2500
10/10 [=====] - 0s 853us/step - loss: 1046.9302 - nll_loss: 1046.9302
Epoch 1172/2500
10/10 [=====] - 0s 995us/step - loss: 1050.0513 - nll_loss: 1050.0513
Epoch 1173/2500
10/10 [=====] - 0s 811us/step - loss: 1049.8083 - nll_loss: 1049.8083
Epoch 1174/2500
10/10 [=====] - 0s 809us/step - loss: 1051.6831 - nll_loss: 1051.6831
Epoch 1175/2500
10/10 [=====] - 0s 763us/step - loss: 1050.7288 - nll_loss: 1050.7288
Epoch 1176/2500
10/10 [=====] - 0s 828us/step - loss: 1048.3895 - nll_loss: 1048.3895
Epoch 1177/2500
10/10 [=====] - 0s 867us/step - loss: 1051.0247 - nll_loss: 1051.0247
Epoch 1178/2500
10/10 [=====] - 0s 876us/step - loss: 1051.2520 - nll_loss: 1051.2520
Epoch 1179/2500
10/10 [=====] - 0s 862us/step - loss: 1052.9181 - nll_loss: 1052.9181
Epoch 1180/2500
10/10 [=====] - 0s 883us/step - loss: 1050.2588 - nll_loss: 1050.2588
Epoch 1181/2500
10/10 [=====] - 0s 867us/step - loss: 1047.2883 - nll_loss: 1047.2883
Epoch 1182/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.7552 - nll_loss: 1049.7552
Epoch 1183/2500
10/10 [=====] - 0s 884us/step - loss: 1050.4031 - nll_loss: 1050.4031
Epoch 1184/2500
10/10 [=====] - 0s 839us/step - loss: 1052.4476 - nll_loss: 1052.4476
Epoch 1185/2500
10/10 [=====] - 0s 816us/step - loss: 1049.7610 - nll_loss: 1049.7610
Epoch 1186/2500
10/10 [=====] - 0s 829us/step - loss: 1047.0487 - nll_loss: 1047.0487
Epoch 1187/2500
10/10 [=====] - 0s 893us/step - loss: 1046.4296 - nll_loss: 1046.4296
Epoch 1188/2500
10/10 [=====] - 0s 810us/step - loss: 1045.7009 - nll_loss: 1045.7009
```

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Epoch 1189/2500
10/10 [=====] - 0s 895us/step - loss: 1049.3411 - nll_loss: 1049.3411
Epoch 1190/2500
10/10 [=====] - 0s 783us/step - loss: 1049.1838 - nll_loss: 1049.1838
Epoch 1191/2500
10/10 [=====] - 0s 953us/step - loss: 1050.4822 - nll_loss: 1050.4822
Epoch 1192/2500
10/10 [=====] - 0s 729us/step - loss: 1047.8649 - nll_loss: 1047.8649
Epoch 1193/2500
10/10 [=====] - 0s 936us/step - loss: 1049.8766 - nll_loss: 1049.8766
Epoch 1194/2500
10/10 [=====] - 0s 832us/step - loss: 1048.8254 - nll_loss: 1048.8254
Epoch 1195/2500
10/10 [=====] - 0s 891us/step - loss: 1050.5674 - nll_loss: 1050.5674
Epoch 1196/2500
10/10 [=====] - 0s 833us/step - loss: 1048.9182 - nll_loss: 1048.9182
Epoch 1197/2500
10/10 [=====] - 0s 835us/step - loss: 1050.9294 - nll_loss: 1050.9294
Epoch 1198/2500
10/10 [=====] - 0s 818us/step - loss: 1049.6702 - nll_loss: 1049.6702
Epoch 1199/2500
10/10 [=====] - 0s 870us/step - loss: 1050.4050 - nll_loss: 1050.4050
Epoch 1200/2500
10/10 [=====] - 0s 938us/step - loss: 1051.9828 - nll_loss: 1051.9828
Epoch 1201/2500
10/10 [=====] - 0s 897us/step - loss: 1049.7736 - nll_loss: 1049.7736
Epoch 1202/2500
10/10 [=====] - 0s 894us/step - loss: 1046.5645 - nll_loss: 1046.5645
Epoch 1203/2500
10/10 [=====] - 0s 778us/step - loss: 1051.4730 - nll_loss: 1051.4730
Epoch 1204/2500
10/10 [=====] - 0s 739us/step - loss: 1047.4058 - nll_loss: 1047.4058
Epoch 1205/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.4010 - nll_loss: 1048.4010
Epoch 1206/2500
10/10 [=====] - 0s 815us/step - loss: 1048.0383 - nll_loss: 1048.0383
Epoch 1207/2500
10/10 [=====] - 0s 872us/step - loss: 1049.3785 - nll_loss: 1049.3785
```

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Epoch 1208/2500
10/10 [=====] - 0s 776us/step - loss: 1046.8594 - nll_los
s: 1046.8594
Epoch 1209/2500
10/10 [=====] - 0s 869us/step - loss: 1053.1387 - nll_los
s: 1053.1387
Epoch 1210/2500
10/10 [=====] - 0s 881us/step - loss: 1051.5851 - nll_los
s: 1051.5851
Epoch 1211/2500
10/10 [=====] - 0s 765us/step - loss: 1051.8724 - nll_los
s: 1051.8724
Epoch 1212/2500
10/10 [=====] - 0s 766us/step - loss: 1051.5762 - nll_los
s: 1051.5762
Epoch 1213/2500
10/10 [=====] - 0s 788us/step - loss: 1050.2428 - nll_los
s: 1050.2428
Epoch 1214/2500
10/10 [=====] - 0s 778us/step - loss: 1047.6583 - nll_los
s: 1047.6583
Epoch 1215/2500
10/10 [=====] - 0s 849us/step - loss: 1050.2466 - nll_los
s: 1050.2466
Epoch 1216/2500
10/10 [=====] - 0s 779us/step - loss: 1050.8313 - nll_los
s: 1050.8313
Epoch 1217/2500
10/10 [=====] - 0s 741us/step - loss: 1051.6995 - nll_los
s: 1051.6995
Epoch 1218/2500
10/10 [=====] - 0s 867us/step - loss: 1054.1100 - nll_los
s: 1054.1100
Epoch 1219/2500
10/10 [=====] - 0s 800us/step - loss: 1052.1678 - nll_los
s: 1052.1678
Epoch 1220/2500
10/10 [=====] - 0s 846us/step - loss: 1052.9287 - nll_los
s: 1052.9287
Epoch 1221/2500
10/10 [=====] - 0s 798us/step - loss: 1049.8745 - nll_los
s: 1049.8745
Epoch 1222/2500
10/10 [=====] - 0s 950us/step - loss: 1052.5930 - nll_los
s: 1052.5930
Epoch 1223/2500
10/10 [=====] - 0s 775us/step - loss: 1048.9822 - nll_los
s: 1048.9822
Epoch 1224/2500
10/10 [=====] - 0s 912us/step - loss: 1048.2896 - nll_los
s: 1048.2896
Epoch 1225/2500
10/10 [=====] - 0s 825us/step - loss: 1049.3809 - nll_los
s: 1049.3809
Epoch 1226/2500
10/10 [=====] - 0s 935us/step - loss: 1046.3606 - nll_los
s: 1046.3606
```

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Epoch 1227/2500
10/10 [=====] - 0s 856us/step - loss: 1052.4906 - nll_los
s: 1052.4906
Epoch 1228/2500
10/10 [=====] - 0s 879us/step - loss: 1048.2830 - nll_los
s: 1048.2830
Epoch 1229/2500
10/10 [=====] - 0s 912us/step - loss: 1048.6517 - nll_los
s: 1048.6517
Epoch 1230/2500
10/10 [=====] - 0s 827us/step - loss: 1048.4362 - nll_los
s: 1048.4362
Epoch 1231/2500
10/10 [=====] - 0s 817us/step - loss: 1049.0299 - nll_los
s: 1049.0299
Epoch 1232/2500
10/10 [=====] - 0s 871us/step - loss: 1049.7162 - nll_los
s: 1049.7162
Epoch 1233/2500
10/10 [=====] - 0s 878us/step - loss: 1048.6794 - nll_los
s: 1048.6794
Epoch 1234/2500
10/10 [=====] - 0s 939us/step - loss: 1050.6177 - nll_los
s: 1050.6177
Epoch 1235/2500
10/10 [=====] - 0s 794us/step - loss: 1046.9280 - nll_los
s: 1046.9280
Epoch 1236/2500
10/10 [=====] - 0s 890us/step - loss: 1047.2190 - nll_los
s: 1047.2190
Epoch 1237/2500
10/10 [=====] - 0s 806us/step - loss: 1049.8958 - nll_los
s: 1049.8958
Epoch 1238/2500
10/10 [=====] - 0s 800us/step - loss: 1048.9939 - nll_los
s: 1048.9939
Epoch 1239/2500
10/10 [=====] - 0s 864us/step - loss: 1050.0016 - nll_los
s: 1050.0016
Epoch 1240/2500
10/10 [=====] - 0s 843us/step - loss: 1045.9183 - nll_los
s: 1045.9183
Epoch 1241/2500
10/10 [=====] - 0s 813us/step - loss: 1047.2035 - nll_los
s: 1047.2035
Epoch 1242/2500
10/10 [=====] - 0s 772us/step - loss: 1048.8828 - nll_los
s: 1048.8828
Epoch 1243/2500
10/10 [=====] - 0s 839us/step - loss: 1047.0525 - nll_los
s: 1047.0525
Epoch 1244/2500
10/10 [=====] - 0s 836us/step - loss: 1046.4766 - nll_los
s: 1046.4766
Epoch 1245/2500
10/10 [=====] - 0s 870us/step - loss: 1051.9458 - nll_los
s: 1051.9458
```

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Epoch 1246/2500
10/10 [=====] - 0s 1ms/step - loss: 1053.1367 - nll_loss:
1053.1367
Epoch 1247/2500
10/10 [=====] - 0s 879us/step - loss: 1050.3866 - nll_los
s: 1050.3866
Epoch 1248/2500
10/10 [=====] - 0s 818us/step - loss: 1049.0730 - nll_los
s: 1049.0730
Epoch 1249/2500
10/10 [=====] - 0s 798us/step - loss: 1048.9993 - nll_los
s: 1048.9993
Epoch 1250/2500
10/10 [=====] - 0s 876us/step - loss: 1048.7694 - nll_los
s: 1048.7694
Epoch 1251/2500
10/10 [=====] - 0s 810us/step - loss: 1052.6990 - nll_los
s: 1052.6990
Epoch 1252/2500
10/10 [=====] - 0s 860us/step - loss: 1050.5891 - nll_los
s: 1050.5891
Epoch 1253/2500
10/10 [=====] - 0s 962us/step - loss: 1049.5409 - nll_los
s: 1049.5409
Epoch 1254/2500
10/10 [=====] - 0s 981us/step - loss: 1049.1005 - nll_los
s: 1049.1005
Epoch 1255/2500
10/10 [=====] - 0s 797us/step - loss: 1048.0170 - nll_los
s: 1048.0170
Epoch 1256/2500
10/10 [=====] - 0s 869us/step - loss: 1047.7507 - nll_los
s: 1047.7507
Epoch 1257/2500
10/10 [=====] - 0s 787us/step - loss: 1046.7559 - nll_los
s: 1046.7559
Epoch 1258/2500
10/10 [=====] - 0s 938us/step - loss: 1050.4021 - nll_los
s: 1050.4021
Epoch 1259/2500
10/10 [=====] - 0s 864us/step - loss: 1050.3120 - nll_los
s: 1050.3120
```

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Epoch 1260/2500
10/10 [=====] - 0s 836us/step - loss: 1048.4366 - nll_los
s: 1048.4366
Epoch 1261/2500
10/10 [=====] - 0s 743us/step - loss: 1051.1693 - nll_los
s: 1051.1693
Epoch 1262/2500
10/10 [=====] - 0s 775us/step - loss: 1049.3201 - nll_los
s: 1049.3201
Epoch 1263/2500
10/10 [=====] - 0s 898us/step - loss: 1049.1384 - nll_los
s: 1049.1384
Epoch 1264/2500
10/10 [=====] - 0s 786us/step - loss: 1051.4220 - nll_los
s: 1051.4220
Epoch 1265/2500
10/10 [=====] - 0s 821us/step - loss: 1048.2131 - nll_los
s: 1048.2131
Epoch 1266/2500
10/10 [=====] - 0s 846us/step - loss: 1047.2117 - nll_los
s: 1047.2117
Epoch 1267/2500
10/10 [=====] - 0s 968us/step - loss: 1049.3698 - nll_los
s: 1049.3698
Epoch 1268/2500
10/10 [=====] - 0s 744us/step - loss: 1050.7673 - nll_los
s: 1050.7673
Epoch 1269/2500
10/10 [=====] - 0s 857us/step - loss: 1051.0452 - nll_los
s: 1051.0452
Epoch 1270/2500
10/10 [=====] - 0s 842us/step - loss: 1050.0115 - nll_los
s: 1050.0115
Epoch 1271/2500
10/10 [=====] - 0s 761us/step - loss: 1047.4663 - nll_los
s: 1047.4663
Epoch 1272/2500
10/10 [=====] - 0s 758us/step - loss: 1049.6559 - nll_los
s: 1049.6559
Epoch 1273/2500
10/10 [=====] - 0s 849us/step - loss: 1049.7667 - nll_los
s: 1049.7667
Epoch 1274/2500
10/10 [=====] - 0s 940us/step - loss: 1050.9147 - nll_los
s: 1050.9147
Epoch 1275/2500
10/10 [=====] - 0s 830us/step - loss: 1050.5256 - nll_los
s: 1050.5256
Epoch 1276/2500
10/10 [=====] - 0s 812us/step - loss: 1050.9480 - nll_los
s: 1050.9480
Epoch 1277/2500
10/10 [=====] - 0s 733us/step - loss: 1053.2731 - nll_los
s: 1053.2731
Epoch 1278/2500
10/10 [=====] - 0s 859us/step - loss: 1054.9333 - nll_los
s: 1054.9333
```

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Epoch 1279/2500
10/10 [=====] - 0s 850us/step - loss: 1054.9122 - nll_loss: 1054.9122
Epoch 1280/2500
10/10 [=====] - 0s 1ms/step - loss: 1053.0266 - nll_loss: 1053.0266
Epoch 1281/2500
10/10 [=====] - 0s 843us/step - loss: 1050.9199 - nll_loss: 1050.9199
Epoch 1282/2500
10/10 [=====] - 0s 886us/step - loss: 1050.9883 - nll_loss: 1050.9883
Epoch 1283/2500
10/10 [=====] - 0s 857us/step - loss: 1049.1190 - nll_loss: 1049.1190
Epoch 1284/2500
10/10 [=====] - 0s 728us/step - loss: 1050.0857 - nll_loss: 1050.0857
Epoch 1285/2500
10/10 [=====] - 0s 833us/step - loss: 1047.6782 - nll_loss: 1047.6782
Epoch 1286/2500
10/10 [=====] - 0s 934us/step - loss: 1047.9287 - nll_loss: 1047.9287
Epoch 1287/2500
10/10 [=====] - 0s 833us/step - loss: 1049.1395 - nll_loss: 1049.1395
Epoch 1288/2500
10/10 [=====] - 0s 865us/step - loss: 1050.2883 - nll_loss: 1050.2883
Epoch 1289/2500
10/10 [=====] - 0s 857us/step - loss: 1050.9500 - nll_loss: 1050.9500
Epoch 1290/2500
10/10 [=====] - 0s 881us/step - loss: 1046.8464 - nll_loss: 1046.8464
Epoch 1291/2500
10/10 [=====] - 0s 949us/step - loss: 1049.6277 - nll_loss: 1049.6277
Epoch 1292/2500
10/10 [=====] - 0s 993us/step - loss: 1050.3088 - nll_loss: 1050.3088
Epoch 1293/2500
10/10 [=====] - 0s 824us/step - loss: 1049.8309 - nll_loss: 1049.8309
Epoch 1294/2500
10/10 [=====] - 0s 838us/step - loss: 1051.4149 - nll_loss: 1051.4149
Epoch 1295/2500
10/10 [=====] - 0s 832us/step - loss: 1048.5653 - nll_loss: 1048.5653
Epoch 1296/2500
10/10 [=====] - 0s 753us/step - loss: 1049.2958 - nll_loss: 1049.2958
Epoch 1297/2500
10/10 [=====] - 0s 972us/step - loss: 1046.7107 - nll_loss: 1046.7107
```

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Epoch 1298/2500
10/10 [=====] - 0s 928us/step - loss: 1049.5033 - nll_los
s: 1049.5033
Epoch 1299/2500
10/10 [=====] - 0s 895us/step - loss: 1048.6958 - nll_los
s: 1048.6958
Epoch 1300/2500
10/10 [=====] - 0s 795us/step - loss: 1048.3998 - nll_los
s: 1048.3998
Epoch 1301/2500
10/10 [=====] - 0s 826us/step - loss: 1051.5500 - nll_los
s: 1051.5500
Epoch 1302/2500
10/10 [=====] - 0s 913us/step - loss: 1051.4852 - nll_los
s: 1051.4852
Epoch 1303/2500
10/10 [=====] - 0s 845us/step - loss: 1050.7947 - nll_los
s: 1050.7947
Epoch 1304/2500
10/10 [=====] - 0s 895us/step - loss: 1049.9095 - nll_los
s: 1049.9095
Epoch 1305/2500
10/10 [=====] - 0s 777us/step - loss: 1050.4346 - nll_los
s: 1050.4346
Epoch 1306/2500
10/10 [=====] - 0s 782us/step - loss: 1049.4436 - nll_los
s: 1049.4436
Epoch 1307/2500
10/10 [=====] - 0s 732us/step - loss: 1048.7043 - nll_los
s: 1048.7043
Epoch 1308/2500
10/10 [=====] - 0s 1ms/step - loss: 1046.9706 - nll_loss:
1046.9706
Epoch 1309/2500
10/10 [=====] - 0s 763us/step - loss: 1048.4153 - nll_los
s: 1048.4153
Epoch 1310/2500
10/10 [=====] - 0s 911us/step - loss: 1049.2341 - nll_los
s: 1049.2341
Epoch 1311/2500
10/10 [=====] - 0s 940us/step - loss: 1049.7513 - nll_los
s: 1049.7513
Epoch 1312/2500
10/10 [=====] - 0s 821us/step - loss: 1050.3728 - nll_los
s: 1050.3728
Epoch 1313/2500
10/10 [=====] - 0s 882us/step - loss: 1048.7985 - nll_los
s: 1048.7985
Epoch 1314/2500
10/10 [=====] - 0s 821us/step - loss: 1048.9642 - nll_los
s: 1048.9642
Epoch 1315/2500
10/10 [=====] - 0s 892us/step - loss: 1050.5862 - nll_los
s: 1050.5862
Epoch 1316/2500
10/10 [=====] - 0s 746us/step - loss: 1050.6807 - nll_los
s: 1050.6807
```

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Epoch 1317/2500
10/10 [=====] - 0s 851us/step - loss: 1049.6414 - nll_los
s: 1049.6414
Epoch 1318/2500
10/10 [=====] - 0s 930us/step - loss: 1048.2543 - nll_los
s: 1048.2543
Epoch 1319/2500
10/10 [=====] - 0s 845us/step - loss: 1051.4637 - nll_los
s: 1051.4637
Epoch 1320/2500
10/10 [=====] - 0s 930us/step - loss: 1049.7661 - nll_los
s: 1049.7661
Epoch 1321/2500
10/10 [=====] - 0s 837us/step - loss: 1049.4878 - nll_los
s: 1049.4878
Epoch 1322/2500
10/10 [=====] - 0s 834us/step - loss: 1049.6892 - nll_los
s: 1049.6892
Epoch 1323/2500
10/10 [=====] - 0s 816us/step - loss: 1050.7555 - nll_los
s: 1050.7555
Epoch 1324/2500
10/10 [=====] - 0s 808us/step - loss: 1050.1022 - nll_los
s: 1050.1022
Epoch 1325/2500
10/10 [=====] - 0s 958us/step - loss: 1050.5459 - nll_los
s: 1050.5459
Epoch 1326/2500
10/10 [=====] - 0s 932us/step - loss: 1049.8129 - nll_los
s: 1049.8129
Epoch 1327/2500
10/10 [=====] - 0s 909us/step - loss: 1050.5238 - nll_los
s: 1050.5238
Epoch 1328/2500
10/10 [=====] - 0s 854us/step - loss: 1052.5066 - nll_los
s: 1052.5066
Epoch 1329/2500
10/10 [=====] - 0s 772us/step - loss: 1051.4104 - nll_los
s: 1051.4104
Epoch 1330/2500
10/10 [=====] - 0s 832us/step - loss: 1051.5022 - nll_los
s: 1051.5022
Epoch 1331/2500
10/10 [=====] - 0s 788us/step - loss: 1048.7087 - nll_los
s: 1048.7087
Epoch 1332/2500
10/10 [=====] - 0s 823us/step - loss: 1052.7087 - nll_los
s: 1052.7087
Epoch 1333/2500
10/10 [=====] - 0s 966us/step - loss: 1049.1995 - nll_los
s: 1049.1995
Epoch 1334/2500
10/10 [=====] - 0s 833us/step - loss: 1049.5453 - nll_los
s: 1049.5453
Epoch 1335/2500
10/10 [=====] - 0s 839us/step - loss: 1046.6764 - nll_los
s: 1046.6764
```

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Epoch 1336/2500
10/10 [=====] - 0s 872us/step - loss: 1047.7767 - nll_los
s: 1047.7767
Epoch 1337/2500
10/10 [=====] - 0s 774us/step - loss: 1049.7051 - nll_los
s: 1049.7051
Epoch 1338/2500
10/10 [=====] - 0s 908us/step - loss: 1052.2290 - nll_los
s: 1052.2290
Epoch 1339/2500
10/10 [=====] - 0s 858us/step - loss: 1048.9382 - nll_los
s: 1048.9382
Epoch 1340/2500
10/10 [=====] - 0s 877us/step - loss: 1050.1661 - nll_los
s: 1050.1661
Epoch 1341/2500
10/10 [=====] - 0s 807us/step - loss: 1053.9294 - nll_los
s: 1053.9294
Epoch 1342/2500
10/10 [=====] - 0s 832us/step - loss: 1053.3528 - nll_los
s: 1053.3528
Epoch 1343/2500
10/10 [=====] - 0s 895us/step - loss: 1051.2283 - nll_los
s: 1051.2283
Epoch 1344/2500
10/10 [=====] - 0s 786us/step - loss: 1051.4889 - nll_los
s: 1051.4889
Epoch 1345/2500
10/10 [=====] - 0s 824us/step - loss: 1050.7836 - nll_los
s: 1050.7836
Epoch 1346/2500
10/10 [=====] - 0s 887us/step - loss: 1048.2161 - nll_los
s: 1048.2161
Epoch 1347/2500
10/10 [=====] - 0s 786us/step - loss: 1047.9725 - nll_los
s: 1047.9725
Epoch 1348/2500
10/10 [=====] - 0s 931us/step - loss: 1047.0950 - nll_los
s: 1047.0950
Epoch 1349/2500
10/10 [=====] - 0s 835us/step - loss: 1048.1227 - nll_los
s: 1048.1227
Epoch 1350/2500
10/10 [=====] - 0s 889us/step - loss: 1048.0560 - nll_los
s: 1048.0560
Epoch 1351/2500
10/10 [=====] - 0s 832us/step - loss: 1048.2571 - nll_los
s: 1048.2571
Epoch 1352/2500
10/10 [=====] - 0s 861us/step - loss: 1048.9456 - nll_los
s: 1048.9456
Epoch 1353/2500
10/10 [=====] - 0s 785us/step - loss: 1046.4460 - nll_los
s: 1046.4460
Epoch 1354/2500
10/10 [=====] - 0s 722us/step - loss: 1050.4570 - nll_los
s: 1050.4570
```

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Epoch 1355/2500
10/10 [=====] - 0s 788us/step - loss: 1046.2620 - nll_loss: 1046.2620
Epoch 1356/2500
10/10 [=====] - 0s 917us/step - loss: 1048.2542 - nll_loss: 1048.2542
Epoch 1357/2500
10/10 [=====] - 0s 888us/step - loss: 1049.6121 - nll_loss: 1049.6121
Epoch 1358/2500
10/10 [=====] - 0s 1ms/step - loss: 1050.0387 - nll_loss: 1050.0387
Epoch 1359/2500
10/10 [=====] - 0s 848us/step - loss: 1047.5649 - nll_loss: 1047.5649
Epoch 1360/2500
10/10 [=====] - 0s 915us/step - loss: 1048.7944 - nll_loss: 1048.7944
Epoch 1361/2500
10/10 [=====] - 0s 840us/step - loss: 1048.5264 - nll_loss: 1048.5264
Epoch 1362/2500
10/10 [=====] - 0s 826us/step - loss: 1048.1665 - nll_loss: 1048.1665
Epoch 1363/2500
10/10 [=====] - 0s 759us/step - loss: 1048.7916 - nll_loss: 1048.7916
Epoch 1364/2500
10/10 [=====] - 0s 810us/step - loss: 1048.3820 - nll_loss: 1048.3820
Epoch 1365/2500
10/10 [=====] - 0s 854us/step - loss: 1047.3110 - nll_loss: 1047.3110
Epoch 1366/2500
10/10 [=====] - 0s 829us/step - loss: 1050.7493 - nll_loss: 1050.7493
Epoch 1367/2500
10/10 [=====] - 0s 947us/step - loss: 1050.3422 - nll_loss: 1050.3422
Epoch 1368/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.1793 - nll_loss: 1048.1793
Epoch 1369/2500
10/10 [=====] - 0s 876us/step - loss: 1047.0629 - nll_loss: 1047.0629
Epoch 1370/2500
10/10 [=====] - 0s 844us/step - loss: 1048.6589 - nll_loss: 1048.6589
Epoch 1371/2500
10/10 [=====] - 0s 876us/step - loss: 1050.4578 - nll_loss: 1050.4578
Epoch 1372/2500
10/10 [=====] - 0s 796us/step - loss: 1047.4893 - nll_loss: 1047.4893
Epoch 1373/2500
10/10 [=====] - 0s 912us/step - loss: 1048.1663 - nll_loss: 1048.1663
```

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Epoch 1374/2500
10/10 [=====] - 0s 927us/step - loss: 1047.1133 - nll_los
s: 1047.1133
Epoch 1375/2500
10/10 [=====] - 0s 877us/step - loss: 1047.8838 - nll_los
s: 1047.8838
Epoch 1376/2500
10/10 [=====] - 0s 809us/step - loss: 1047.7294 - nll_los
s: 1047.7294
Epoch 1377/2500
10/10 [=====] - 0s 825us/step - loss: 1047.2020 - nll_los
s: 1047.2020
Epoch 1378/2500
10/10 [=====] - 0s 896us/step - loss: 1047.5171 - nll_los
s: 1047.5171
Epoch 1379/2500
10/10 [=====] - 0s 848us/step - loss: 1050.4620 - nll_los
s: 1050.4620
Epoch 1380/2500
10/10 [=====] - 0s 830us/step - loss: 1051.0646 - nll_los
s: 1051.0646
Epoch 1381/2500
10/10 [=====] - 0s 835us/step - loss: 1051.6152 - nll_los
s: 1051.6152
Epoch 1382/2500
10/10 [=====] - 0s 843us/step - loss: 1048.1992 - nll_los
s: 1048.1992
Epoch 1383/2500
10/10 [=====] - 0s 966us/step - loss: 1047.8588 - nll_los
s: 1047.8588
Epoch 1384/2500
10/10 [=====] - 0s 957us/step - loss: 1048.7407 - nll_los
s: 1048.7407
Epoch 1385/2500
10/10 [=====] - 0s 930us/step - loss: 1048.2415 - nll_los
s: 1048.2415
Epoch 1386/2500
10/10 [=====] - 0s 800us/step - loss: 1046.7041 - nll_los
s: 1046.7041
Epoch 1387/2500
10/10 [=====] - 0s 821us/step - loss: 1046.8494 - nll_los
s: 1046.8494
Epoch 1388/2500
10/10 [=====] - 0s 869us/step - loss: 1047.9460 - nll_los
s: 1047.9460
Epoch 1389/2500
10/10 [=====] - 0s 780us/step - loss: 1048.8600 - nll_los
s: 1048.8600
Epoch 1390/2500
10/10 [=====] - 0s 854us/step - loss: 1051.8494 - nll_los
s: 1051.8494
Epoch 1391/2500
10/10 [=====] - 0s 829us/step - loss: 1047.6825 - nll_los
s: 1047.6825
Epoch 1392/2500
10/10 [=====] - 0s 761us/step - loss: 1046.1189 - nll_los
s: 1046.1189
```

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Epoch 1393/2500
10/10 [=====] - 0s 874us/step - loss: 1047.9797 - nll_loss: 1047.9797
Epoch 1394/2500
10/10 [=====] - 0s 945us/step - loss: 1048.4200 - nll_loss: 1048.4200
Epoch 1395/2500
10/10 [=====] - 0s 933us/step - loss: 1049.3948 - nll_loss: 1049.3948
Epoch 1396/2500
10/10 [=====] - 0s 785us/step - loss: 1048.6877 - nll_loss: 1048.6877
Epoch 1397/2500
10/10 [=====] - 0s 906us/step - loss: 1048.4147 - nll_loss: 1048.4147
Epoch 1398/2500
10/10 [=====] - 0s 807us/step - loss: 1048.8279 - nll_loss: 1048.8279
Epoch 1399/2500
10/10 [=====] - 0s 856us/step - loss: 1048.9215 - nll_loss: 1048.9215
Epoch 1400/2500
10/10 [=====] - 0s 747us/step - loss: 1048.3816 - nll_loss: 1048.3816
Epoch 1401/2500
10/10 [=====] - 0s 913us/step - loss: 1049.7548 - nll_loss: 1049.7548
Epoch 1402/2500
10/10 [=====] - 0s 870us/step - loss: 1048.9825 - nll_loss: 1048.9825
Epoch 1403/2500
10/10 [=====] - 0s 913us/step - loss: 1047.7072 - nll_loss: 1047.7072
Epoch 1404/2500
10/10 [=====] - 0s 862us/step - loss: 1051.0608 - nll_loss: 1051.0608
Epoch 1405/2500
10/10 [=====] - 0s 566us/step - loss: 1050.3221 - nll_loss: 1050.3221
Epoch 1406/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.5178 - nll_loss: 1048.5178
Epoch 1407/2500
```

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10/10 [=====] - 0s 751us/step - loss: 1046.9319 - nll_loss:  
s: 1046.9319  
Epoch 1408/2500  
10/10 [=====] - 0s 807us/step - loss: 1049.2170 - nll_loss:  
s: 1049.2170  
Epoch 1409/2500  
10/10 [=====] - 0s 794us/step - loss: 1045.2610 - nll_loss:  
s: 1045.2610  
Epoch 1410/2500  
10/10 [=====] - 0s 884us/step - loss: 1050.2839 - nll_loss:  
s: 1050.2839  
Epoch 1411/2500  
10/10 [=====] - 0s 872us/step - loss: 1051.6675 - nll_loss:  
s: 1051.6675  
Epoch 1412/2500  
10/10 [=====] - 0s 803us/step - loss: 1052.0808 - nll_loss:  
s: 1052.0808  
Epoch 1413/2500  
10/10 [=====] - 0s 882us/step - loss: 1048.5748 - nll_loss:  
s: 1048.5748  
Epoch 1414/2500  
10/10 [=====] - 0s 830us/step - loss: 1046.3643 - nll_loss:  
s: 1046.3643  
Epoch 1415/2500  
10/10 [=====] - 0s 834us/step - loss: 1049.2473 - nll_loss:  
s: 1049.2473  
Epoch 1416/2500  
10/10 [=====] - 0s 816us/step - loss: 1049.2430 - nll_loss:  
s: 1049.2430  
Epoch 1417/2500  
10/10 [=====] - 0s 820us/step - loss: 1050.0969 - nll_loss:  
s: 1050.0969  
Epoch 1418/2500  
10/10 [=====] - 0s 841us/step - loss: 1048.2037 - nll_loss:  
s: 1048.2037  
Epoch 1419/2500  
10/10 [=====] - 0s 814us/step - loss: 1052.9633 - nll_loss:  
s: 1052.9633  
Epoch 1420/2500  
10/10 [=====] - 0s 837us/step - loss: 1051.7133 - nll_loss:  
s: 1051.7133  
Epoch 1421/2500  
10/10 [=====] - 0s 912us/step - loss: 1050.3011 - nll_loss:  
s: 1050.3011  
Epoch 1422/2500  
10/10 [=====] - 0s 786us/step - loss: 1047.6025 - nll_loss:  
s: 1047.6025  
Epoch 1423/2500  
10/10 [=====] - 0s 927us/step - loss: 1049.2443 - nll_loss:  
s: 1049.2443  
Epoch 1424/2500  
10/10 [=====] - 0s 897us/step - loss: 1048.5569 - nll_loss:  
s: 1048.5569  
Epoch 1425/2500  
10/10 [=====] - 0s 1ms/step - loss: 1051.4260 - nll_loss:  
s: 1051.4260  
Epoch 1426/2500
```

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10/10 [=====] - 0s 893us/step - loss: 1049.0289 - nll_los  
s: 1049.0289  
Epoch 1427/2500  
10/10 [=====] - 0s 858us/step - loss: 1050.5105 - nll_los  
s: 1050.5105  
Epoch 1428/2500  
10/10 [=====] - 0s 776us/step - loss: 1049.1672 - nll_los  
s: 1049.1672  
Epoch 1429/2500  
10/10 [=====] - 0s 840us/step - loss: 1046.6501 - nll_los  
s: 1046.6501  
Epoch 1430/2500  
10/10 [=====] - 0s 946us/step - loss: 1049.5516 - nll_los  
s: 1049.5516  
Epoch 1431/2500  
10/10 [=====] - 0s 819us/step - loss: 1048.5343 - nll_los  
s: 1048.5343  
Epoch 1432/2500  
10/10 [=====] - 0s 901us/step - loss: 1049.1622 - nll_los  
s: 1049.1622  
Epoch 1433/2500  
10/10 [=====] - 0s 813us/step - loss: 1050.5911 - nll_los  
s: 1050.5911  
Epoch 1434/2500  
10/10 [=====] - 0s 764us/step - loss: 1046.7194 - nll_los  
s: 1046.7194  
Epoch 1435/2500  
10/10 [=====] - 0s 854us/step - loss: 1048.9142 - nll_los  
s: 1048.9142  
Epoch 1436/2500  
10/10 [=====] - 0s 796us/step - loss: 1049.8337 - nll_los  
s: 1049.8337  
Epoch 1437/2500  
10/10 [=====] - 0s 829us/step - loss: 1048.1644 - nll_los  
s: 1048.1644  
Epoch 1438/2500  
10/10 [=====] - 0s 779us/step - loss: 1049.9470 - nll_los  
s: 1049.9470  
Epoch 1439/2500  
10/10 [=====] - 0s 739us/step - loss: 1047.9036 - nll_los  
s: 1047.9036  
Epoch 1440/2500  
10/10 [=====] - 0s 821us/step - loss: 1047.9294 - nll_los  
s: 1047.9294  
Epoch 1441/2500  
10/10 [=====] - 0s 693us/step - loss: 1046.7927 - nll_los  
s: 1046.7927  
Epoch 1442/2500  
10/10 [=====] - 0s 855us/step - loss: 1050.0875 - nll_los  
s: 1050.0875  
Epoch 1443/2500  
10/10 [=====] - 0s 813us/step - loss: 1048.5227 - nll_los  
s: 1048.5227  
Epoch 1444/2500  
10/10 [=====] - 0s 889us/step - loss: 1048.5947 - nll_los  
s: 1048.5947  
Epoch 1445/2500
```

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10/10 [=====] - 0s 793us/step - loss: 1047.1047 - nll_los  
s: 1047.1047  
Epoch 1446/2500  
10/10 [=====] - 0s 814us/step - loss: 1049.4895 - nll_los  
s: 1049.4895  
Epoch 1447/2500  
10/10 [=====] - 0s 890us/step - loss: 1048.5535 - nll_los  
s: 1048.5535  
Epoch 1448/2500  
10/10 [=====] - 0s 945us/step - loss: 1048.7140 - nll_los  
s: 1048.7140  
Epoch 1449/2500  
10/10 [=====] - 0s 946us/step - loss: 1045.7910 - nll_los  
s: 1045.7910  
Epoch 1450/2500  
10/10 [=====] - 0s 894us/step - loss: 1047.1663 - nll_los  
s: 1047.1663  
Epoch 1451/2500  
10/10 [=====] - 0s 961us/step - loss: 1049.2598 - nll_los  
s: 1049.2598  
Epoch 1452/2500  
10/10 [=====] - 0s 916us/step - loss: 1050.3005 - nll_los  
s: 1050.3005  
Epoch 1453/2500  
10/10 [=====] - 0s 853us/step - loss: 1051.1902 - nll_los  
s: 1051.1902  
Epoch 1454/2500  
10/10 [=====] - 0s 828us/step - loss: 1049.2720 - nll_los  
s: 1049.2720  
Epoch 1455/2500  
10/10 [=====] - 0s 833us/step - loss: 1050.3752 - nll_los  
s: 1050.3752  
Epoch 1456/2500  
10/10 [=====] - 0s 844us/step - loss: 1049.4088 - nll_los  
s: 1049.4088  
Epoch 1457/2500  
10/10 [=====] - 0s 803us/step - loss: 1047.4473 - nll_los  
s: 1047.4473  
Epoch 1458/2500  
10/10 [=====] - 0s 710us/step - loss: 1053.4811 - nll_los  
s: 1053.4811  
Epoch 1459/2500  
10/10 [=====] - 0s 865us/step - loss: 1048.7800 - nll_los  
s: 1048.7800  
Epoch 1460/2500  
10/10 [=====] - 0s 876us/step - loss: 1049.4880 - nll_los  
s: 1049.4880  
Epoch 1461/2500  
10/10 [=====] - 0s 883us/step - loss: 1047.0056 - nll_los  
s: 1047.0056  
Epoch 1462/2500  
10/10 [=====] - 0s 742us/step - loss: 1049.9777 - nll_los  
s: 1049.9777  
Epoch 1463/2500  
10/10 [=====] - 0s 812us/step - loss: 1048.6443 - nll_los  
s: 1048.6443  
Epoch 1464/2500
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10/10 [=====] - 0s 881us/step - loss: 1046.9333 - nll_los  
s: 1046.9333  
Epoch 1465/2500  
10/10 [=====] - 0s 843us/step - loss: 1045.1650 - nll_los  
s: 1045.1650  
Epoch 1466/2500  
10/10 [=====] - 0s 750us/step - loss: 1046.7397 - nll_los  
s: 1046.7397  
Epoch 1467/2500  
10/10 [=====] - 0s 830us/step - loss: 1047.3387 - nll_los  
s: 1047.3387  
Epoch 1468/2500  
10/10 [=====] - 0s 836us/step - loss: 1048.3851 - nll_los  
s: 1048.3851  
Epoch 1469/2500  
10/10 [=====] - 0s 947us/step - loss: 1049.9200 - nll_los  
s: 1049.9200  
Epoch 1470/2500  
10/10 [=====] - 0s 930us/step - loss: 1049.9504 - nll_los  
s: 1049.9504  
Epoch 1471/2500  
10/10 [=====] - 0s 866us/step - loss: 1047.2135 - nll_los  
s: 1047.2135  
Epoch 1472/2500  
10/10 [=====] - 0s 781us/step - loss: 1047.1641 - nll_los  
s: 1047.1641  
Epoch 1473/2500  
10/10 [=====] - 0s 834us/step - loss: 1048.1897 - nll_los  
s: 1048.1897  
Epoch 1474/2500  
10/10 [=====] - 0s 788us/step - loss: 1049.7610 - nll_los  
s: 1049.7610  
Epoch 1475/2500  
10/10 [=====] - 0s 820us/step - loss: 1048.9087 - nll_los  
s: 1048.9087  
Epoch 1476/2500  
10/10 [=====] - 0s 844us/step - loss: 1049.7871 - nll_los  
s: 1049.7871  
Epoch 1477/2500  
10/10 [=====] - 0s 853us/step - loss: 1047.8801 - nll_los  
s: 1047.8801  
Epoch 1478/2500  
10/10 [=====] - 0s 853us/step - loss: 1050.4745 - nll_los  
s: 1050.4745  
Epoch 1479/2500  
10/10 [=====] - 0s 866us/step - loss: 1049.5273 - nll_los  
s: 1049.5273  
Epoch 1480/2500  
10/10 [=====] - 0s 862us/step - loss: 1048.9060 - nll_los  
s: 1048.9060
```

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Epoch 1481/2500
10/10 [=====] - 0s 882us/step - loss: 1048.2545 - nll_los
s: 1048.2545
Epoch 1482/2500
10/10 [=====] - 0s 867us/step - loss: 1049.8130 - nll_los
s: 1049.8130
Epoch 1483/2500
10/10 [=====] - 0s 949us/step - loss: 1049.0126 - nll_los
s: 1049.0126
Epoch 1484/2500
10/10 [=====] - 0s 778us/step - loss: 1047.5256 - nll_los
s: 1047.5256
Epoch 1485/2500
10/10 [=====] - 0s 812us/step - loss: 1048.3534 - nll_los
s: 1048.3534
Epoch 1486/2500
10/10 [=====] - 0s 805us/step - loss: 1049.3540 - nll_los
s: 1049.3540
Epoch 1487/2500
10/10 [=====] - 0s 855us/step - loss: 1049.4421 - nll_los
s: 1049.4421
Epoch 1488/2500
10/10 [=====] - 0s 819us/step - loss: 1047.7009 - nll_los
s: 1047.7009
Epoch 1489/2500
10/10 [=====] - 0s 866us/step - loss: 1047.2771 - nll_los
s: 1047.2771
Epoch 1490/2500
10/10 [=====] - 0s 836us/step - loss: 1049.4543 - nll_los
s: 1049.4543
Epoch 1491/2500
10/10 [=====] - 0s 840us/step - loss: 1050.4517 - nll_los
s: 1050.4517
Epoch 1492/2500
10/10 [=====] - 0s 757us/step - loss: 1050.0046 - nll_los
s: 1050.0046
Epoch 1493/2500
10/10 [=====] - 0s 850us/step - loss: 1049.1901 - nll_los
s: 1049.1901
Epoch 1494/2500
10/10 [=====] - 0s 844us/step - loss: 1051.7185 - nll_los
s: 1051.7185
Epoch 1495/2500
10/10 [=====] - 0s 925us/step - loss: 1055.0278 - nll_los
s: 1055.0278
Epoch 1496/2500
10/10 [=====] - 0s 833us/step - loss: 1050.0861 - nll_los
s: 1050.0861
Epoch 1497/2500
10/10 [=====] - 0s 807us/step - loss: 1049.8030 - nll_los
s: 1049.8030
Epoch 1498/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.6667 - nll_los
s: 1049.6667
Epoch 1499/2500
10/10 [=====] - 0s 905us/step - loss: 1045.8306 - nll_los
s: 1045.8306
```

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Epoch 1500/2500
10/10 [=====] - 0s 817us/step - loss: 1049.8339 - nll_loss: 1049.8339
Epoch 1501/2500
10/10 [=====] - 0s 717us/step - loss: 1050.7161 - nll_loss: 1050.7161
Epoch 1502/2500
10/10 [=====] - 0s 876us/step - loss: 1052.2206 - nll_loss: 1052.2206
Epoch 1503/2500
10/10 [=====] - 0s 808us/step - loss: 1049.3889 - nll_loss: 1049.3889
Epoch 1504/2500
10/10 [=====] - 0s 802us/step - loss: 1051.7366 - nll_loss: 1051.7366
Epoch 1505/2500
10/10 [=====] - 0s 899us/step - loss: 1047.3875 - nll_loss: 1047.3875
Epoch 1506/2500
10/10 [=====] - 0s 823us/step - loss: 1046.9786 - nll_loss: 1046.9786
Epoch 1507/2500
10/10 [=====] - 0s 830us/step - loss: 1048.4679 - nll_loss: 1048.4679
Epoch 1508/2500
10/10 [=====] - 0s 787us/step - loss: 1048.3057 - nll_loss: 1048.3057
Epoch 1509/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.6204 - nll_loss: 1047.6204
Epoch 1510/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.2852 - nll_loss: 1048.2852
Epoch 1511/2500
10/10 [=====] - 0s 958us/step - loss: 1047.3357 - nll_loss: 1047.3357
Epoch 1512/2500
10/10 [=====] - 0s 956us/step - loss: 1050.4930 - nll_loss: 1050.4930
Epoch 1513/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.7400 - nll_loss: 1049.7400
Epoch 1514/2500
10/10 [=====] - 0s 893us/step - loss: 1048.9738 - nll_loss: 1048.9738
Epoch 1515/2500
10/10 [=====] - 0s 848us/step - loss: 1046.9102 - nll_loss: 1046.9102
Epoch 1516/2500
10/10 [=====] - 0s 802us/step - loss: 1046.9023 - nll_loss: 1046.9023
Epoch 1517/2500
10/10 [=====] - 0s 913us/step - loss: 1047.8359 - nll_loss: 1047.8359
Epoch 1518/2500
10/10 [=====] - 0s 829us/step - loss: 1047.9832 - nll_loss: 1047.9832
```

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Epoch 1519/2500
10/10 [=====] - 0s 893us/step - loss: 1049.1042 - nll_loss: 1049.1042
Epoch 1520/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.5482 - nll_loss: 1047.5482
Epoch 1521/2500
10/10 [=====] - 0s 945us/step - loss: 1048.8419 - nll_loss: 1048.8419
Epoch 1522/2500
10/10 [=====] - 0s 803us/step - loss: 1046.7175 - nll_loss: 1046.7175
Epoch 1523/2500
10/10 [=====] - 0s 916us/step - loss: 1045.4897 - nll_loss: 1045.4897
Epoch 1524/2500
10/10 [=====] - 0s 822us/step - loss: 1048.7234 - nll_loss: 1048.7234
Epoch 1525/2500
10/10 [=====] - 0s 840us/step - loss: 1048.6801 - nll_loss: 1048.6801
Epoch 1526/2500
10/10 [=====] - 0s 768us/step - loss: 1051.5173 - nll_loss: 1051.5173
Epoch 1527/2500
10/10 [=====] - 0s 824us/step - loss: 1049.4410 - nll_loss: 1049.4410
Epoch 1528/2500
10/10 [=====] - 0s 812us/step - loss: 1050.3005 - nll_loss: 1050.3005
Epoch 1529/2500
10/10 [=====] - 0s 860us/step - loss: 1050.3840 - nll_loss: 1050.3840
Epoch 1530/2500
10/10 [=====] - 0s 797us/step - loss: 1051.5884 - nll_loss: 1051.5884
Epoch 1531/2500
10/10 [=====] - 0s 843us/step - loss: 1053.9755 - nll_loss: 1053.9755
Epoch 1532/2500
10/10 [=====] - 0s 961us/step - loss: 1049.3645 - nll_loss: 1049.3645
Epoch 1533/2500
10/10 [=====] - 0s 986us/step - loss: 1051.8827 - nll_loss: 1051.8827
Epoch 1534/2500
10/10 [=====] - 0s 969us/step - loss: 1048.9116 - nll_loss: 1048.9116
Epoch 1535/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.4788 - nll_loss: 1049.4788
Epoch 1536/2500
10/10 [=====] - 0s 926us/step - loss: 1050.3900 - nll_loss: 1050.3900
Epoch 1537/2500
10/10 [=====] - 0s 829us/step - loss: 1046.5532 - nll_loss: 1046.5532
```

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Epoch 1538/2500
10/10 [=====] - 0s 844us/step - loss: 1050.1841 - nll_los
s: 1050.1841
Epoch 1539/2500
10/10 [=====] - 0s 876us/step - loss: 1048.8743 - nll_los
s: 1048.8743
Epoch 1540/2500
10/10 [=====] - 0s 806us/step - loss: 1046.9927 - nll_los
s: 1046.9927
Epoch 1541/2500
10/10 [=====] - 0s 874us/step - loss: 1049.5978 - nll_los
s: 1049.5978
Epoch 1542/2500
10/10 [=====] - 0s 873us/step - loss: 1050.3925 - nll_los
s: 1050.3925
Epoch 1543/2500
10/10 [=====] - 0s 930us/step - loss: 1049.1385 - nll_los
s: 1049.1385
Epoch 1544/2500
10/10 [=====] - 0s 857us/step - loss: 1048.3184 - nll_los
s: 1048.3184
Epoch 1545/2500
10/10 [=====] - 0s 835us/step - loss: 1049.4131 - nll_los
s: 1049.4131
Epoch 1546/2500
10/10 [=====] - 0s 849us/step - loss: 1051.2961 - nll_los
s: 1051.2961
Epoch 1547/2500
10/10 [=====] - 0s 913us/step - loss: 1049.5603 - nll_los
s: 1049.5603
Epoch 1548/2500
10/10 [=====] - 0s 917us/step - loss: 1046.0569 - nll_los
s: 1046.0569
Epoch 1549/2500
10/10 [=====] - 0s 871us/step - loss: 1047.1637 - nll_los
s: 1047.1637
Epoch 1550/2500
10/10 [=====] - 0s 870us/step - loss: 1047.8479 - nll_los
s: 1047.8479
Epoch 1551/2500
10/10 [=====] - 0s 824us/step - loss: 1047.8372 - nll_los
s: 1047.8372
Epoch 1552/2500
10/10 [=====] - 0s 793us/step - loss: 1047.0967 - nll_los
s: 1047.0967
Epoch 1553/2500
10/10 [=====] - 0s 946us/step - loss: 1048.0016 - nll_los
s: 1048.0016
Epoch 1554/2500
10/10 [=====] - 0s 814us/step - loss: 1051.2751 - nll_los
s: 1051.2751
Epoch 1555/2500
10/10 [=====] - 0s 840us/step - loss: 1046.3138 - nll_los
s: 1046.3138
Epoch 1556/2500
10/10 [=====] - 0s 995us/step - loss: 1050.1512 - nll_los
s: 1050.1512
```

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Epoch 1557/2500
10/10 [=====] - 0s 886us/step - loss: 1047.5715 - nll_los
s: 1047.5715
Epoch 1558/2500
10/10 [=====] - 0s 888us/step - loss: 1049.6090 - nll_los
s: 1049.6090
Epoch 1559/2500
10/10 [=====] - 0s 939us/step - loss: 1048.5239 - nll_los
s: 1048.5239
Epoch 1560/2500
10/10 [=====] - 0s 937us/step - loss: 1049.0438 - nll_los
s: 1049.0438
Epoch 1561/2500
10/10 [=====] - 0s 967us/step - loss: 1050.6532 - nll_los
s: 1050.6532
Epoch 1562/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.0570 - nll_loss:
1049.0570
Epoch 1563/2500
10/10 [=====] - 0s 951us/step - loss: 1045.5350 - nll_los
s: 1045.5350
Epoch 1564/2500
10/10 [=====] - 0s 981us/step - loss: 1049.0387 - nll_los
s: 1049.0387
Epoch 1565/2500
10/10 [=====] - 0s 783us/step - loss: 1049.3923 - nll_los
s: 1049.3923
Epoch 1566/2500
10/10 [=====] - 0s 829us/step - loss: 1048.5109 - nll_los
s: 1048.5109
Epoch 1567/2500
10/10 [=====] - 0s 828us/step - loss: 1048.9211 - nll_los
s: 1048.9211
Epoch 1568/2500
10/10 [=====] - 0s 895us/step - loss: 1051.3711 - nll_los
s: 1051.3711
Epoch 1569/2500
10/10 [=====] - 0s 884us/step - loss: 1051.9470 - nll_los
s: 1051.9470
Epoch 1570/2500
10/10 [=====] - 0s 951us/step - loss: 1051.7166 - nll_los
s: 1051.7166
Epoch 1571/2500
10/10 [=====] - 0s 829us/step - loss: 1051.3918 - nll_los
s: 1051.3918
Epoch 1572/2500
10/10 [=====] - 0s 749us/step - loss: 1049.9469 - nll_los
s: 1049.9469
Epoch 1573/2500
10/10 [=====] - 0s 769us/step - loss: 1047.8390 - nll_los
s: 1047.8390
Epoch 1574/2500
10/10 [=====] - 0s 864us/step - loss: 1049.3075 - nll_los
s: 1049.3075
Epoch 1575/2500
10/10 [=====] - 0s 889us/step - loss: 1051.5875 - nll_los
s: 1051.5875
```

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Epoch 1576/2500
10/10 [=====] - 0s 771us/step - loss: 1046.5934 - nll_loss: 1046.5934
Epoch 1577/2500
10/10 [=====] - 0s 730us/step - loss: 1049.3488 - nll_loss: 1049.3488
Epoch 1578/2500
10/10 [=====] - 0s 838us/step - loss: 1049.4250 - nll_loss: 1049.4250
Epoch 1579/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.8805 - nll_loss: 1047.8805
Epoch 1580/2500
10/10 [=====] - 0s 929us/step - loss: 1050.2639 - nll_loss: 1050.2639
Epoch 1581/2500
10/10 [=====] - 0s 791us/step - loss: 1050.4154 - nll_loss: 1050.4154
Epoch 1582/2500
10/10 [=====] - 0s 844us/step - loss: 1048.2245 - nll_loss: 1048.2245
Epoch 1583/2500
10/10 [=====] - 0s 784us/step - loss: 1050.4937 - nll_loss: 1050.4937
Epoch 1584/2500
10/10 [=====] - 0s 847us/step - loss: 1051.5988 - nll_loss: 1051.5988
Epoch 1585/2500
10/10 [=====] - 0s 903us/step - loss: 1053.1760 - nll_loss: 1053.1760
Epoch 1586/2500
10/10 [=====] - 0s 838us/step - loss: 1052.2229 - nll_loss: 1052.2229
Epoch 1587/2500
10/10 [=====] - 0s 929us/step - loss: 1051.9849 - nll_loss: 1051.9849
Epoch 1588/2500
10/10 [=====] - 0s 904us/step - loss: 1049.6414 - nll_loss: 1049.6414
Epoch 1589/2500
10/10 [=====] - 0s 872us/step - loss: 1045.8113 - nll_loss: 1045.8113
Epoch 1590/2500
10/10 [=====] - 0s 937us/step - loss: 1043.0541 - nll_loss: 1043.0541
Epoch 1591/2500
10/10 [=====] - 0s 853us/step - loss: 1050.1697 - nll_loss: 1050.1697
Epoch 1592/2500
10/10 [=====] - 0s 770us/step - loss: 1046.2712 - nll_loss: 1046.2712
Epoch 1593/2500
10/10 [=====] - 0s 781us/step - loss: 1048.9081 - nll_loss: 1048.9081
Epoch 1594/2500
10/10 [=====] - 0s 785us/step - loss: 1048.8157 - nll_loss: 1048.8157
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Epoch 1595/2500
10/10 [=====] - 0s 879us/step - loss: 1048.0237 - nll_loss: 1048.0237
Epoch 1596/2500
10/10 [=====] - 0s 812us/step - loss: 1049.2654 - nll_loss: 1049.2654
Epoch 1597/2500
10/10 [=====] - 0s 984us/step - loss: 1046.6237 - nll_loss: 1046.6237
Epoch 1598/2500
10/10 [=====] - 0s 932us/step - loss: 1047.1194 - nll_loss: 1047.1194
Epoch 1599/2500
10/10 [=====] - 0s 886us/step - loss: 1047.7849 - nll_loss: 1047.7849
Epoch 1600/2500
10/10 [=====] - 0s 850us/step - loss: 1048.7131 - nll_loss: 1048.7131
Epoch 1601/2500
10/10 [=====] - 0s 959us/step - loss: 1049.0178 - nll_loss: 1049.0178
Epoch 1602/2500
10/10 [=====] - 0s 905us/step - loss: 1046.4729 - nll_loss: 1046.4729
Epoch 1603/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.2559 - nll_loss: 1049.2559
Epoch 1604/2500
10/10 [=====] - 0s 958us/step - loss: 1045.6128 - nll_loss: 1045.6128
Epoch 1605/2500
10/10 [=====] - 0s 1ms/step - loss: 1046.4028 - nll_loss: 1046.4028
Epoch 1606/2500
10/10 [=====] - 0s 896us/step - loss: 1048.5492 - nll_loss: 1048.5492
Epoch 1607/2500
10/10 [=====] - 0s 939us/step - loss: 1049.4543 - nll_loss: 1049.4543
Epoch 1608/2500
10/10 [=====] - 0s 785us/step - loss: 1051.1924 - nll_loss: 1051.1924
Epoch 1609/2500
10/10 [=====] - 0s 849us/step - loss: 1046.6455 - nll_loss: 1046.6455
Epoch 1610/2500
10/10 [=====] - 0s 703us/step - loss: 1046.4347 - nll_loss: 1046.4347
Epoch 1611/2500
10/10 [=====] - 0s 657us/step - loss: 1050.7896 - nll_loss: 1050.7896
Epoch 1612/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.7883 - nll_loss: 1047.7883
Epoch 1613/2500
10/10 [=====] - 0s 814us/step - loss: 1049.1088 - nll_loss: 1049.1088
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Epoch 1614/2500
10/10 [=====] - 0s 932us/step - loss: 1051.4740 - nll_loss: 1051.4740
Epoch 1615/2500
10/10 [=====] - 0s 820us/step - loss: 1048.8226 - nll_loss: 1048.8226
Epoch 1616/2500
10/10 [=====] - 0s 901us/step - loss: 1047.2297 - nll_loss: 1047.2297
Epoch 1617/2500
10/10 [=====] - 0s 915us/step - loss: 1048.7568 - nll_loss: 1048.7568
Epoch 1618/2500
10/10 [=====] - 0s 845us/step - loss: 1048.0175 - nll_loss: 1048.0175
Epoch 1619/2500
10/10 [=====] - 0s 806us/step - loss: 1051.1372 - nll_loss: 1051.1372
Epoch 1620/2500
10/10 [=====] - 0s 919us/step - loss: 1050.6049 - nll_loss: 1050.6049
Epoch 1621/2500
10/10 [=====] - 0s 872us/step - loss: 1045.6515 - nll_loss: 1045.6515
Epoch 1622/2500
10/10 [=====] - 0s 869us/step - loss: 1048.5967 - nll_loss: 1048.5967
Epoch 1623/2500
10/10 [=====] - 0s 776us/step - loss: 1047.3909 - nll_loss: 1047.3909
Epoch 1624/2500
10/10 [=====] - 0s 851us/step - loss: 1046.9221 - nll_loss: 1046.9221
Epoch 1625/2500
10/10 [=====] - 0s 835us/step - loss: 1045.1556 - nll_loss: 1045.1556
Epoch 1626/2500
10/10 [=====] - 0s 892us/step - loss: 1046.4924 - nll_loss: 1046.4924
Epoch 1627/2500
10/10 [=====] - 0s 911us/step - loss: 1046.5706 - nll_loss: 1046.5706
Epoch 1628/2500
```

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10/10 [=====] - 0s 946us/step - loss: 1047.3236 - nll_los  
s: 1047.3236  
Epoch 1629/2500  
10/10 [=====] - 0s 852us/step - loss: 1051.4895 - nll_los  
s: 1051.4895  
Epoch 1630/2500  
10/10 [=====] - 0s 869us/step - loss: 1048.3613 - nll_los  
s: 1048.3613  
Epoch 1631/2500  
10/10 [=====] - 0s 935us/step - loss: 1048.6322 - nll_los  
s: 1048.6322  
Epoch 1632/2500  
10/10 [=====] - 0s 935us/step - loss: 1046.2239 - nll_los  
s: 1046.2239  
Epoch 1633/2500  
10/10 [=====] - 0s 874us/step - loss: 1045.3885 - nll_los  
s: 1045.3885  
Epoch 1634/2500  
10/10 [=====] - 0s 928us/step - loss: 1047.2029 - nll_los  
s: 1047.2029  
Epoch 1635/2500  
10/10 [=====] - 0s 763us/step - loss: 1045.1006 - nll_los  
s: 1045.1006  
Epoch 1636/2500  
10/10 [=====] - 0s 811us/step - loss: 1047.2229 - nll_los  
s: 1047.2229  
Epoch 1637/2500  
10/10 [=====] - 0s 957us/step - loss: 1052.0376 - nll_los  
s: 1052.0376  
Epoch 1638/2500  
10/10 [=====] - 0s 755us/step - loss: 1048.6956 - nll_los  
s: 1048.6956  
Epoch 1639/2500  
10/10 [=====] - 0s 776us/step - loss: 1047.7114 - nll_los  
s: 1047.7114  
Epoch 1640/2500  
10/10 [=====] - 0s 831us/step - loss: 1047.1927 - nll_los  
s: 1047.1927  
Epoch 1641/2500  
10/10 [=====] - 0s 837us/step - loss: 1045.4749 - nll_los  
s: 1045.4749  
Epoch 1642/2500  
10/10 [=====] - 0s 858us/step - loss: 1049.4563 - nll_los  
s: 1049.4563  
Epoch 1643/2500  
10/10 [=====] - 0s 907us/step - loss: 1046.9171 - nll_los  
s: 1046.9171  
Epoch 1644/2500  
10/10 [=====] - 0s 835us/step - loss: 1048.3679 - nll_los  
s: 1048.3679  
Epoch 1645/2500  
10/10 [=====] - 0s 1ms/step - loss: 1048.8480 - nll_los:  
1048.8480  
Epoch 1646/2500  
10/10 [=====] - 0s 839us/step - loss: 1047.0089 - nll_los  
s: 1047.0089  
Epoch 1647/2500
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10/10 [=====] - 0s 796us/step - loss: 1047.0052 - nll_los  
s: 1047.0052  
Epoch 1648/2500  
10/10 [=====] - 0s 861us/step - loss: 1047.2019 - nll_los  
s: 1047.2019  
Epoch 1649/2500  
10/10 [=====] - 0s 882us/step - loss: 1046.3552 - nll_los  
s: 1046.3552  
Epoch 1650/2500  
10/10 [=====] - 0s 835us/step - loss: 1049.4294 - nll_los  
s: 1049.4294  
Epoch 1651/2500  
10/10 [=====] - 0s 828us/step - loss: 1048.9023 - nll_los  
s: 1048.9023  
Epoch 1652/2500  
10/10 [=====] - 0s 804us/step - loss: 1050.0980 - nll_los  
s: 1050.0980  
Epoch 1653/2500  
10/10 [=====] - 0s 727us/step - loss: 1048.1616 - nll_los  
s: 1048.1616  
Epoch 1654/2500  
10/10 [=====] - 0s 884us/step - loss: 1051.1228 - nll_los  
s: 1051.1228  
Epoch 1655/2500  
10/10 [=====] - 0s 759us/step - loss: 1049.7926 - nll_los  
s: 1049.7926  
Epoch 1656/2500  
10/10 [=====] - 0s 903us/step - loss: 1049.6318 - nll_los  
s: 1049.6318  
Epoch 1657/2500  
10/10 [=====] - 0s 953us/step - loss: 1047.0323 - nll_los  
s: 1047.0323  
Epoch 1658/2500  
10/10 [=====] - 0s 929us/step - loss: 1049.1844 - nll_los  
s: 1049.1844  
Epoch 1659/2500  
10/10 [=====] - 0s 952us/step - loss: 1049.1296 - nll_los  
s: 1049.1296  
Epoch 1660/2500  
10/10 [=====] - 0s 1ms/step - loss: 1046.2616 - nll_los:  
s: 1046.2616  
Epoch 1661/2500  
10/10 [=====] - 0s 915us/step - loss: 1047.7017 - nll_los  
s: 1047.7017  
Epoch 1662/2500  
10/10 [=====] - 0s 901us/step - loss: 1049.6055 - nll_los  
s: 1049.6055  
Epoch 1663/2500  
10/10 [=====] - 0s 850us/step - loss: 1050.6609 - nll_los  
s: 1050.6609  
Epoch 1664/2500  
10/10 [=====] - 0s 794us/step - loss: 1049.6879 - nll_los  
s: 1049.6879  
Epoch 1665/2500  
10/10 [=====] - 0s 906us/step - loss: 1049.3586 - nll_los  
s: 1049.3586  
Epoch 1666/2500
```

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10/10 [=====] - 0s 853us/step - loss: 1048.5598 - nll_los  
s: 1048.5598  
Epoch 1667/2500  
10/10 [=====] - 0s 687us/step - loss: 1047.0642 - nll_los  
s: 1047.0642  
Epoch 1668/2500  
10/10 [=====] - 0s 789us/step - loss: 1047.0917 - nll_los  
s: 1047.0917  
Epoch 1669/2500  
10/10 [=====] - 0s 907us/step - loss: 1049.7194 - nll_los  
s: 1049.7194  
Epoch 1670/2500  
10/10 [=====] - 0s 826us/step - loss: 1050.2347 - nll_los  
s: 1050.2347  
Epoch 1671/2500  
10/10 [=====] - 0s 885us/step - loss: 1044.4053 - nll_los  
s: 1044.4053  
Epoch 1672/2500  
10/10 [=====] - 0s 802us/step - loss: 1048.0813 - nll_los  
s: 1048.0813  
Epoch 1673/2500  
10/10 [=====] - 0s 827us/step - loss: 1047.1638 - nll_los  
s: 1047.1638  
Epoch 1674/2500  
10/10 [=====] - 0s 921us/step - loss: 1050.7379 - nll_los  
s: 1050.7379  
Epoch 1675/2500  
10/10 [=====] - 0s 809us/step - loss: 1047.9832 - nll_los  
s: 1047.9832  
Epoch 1676/2500  
10/10 [=====] - 0s 835us/step - loss: 1047.6183 - nll_los  
s: 1047.6183  
Epoch 1677/2500  
10/10 [=====] - 0s 902us/step - loss: 1046.2961 - nll_los  
s: 1046.2961  
Epoch 1678/2500  
10/10 [=====] - 0s 889us/step - loss: 1047.3220 - nll_los  
s: 1047.3220  
Epoch 1679/2500  
10/10 [=====] - 0s 758us/step - loss: 1045.9539 - nll_los  
s: 1045.9539  
Epoch 1680/2500  
10/10 [=====] - 0s 954us/step - loss: 1049.3228 - nll_los  
s: 1049.3228  
Epoch 1681/2500  
10/10 [=====] - 0s 887us/step - loss: 1045.8289 - nll_los  
s: 1045.8289  
Epoch 1682/2500  
10/10 [=====] - 0s 784us/step - loss: 1051.0798 - nll_los  
s: 1051.0798  
Epoch 1683/2500  
10/10 [=====] - 0s 850us/step - loss: 1049.9659 - nll_los  
s: 1049.9659  
Epoch 1684/2500  
10/10 [=====] - 0s 770us/step - loss: 1050.4236 - nll_los  
s: 1050.4236  
Epoch 1685/2500
```

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10/10 [=====] - 0s 898us/step - loss: 1047.9060 - nll_los  
s: 1047.9060  
Epoch 1686/2500  
10/10 [=====] - 0s 820us/step - loss: 1048.9805 - nll_los  
s: 1048.9805  
Epoch 1687/2500  
10/10 [=====] - 0s 841us/step - loss: 1048.1779 - nll_los  
s: 1048.1779  
Epoch 1688/2500  
10/10 [=====] - 0s 993us/step - loss: 1048.2395 - nll_los  
s: 1048.2395  
Epoch 1689/2500  
10/10 [=====] - 0s 838us/step - loss: 1045.0468 - nll_los  
s: 1045.0468  
Epoch 1690/2500  
10/10 [=====] - 0s 859us/step - loss: 1047.8293 - nll_los  
s: 1047.8293  
Epoch 1691/2500  
10/10 [=====] - 0s 954us/step - loss: 1047.9393 - nll_los  
s: 1047.9393  
Epoch 1692/2500  
10/10 [=====] - 0s 937us/step - loss: 1046.5538 - nll_los  
s: 1046.5538  
Epoch 1693/2500  
10/10 [=====] - 0s 993us/step - loss: 1051.8428 - nll_los  
s: 1051.8428  
Epoch 1694/2500  
10/10 [=====] - 0s 856us/step - loss: 1048.7795 - nll_los  
s: 1048.7795  
Epoch 1695/2500  
10/10 [=====] - 0s 815us/step - loss: 1047.3495 - nll_los  
s: 1047.3495  
Epoch 1696/2500  
10/10 [=====] - 0s 857us/step - loss: 1049.3644 - nll_los  
s: 1049.3644  
Epoch 1697/2500  
10/10 [=====] - 0s 906us/step - loss: 1047.3995 - nll_los  
s: 1047.3995  
Epoch 1698/2500  
10/10 [=====] - 0s 865us/step - loss: 1048.7853 - nll_los  
s: 1048.7853  
Epoch 1699/2500  
10/10 [=====] - 0s 902us/step - loss: 1046.1615 - nll_los  
s: 1046.1615  
Epoch 1700/2500  
10/10 [=====] - 0s 905us/step - loss: 1047.9309 - nll_los  
s: 1047.9309  
Epoch 1701/2500  
10/10 [=====] - 0s 907us/step - loss: 1048.6562 - nll_los  
s: 1048.6562
```

Epoch 1702/2500
10/10 [=====] - 0s 874us/step - loss: 1046.5956 - nll_los
s: 1046.5956
Epoch 1703/2500
10/10 [=====] - 0s 734us/step - loss: 1047.7059 - nll_los
s: 1047.7059
Epoch 1704/2500
10/10 [=====] - 0s 807us/step - loss: 1047.8777 - nll_los
s: 1047.8777
Epoch 1705/2500
10/10 [=====] - 0s 836us/step - loss: 1050.0195 - nll_los
s: 1050.0195
Epoch 1706/2500
10/10 [=====] - 0s 825us/step - loss: 1046.9275 - nll_los
s: 1046.9275
Epoch 1707/2500
10/10 [=====] - 0s 862us/step - loss: 1048.8433 - nll_los
s: 1048.8433
Epoch 1708/2500
10/10 [=====] - 0s 828us/step - loss: 1044.7123 - nll_los
s: 1044.7123
Epoch 1709/2500
10/10 [=====] - 0s 896us/step - loss: 1047.7307 - nll_los
s: 1047.7307
Epoch 1710/2500
10/10 [=====] - 0s 833us/step - loss: 1048.3708 - nll_los
s: 1048.3708
Epoch 1711/2500
10/10 [=====] - 0s 862us/step - loss: 1047.4747 - nll_los
s: 1047.4747
Epoch 1712/2500
10/10 [=====] - 0s 870us/step - loss: 1047.2576 - nll_los
s: 1047.2576
Epoch 1713/2500
10/10 [=====] - 0s 832us/step - loss: 1047.4146 - nll_los
s: 1047.4146
Epoch 1714/2500
10/10 [=====] - 0s 933us/step - loss: 1050.2714 - nll_los
s: 1050.2714
Epoch 1715/2500
10/10 [=====] - 0s 840us/step - loss: 1050.1659 - nll_los
s: 1050.1659
Epoch 1716/2500
10/10 [=====] - 0s 822us/step - loss: 1049.2766 - nll_los
s: 1049.2766
Epoch 1717/2500
10/10 [=====] - 0s 930us/step - loss: 1053.0690 - nll_los
s: 1053.0690
Epoch 1718/2500
10/10 [=====] - 0s 788us/step - loss: 1051.0118 - nll_los
s: 1051.0118
Epoch 1719/2500
10/10 [=====] - 0s 832us/step - loss: 1051.4694 - nll_los
s: 1051.4694
Epoch 1720/2500
10/10 [=====] - 0s 820us/step - loss: 1047.1327 - nll_los
s: 1047.1327

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Epoch 1721/2500
10/10 [=====] - 0s 694us/step - loss: 1048.3157 - nll_los
s: 1048.3157
Epoch 1722/2500
10/10 [=====] - 0s 847us/step - loss: 1047.9591 - nll_los
s: 1047.9591
Epoch 1723/2500
10/10 [=====] - 0s 946us/step - loss: 1046.8733 - nll_los
s: 1046.8733
Epoch 1724/2500
10/10 [=====] - 0s 979us/step - loss: 1047.7098 - nll_los
s: 1047.7098
Epoch 1725/2500
10/10 [=====] - 0s 963us/step - loss: 1051.2552 - nll_los
s: 1051.2552
Epoch 1726/2500
10/10 [=====] - 0s 901us/step - loss: 1048.8575 - nll_los
s: 1048.8575
Epoch 1727/2500
10/10 [=====] - 0s 961us/step - loss: 1047.8705 - nll_los
s: 1047.8705
Epoch 1728/2500
10/10 [=====] - 0s 785us/step - loss: 1047.3889 - nll_los
s: 1047.3889
Epoch 1729/2500
10/10 [=====] - 0s 853us/step - loss: 1046.6633 - nll_los
s: 1046.6633
Epoch 1730/2500
10/10 [=====] - 0s 833us/step - loss: 1048.3627 - nll_los
s: 1048.3627
Epoch 1731/2500
10/10 [=====] - 0s 820us/step - loss: 1045.9915 - nll_los
s: 1045.9915
Epoch 1732/2500
10/10 [=====] - 0s 929us/step - loss: 1049.2239 - nll_los
s: 1049.2239
Epoch 1733/2500
10/10 [=====] - 0s 795us/step - loss: 1048.1796 - nll_los
s: 1048.1796
Epoch 1734/2500
10/10 [=====] - 0s 796us/step - loss: 1049.6935 - nll_los
s: 1049.6935
Epoch 1735/2500
10/10 [=====] - 0s 805us/step - loss: 1049.4373 - nll_los
s: 1049.4373
Epoch 1736/2500
10/10 [=====] - 0s 825us/step - loss: 1048.0262 - nll_los
s: 1048.0262
Epoch 1737/2500
10/10 [=====] - 0s 857us/step - loss: 1048.8314 - nll_los
s: 1048.8314
Epoch 1738/2500
10/10 [=====] - 0s 879us/step - loss: 1047.3589 - nll_los
s: 1047.3589
Epoch 1739/2500
10/10 [=====] - 0s 918us/step - loss: 1047.0310 - nll_los
s: 1047.0310
```

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Epoch 1740/2500
10/10 [=====] - 0s 720us/step - loss: 1049.9805 - nll_loss: 1049.9805
Epoch 1741/2500
10/10 [=====] - 0s 826us/step - loss: 1046.4700 - nll_loss: 1046.4700
Epoch 1742/2500
10/10 [=====] - 0s 934us/step - loss: 1048.6791 - nll_loss: 1048.6791
Epoch 1743/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.2334 - nll_loss: 1049.2334
Epoch 1744/2500
10/10 [=====] - 0s 786us/step - loss: 1047.7379 - nll_loss: 1047.7379
Epoch 1745/2500
10/10 [=====] - 0s 985us/step - loss: 1045.4426 - nll_loss: 1045.4426
Epoch 1746/2500
10/10 [=====] - 0s 790us/step - loss: 1046.6199 - nll_loss: 1046.6199
Epoch 1747/2500
10/10 [=====] - 0s 918us/step - loss: 1044.6108 - nll_loss: 1044.6108
Epoch 1748/2500
10/10 [=====] - 0s 878us/step - loss: 1045.8158 - nll_loss: 1045.8158
Epoch 1749/2500
10/10 [=====] - 0s 893us/step - loss: 1047.9044 - nll_loss: 1047.9044
Epoch 1750/2500
10/10 [=====] - 0s 854us/step - loss: 1048.1066 - nll_loss: 1048.1066
Epoch 1751/2500
10/10 [=====] - 0s 811us/step - loss: 1048.6096 - nll_loss: 1048.6096
Epoch 1752/2500
10/10 [=====] - 0s 874us/step - loss: 1047.7324 - nll_loss: 1047.7324
Epoch 1753/2500
10/10 [=====] - 0s 855us/step - loss: 1049.4402 - nll_loss: 1049.4402
Epoch 1754/2500
10/10 [=====] - 0s 825us/step - loss: 1051.4944 - nll_loss: 1051.4944
Epoch 1755/2500
10/10 [=====] - 0s 868us/step - loss: 1048.4639 - nll_loss: 1048.4639
Epoch 1756/2500
10/10 [=====] - 0s 890us/step - loss: 1046.1560 - nll_loss: 1046.1560
Epoch 1757/2500
10/10 [=====] - 0s 868us/step - loss: 1050.5371 - nll_loss: 1050.5371
Epoch 1758/2500
10/10 [=====] - 0s 909us/step - loss: 1047.4084 - nll_loss: 1047.4084
```

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Epoch 1759/2500
10/10 [=====] - 0s 874us/step - loss: 1046.1892 - nll_los
s: 1046.1892
Epoch 1760/2500
10/10 [=====] - 0s 815us/step - loss: 1050.4951 - nll_los
s: 1050.4951
Epoch 1761/2500
10/10 [=====] - 0s 810us/step - loss: 1045.8263 - nll_los
s: 1045.8263
Epoch 1762/2500
10/10 [=====] - 0s 881us/step - loss: 1050.3304 - nll_los
s: 1050.3304
Epoch 1763/2500
10/10 [=====] - 0s 830us/step - loss: 1046.5930 - nll_los
s: 1046.5930
Epoch 1764/2500
10/10 [=====] - 0s 920us/step - loss: 1048.6787 - nll_los
s: 1048.6787
Epoch 1765/2500
10/10 [=====] - 0s 832us/step - loss: 1049.4572 - nll_los
s: 1049.4572
Epoch 1766/2500
10/10 [=====] - 0s 937us/step - loss: 1046.5284 - nll_los
s: 1046.5284
Epoch 1767/2500
10/10 [=====] - 0s 853us/step - loss: 1048.8241 - nll_los
s: 1048.8241
Epoch 1768/2500
10/10 [=====] - 0s 832us/step - loss: 1046.2274 - nll_los
s: 1046.2274
Epoch 1769/2500
10/10 [=====] - 0s 888us/step - loss: 1049.4884 - nll_los
s: 1049.4884
Epoch 1770/2500
10/10 [=====] - 0s 790us/step - loss: 1047.2380 - nll_los
s: 1047.2380
Epoch 1771/2500
10/10 [=====] - 0s 871us/step - loss: 1047.4080 - nll_los
s: 1047.4080
Epoch 1772/2500
10/10 [=====] - 0s 722us/step - loss: 1048.3025 - nll_los
s: 1048.3025
Epoch 1773/2500
10/10 [=====] - 0s 940us/step - loss: 1048.8723 - nll_los
s: 1048.8723
Epoch 1774/2500
10/10 [=====] - 0s 929us/step - loss: 1051.1301 - nll_los
s: 1051.1301
Epoch 1775/2500
10/10 [=====] - 0s 859us/step - loss: 1047.4390 - nll_los
s: 1047.4390
Epoch 1776/2500
10/10 [=====] - 0s 828us/step - loss: 1046.3873 - nll_los
s: 1046.3873
Epoch 1777/2500
10/10 [=====] - 0s 883us/step - loss: 1049.2917 - nll_los
s: 1049.2917
```

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Epoch 1778/2500
10/10 [=====] - 0s 771us/step - loss: 1044.7347 - nll_loss: 1044.7347
Epoch 1779/2500
10/10 [=====] - 0s 760us/step - loss: 1046.1643 - nll_loss: 1046.1643
Epoch 1780/2500
10/10 [=====] - 0s 836us/step - loss: 1043.3401 - nll_loss: 1043.3401
Epoch 1781/2500
10/10 [=====] - 0s 919us/step - loss: 1047.0417 - nll_loss: 1047.0417
Epoch 1782/2500
10/10 [=====] - 0s 715us/step - loss: 1047.4015 - nll_loss: 1047.4015
Epoch 1783/2500
10/10 [=====] - 0s 818us/step - loss: 1050.1465 - nll_loss: 1050.1465
Epoch 1784/2500
10/10 [=====] - 0s 948us/step - loss: 1045.0510 - nll_loss: 1045.0510
Epoch 1785/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.5262 - nll_loss: 1048.5262
Epoch 1786/2500
10/10 [=====] - 0s 963us/step - loss: 1048.9558 - nll_loss: 1048.9558
Epoch 1787/2500
10/10 [=====] - 0s 1ms/step - loss: 1050.1066 - nll_loss: 1050.1066
Epoch 1788/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.0251 - nll_loss: 1049.0251
Epoch 1789/2500
10/10 [=====] - 0s 778us/step - loss: 1049.6102 - nll_loss: 1049.6102
Epoch 1790/2500
10/10 [=====] - 0s 828us/step - loss: 1049.0282 - nll_loss: 1049.0282
Epoch 1791/2500
10/10 [=====] - 0s 942us/step - loss: 1048.6870 - nll_loss: 1048.6870
Epoch 1792/2500
10/10 [=====] - 0s 761us/step - loss: 1046.0801 - nll_loss: 1046.0801
Epoch 1793/2500
10/10 [=====] - 0s 825us/step - loss: 1047.6700 - nll_loss: 1047.6700
Epoch 1794/2500
10/10 [=====] - 0s 867us/step - loss: 1050.3472 - nll_loss: 1050.3472
Epoch 1795/2500
10/10 [=====] - 0s 834us/step - loss: 1051.7476 - nll_loss: 1051.7476
Epoch 1796/2500
10/10 [=====] - 0s 825us/step - loss: 1051.8478 - nll_loss: 1051.8478
```

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Epoch 1797/2500
10/10 [=====] - 0s 863us/step - loss: 1049.6024 - nll_los
s: 1049.6024
Epoch 1798/2500
10/10 [=====] - 0s 886us/step - loss: 1046.5543 - nll_los
s: 1046.5543
Epoch 1799/2500
10/10 [=====] - 0s 813us/step - loss: 1047.0776 - nll_los
s: 1047.0776
Epoch 1800/2500
10/10 [=====] - 0s 877us/step - loss: 1047.6506 - nll_los
s: 1047.6506
Epoch 1801/2500
10/10 [=====] - 0s 974us/step - loss: 1047.4634 - nll_los
s: 1047.4634
Epoch 1802/2500
10/10 [=====] - 0s 860us/step - loss: 1049.8263 - nll_los
s: 1049.8263
Epoch 1803/2500
10/10 [=====] - 0s 859us/step - loss: 1051.6562 - nll_los
s: 1051.6562
Epoch 1804/2500
10/10 [=====] - 0s 830us/step - loss: 1049.4858 - nll_los
s: 1049.4858
Epoch 1805/2500
10/10 [=====] - 0s 862us/step - loss: 1051.3105 - nll_los
s: 1051.3105
Epoch 1806/2500
10/10 [=====] - 0s 995us/step - loss: 1046.3435 - nll_los
s: 1046.3435
Epoch 1807/2500
10/10 [=====] - 0s 936us/step - loss: 1046.8826 - nll_los
s: 1046.8826
Epoch 1808/2500
10/10 [=====] - 0s 955us/step - loss: 1045.0989 - nll_los
s: 1045.0989
Epoch 1809/2500
10/10 [=====] - 0s 806us/step - loss: 1048.6696 - nll_los
s: 1048.6696
Epoch 1810/2500
10/10 [=====] - 0s 958us/step - loss: 1050.4962 - nll_los
s: 1050.4962
Epoch 1811/2500
10/10 [=====] - 0s 858us/step - loss: 1049.4341 - nll_los
s: 1049.4341
Epoch 1812/2500
10/10 [=====] - 0s 806us/step - loss: 1047.0189 - nll_los
s: 1047.0189
Epoch 1813/2500
10/10 [=====] - 0s 883us/step - loss: 1047.8403 - nll_los
s: 1047.8403
Epoch 1814/2500
10/10 [=====] - 0s 963us/step - loss: 1048.3864 - nll_los
s: 1048.3864
Epoch 1815/2500
10/10 [=====] - 0s 828us/step - loss: 1052.6340 - nll_los
s: 1052.6340
```

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Epoch 1816/2500
10/10 [=====] - 0s 835us/step - loss: 1048.1394 - nll_los
s: 1048.1394
Epoch 1817/2500
10/10 [=====] - 0s 943us/step - loss: 1050.5153 - nll_los
s: 1050.5153
Epoch 1818/2500
10/10 [=====] - 0s 914us/step - loss: 1047.9900 - nll_los
s: 1047.9900
Epoch 1819/2500
10/10 [=====] - 0s 772us/step - loss: 1049.9692 - nll_los
s: 1049.9692
Epoch 1820/2500
10/10 [=====] - 0s 583us/step - loss: 1049.2731 - nll_los
s: 1049.2731
Epoch 1821/2500
10/10 [=====] - 0s 731us/step - loss: 1047.1477 - nll_los
s: 1047.1477
Epoch 1822/2500
10/10 [=====] - 0s 791us/step - loss: 1047.6506 - nll_los
s: 1047.6506
Epoch 1823/2500
10/10 [=====] - 0s 789us/step - loss: 1047.7719 - nll_los
s: 1047.7719
Epoch 1824/2500
10/10 [=====] - 0s 721us/step - loss: 1052.2288 - nll_los
s: 1052.2288
Epoch 1825/2500
10/10 [=====] - 0s 829us/step - loss: 1049.4535 - nll_los
s: 1049.4535
Epoch 1826/2500
10/10 [=====] - 0s 839us/step - loss: 1047.3713 - nll_los
s: 1047.3713
Epoch 1827/2500
10/10 [=====] - 0s 841us/step - loss: 1047.0577 - nll_los
s: 1047.0577
Epoch 1828/2500
10/10 [=====] - 0s 642us/step - loss: 1048.2719 - nll_los
s: 1048.2719
Epoch 1829/2500
10/10 [=====] - 0s 794us/step - loss: 1047.5989 - nll_los
s: 1047.5989
Epoch 1830/2500
10/10 [=====] - 0s 953us/step - loss: 1047.1931 - nll_los
s: 1047.1931
Epoch 1831/2500
10/10 [=====] - 0s 908us/step - loss: 1047.5922 - nll_los
s: 1047.5922
Epoch 1832/2500
10/10 [=====] - 0s 804us/step - loss: 1046.2520 - nll_los
s: 1046.2520
Epoch 1833/2500
10/10 [=====] - 0s 789us/step - loss: 1049.0746 - nll_los
s: 1049.0746
Epoch 1834/2500
10/10 [=====] - 0s 769us/step - loss: 1048.4429 - nll_los
s: 1048.4429
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Epoch 1835/2500
10/10 [=====] - 0s 850us/step - loss: 1049.9290 - nll_los
s: 1049.9290
Epoch 1836/2500
10/10 [=====] - 0s 820us/step - loss: 1047.1741 - nll_los
s: 1047.1741
Epoch 1837/2500
10/10 [=====] - 0s 868us/step - loss: 1051.0013 - nll_los
s: 1051.0013
Epoch 1838/2500
10/10 [=====] - 0s 944us/step - loss: 1050.1111 - nll_los
s: 1050.1111
Epoch 1839/2500
10/10 [=====] - 0s 896us/step - loss: 1048.6978 - nll_los
s: 1048.6978
Epoch 1840/2500
10/10 [=====] - 0s 803us/step - loss: 1051.0754 - nll_los
s: 1051.0754
Epoch 1841/2500
10/10 [=====] - 0s 922us/step - loss: 1046.7321 - nll_los
s: 1046.7321
Epoch 1842/2500
10/10 [=====] - 0s 883us/step - loss: 1048.5604 - nll_los
s: 1048.5604
Epoch 1843/2500
10/10 [=====] - 0s 855us/step - loss: 1048.5945 - nll_los
s: 1048.5945
Epoch 1844/2500
10/10 [=====] - 0s 920us/step - loss: 1048.3226 - nll_los
s: 1048.3226
Epoch 1845/2500
10/10 [=====] - 0s 824us/step - loss: 1050.1503 - nll_los
s: 1050.1503
Epoch 1846/2500
10/10 [=====] - 0s 737us/step - loss: 1048.1428 - nll_los
s: 1048.1428
Epoch 1847/2500
10/10 [=====] - 0s 800us/step - loss: 1048.7827 - nll_los
s: 1048.7827
Epoch 1848/2500
10/10 [=====] - 0s 760us/step - loss: 1043.0598 - nll_los
s: 1043.0598
Epoch 1849/2500
```

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10/10 [=====] - 0s 773us/step - loss: 1047.6764 - nll_los  
s: 1047.6764  
Epoch 1850/2500  
10/10 [=====] - 0s 796us/step - loss: 1048.2202 - nll_los  
s: 1048.2202  
Epoch 1851/2500  
10/10 [=====] - 0s 940us/step - loss: 1049.3768 - nll_los  
s: 1049.3768  
Epoch 1852/2500  
10/10 [=====] - 0s 932us/step - loss: 1047.0359 - nll_los  
s: 1047.0359  
Epoch 1853/2500  
10/10 [=====] - 0s 861us/step - loss: 1048.6832 - nll_los  
s: 1048.6832  
Epoch 1854/2500  
10/10 [=====] - 0s 834us/step - loss: 1048.1683 - nll_los  
s: 1048.1683  
Epoch 1855/2500  
10/10 [=====] - 0s 834us/step - loss: 1046.6156 - nll_los  
s: 1046.6156  
Epoch 1856/2500  
10/10 [=====] - 0s 825us/step - loss: 1047.2686 - nll_los  
s: 1047.2686  
Epoch 1857/2500  
10/10 [=====] - 0s 830us/step - loss: 1050.7987 - nll_los  
s: 1050.7987  
Epoch 1858/2500  
10/10 [=====] - 0s 744us/step - loss: 1046.9590 - nll_los  
s: 1046.9590  
Epoch 1859/2500  
10/10 [=====] - 0s 790us/step - loss: 1048.6653 - nll_los  
s: 1048.6653  
Epoch 1860/2500  
10/10 [=====] - 0s 871us/step - loss: 1046.1295 - nll_los  
s: 1046.1295  
Epoch 1861/2500  
10/10 [=====] - 0s 835us/step - loss: 1046.6677 - nll_los  
s: 1046.6677  
Epoch 1862/2500  
10/10 [=====] - 0s 837us/step - loss: 1049.4382 - nll_los  
s: 1049.4382  
Epoch 1863/2500  
10/10 [=====] - 0s 958us/step - loss: 1048.5485 - nll_los  
s: 1048.5485  
Epoch 1864/2500  
10/10 [=====] - 0s 832us/step - loss: 1048.7838 - nll_los  
s: 1048.7838  
Epoch 1865/2500  
10/10 [=====] - 0s 950us/step - loss: 1045.2955 - nll_los  
s: 1045.2955  
Epoch 1866/2500  
10/10 [=====] - 0s 833us/step - loss: 1046.3451 - nll_los  
s: 1046.3451  
Epoch 1867/2500  
10/10 [=====] - 0s 787us/step - loss: 1044.2109 - nll_los  
s: 1044.2109  
Epoch 1868/2500
```

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10/10 [=====] - 0s 870us/step - loss: 1045.5945 - nll_los  
s: 1045.5945  
Epoch 1869/2500  
10/10 [=====] - 0s 870us/step - loss: 1047.1608 - nll_los  
s: 1047.1608  
Epoch 1870/2500  
10/10 [=====] - 0s 903us/step - loss: 1048.2620 - nll_los  
s: 1048.2620  
Epoch 1871/2500  
10/10 [=====] - 0s 941us/step - loss: 1048.5804 - nll_los  
s: 1048.5804  
Epoch 1872/2500  
10/10 [=====] - 0s 971us/step - loss: 1051.1791 - nll_los  
s: 1051.1791  
Epoch 1873/2500  
10/10 [=====] - 0s 881us/step - loss: 1048.9282 - nll_los  
s: 1048.9282  
Epoch 1874/2500  
10/10 [=====] - 0s 799us/step - loss: 1046.2947 - nll_los  
s: 1046.2947  
Epoch 1875/2500  
10/10 [=====] - 0s 923us/step - loss: 1047.4965 - nll_los  
s: 1047.4965  
Epoch 1876/2500  
10/10 [=====] - 0s 886us/step - loss: 1046.6520 - nll_los  
s: 1046.6520  
Epoch 1877/2500  
10/10 [=====] - 0s 824us/step - loss: 1051.9309 - nll_los  
s: 1051.9309  
Epoch 1878/2500  
10/10 [=====] - 0s 838us/step - loss: 1050.5432 - nll_los  
s: 1050.5432  
Epoch 1879/2500  
10/10 [=====] - 0s 730us/step - loss: 1048.8461 - nll_los  
s: 1048.8461  
Epoch 1880/2500  
10/10 [=====] - 0s 788us/step - loss: 1047.8586 - nll_los  
s: 1047.8586  
Epoch 1881/2500  
10/10 [=====] - 0s 801us/step - loss: 1047.1527 - nll_los  
s: 1047.1527  
Epoch 1882/2500  
10/10 [=====] - 0s 881us/step - loss: 1049.0867 - nll_los  
s: 1049.0867  
Epoch 1883/2500  
10/10 [=====] - 0s 820us/step - loss: 1049.3020 - nll_los  
s: 1049.3020  
Epoch 1884/2500  
10/10 [=====] - 0s 895us/step - loss: 1048.3915 - nll_los  
s: 1048.3915  
Epoch 1885/2500  
10/10 [=====] - 0s 914us/step - loss: 1046.3176 - nll_los  
s: 1046.3176  
Epoch 1886/2500  
10/10 [=====] - 0s 808us/step - loss: 1049.1775 - nll_los  
s: 1049.1775  
Epoch 1887/2500
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10/10 [=====] - 0s 883us/step - loss: 1046.3207 - nll_los  
s: 1046.3207  
Epoch 1888/2500  
10/10 [=====] - 0s 925us/step - loss: 1047.7883 - nll_los  
s: 1047.7883  
Epoch 1889/2500  
10/10 [=====] - 0s 833us/step - loss: 1047.9592 - nll_los  
s: 1047.9592  
Epoch 1890/2500  
10/10 [=====] - 0s 833us/step - loss: 1048.3010 - nll_los  
s: 1048.3010  
Epoch 1891/2500  
10/10 [=====] - 0s 509us/step - loss: 1050.7970 - nll_los  
s: 1050.7970  
Epoch 1892/2500  
10/10 [=====] - 0s 1ms/step - loss: 1050.3905 - nll_loss:  
1050.3905  
Epoch 1893/2500  
10/10 [=====] - 0s 840us/step - loss: 1046.4451 - nll_los  
s: 1046.4451  
Epoch 1894/2500  
10/10 [=====] - 0s 746us/step - loss: 1048.1995 - nll_los  
s: 1048.1995  
Epoch 1895/2500  
10/10 [=====] - 0s 834us/step - loss: 1048.2960 - nll_los  
s: 1048.2960  
Epoch 1896/2500  
10/10 [=====] - 0s 848us/step - loss: 1047.7827 - nll_los  
s: 1047.7827  
Epoch 1897/2500  
10/10 [=====] - 0s 878us/step - loss: 1048.9548 - nll_los  
s: 1048.9548  
Epoch 1898/2500  
10/10 [=====] - 0s 709us/step - loss: 1049.4242 - nll_los  
s: 1049.4242  
Epoch 1899/2500  
10/10 [=====] - 0s 824us/step - loss: 1046.8086 - nll_los  
s: 1046.8086  
Epoch 1900/2500  
10/10 [=====] - 0s 867us/step - loss: 1047.5416 - nll_los  
s: 1047.5416  
Epoch 1901/2500  
10/10 [=====] - 0s 827us/step - loss: 1046.7234 - nll_los  
s: 1046.7234  
Epoch 1902/2500  
10/10 [=====] - 0s 948us/step - loss: 1049.9309 - nll_los  
s: 1049.9309  
Epoch 1903/2500  
10/10 [=====] - 0s 866us/step - loss: 1048.0764 - nll_los  
s: 1048.0764  
Epoch 1904/2500  
10/10 [=====] - 0s 791us/step - loss: 1047.8557 - nll_los  
s: 1047.8557  
Epoch 1905/2500  
10/10 [=====] - 0s 834us/step - loss: 1048.1996 - nll_los  
s: 1048.1996  
Epoch 1906/2500
```

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10/10 [=====] - 0s 909us/step - loss: 1049.4578 - nll_los  
s: 1049.4578  
Epoch 1907/2500  
10/10 [=====] - 0s 962us/step - loss: 1049.5383 - nll_los  
s: 1049.5383  
Epoch 1908/2500  
10/10 [=====] - 0s 760us/step - loss: 1050.6865 - nll_los  
s: 1050.6865  
Epoch 1909/2500  
10/10 [=====] - 0s 808us/step - loss: 1046.9445 - nll_los  
s: 1046.9445  
Epoch 1910/2500  
10/10 [=====] - 0s 852us/step - loss: 1047.0737 - nll_los  
s: 1047.0737  
Epoch 1911/2500  
10/10 [=====] - 0s 1ms/step - loss: 1046.1974 - nll_loss:  
1046.1974  
Epoch 1912/2500  
10/10 [=====] - 0s 831us/step - loss: 1047.0359 - nll_los  
s: 1047.0359  
Epoch 1913/2500  
10/10 [=====] - 0s 777us/step - loss: 1047.1526 - nll_los  
s: 1047.1526  
Epoch 1914/2500  
10/10 [=====] - 0s 911us/step - loss: 1047.5488 - nll_los  
s: 1047.5488  
Epoch 1915/2500  
10/10 [=====] - 0s 835us/step - loss: 1050.9685 - nll_los  
s: 1050.9685  
Epoch 1916/2500  
10/10 [=====] - 0s 896us/step - loss: 1048.9746 - nll_los  
s: 1048.9746  
Epoch 1917/2500  
10/10 [=====] - 0s 706us/step - loss: 1044.9775 - nll_los  
s: 1044.9775  
Epoch 1918/2500  
10/10 [=====] - 0s 813us/step - loss: 1048.3033 - nll_los  
s: 1048.3033  
Epoch 1919/2500  
10/10 [=====] - 0s 907us/step - loss: 1049.4460 - nll_los  
s: 1049.4460  
Epoch 1920/2500  
10/10 [=====] - 0s 836us/step - loss: 1049.8616 - nll_los  
s: 1049.8616  
Epoch 1921/2500  
10/10 [=====] - 0s 849us/step - loss: 1046.5217 - nll_los  
s: 1046.5217  
Epoch 1922/2500  
10/10 [=====] - 0s 804us/step - loss: 1048.6251 - nll_los  
s: 1048.6251
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Epoch 1923/2500
10/10 [=====] - 0s 902us/step - loss: 1047.6956 - nll_loss: 1047.6956
Epoch 1924/2500
10/10 [=====] - 0s 760us/step - loss: 1047.2869 - nll_loss: 1047.2869
Epoch 1925/2500
10/10 [=====] - 0s 929us/step - loss: 1048.4309 - nll_loss: 1048.4309
Epoch 1926/2500
10/10 [=====] - 0s 899us/step - loss: 1049.2926 - nll_loss: 1049.2926
Epoch 1927/2500
10/10 [=====] - 0s 950us/step - loss: 1046.8352 - nll_loss: 1046.8352
Epoch 1928/2500
10/10 [=====] - 0s 882us/step - loss: 1048.7290 - nll_loss: 1048.7290
Epoch 1929/2500
10/10 [=====] - 0s 875us/step - loss: 1044.0929 - nll_loss: 1044.0929
Epoch 1930/2500
10/10 [=====] - 0s 871us/step - loss: 1046.0085 - nll_loss: 1046.0085
Epoch 1931/2500
10/10 [=====] - 0s 860us/step - loss: 1046.8151 - nll_loss: 1046.8151
Epoch 1932/2500
10/10 [=====] - 0s 863us/step - loss: 1044.7402 - nll_loss: 1044.7402
Epoch 1933/2500
10/10 [=====] - 0s 904us/step - loss: 1049.1859 - nll_loss: 1049.1859
Epoch 1934/2500
10/10 [=====] - 0s 831us/step - loss: 1049.3380 - nll_loss: 1049.3380
Epoch 1935/2500
10/10 [=====] - 0s 883us/step - loss: 1048.1659 - nll_loss: 1048.1659
Epoch 1936/2500
10/10 [=====] - 0s 839us/step - loss: 1048.4117 - nll_loss: 1048.4117
Epoch 1937/2500
10/10 [=====] - 0s 897us/step - loss: 1044.7322 - nll_loss: 1044.7322
Epoch 1938/2500
10/10 [=====] - 0s 853us/step - loss: 1048.8359 - nll_loss: 1048.8359
Epoch 1939/2500
10/10 [=====] - 0s 832us/step - loss: 1048.4417 - nll_loss: 1048.4417
Epoch 1940/2500
10/10 [=====] - 0s 805us/step - loss: 1046.3262 - nll_loss: 1046.3262
Epoch 1941/2500
10/10 [=====] - 0s 764us/step - loss: 1049.4457 - nll_loss: 1049.4457

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Epoch 1942/2500
10/10 [=====] - 0s 774us/step - loss: 1047.8030 - nll_los
s: 1047.8030
Epoch 1943/2500
10/10 [=====] - 0s 831us/step - loss: 1046.6575 - nll_los
s: 1046.6575
Epoch 1944/2500
10/10 [=====] - 0s 831us/step - loss: 1047.4259 - nll_los
s: 1047.4259
Epoch 1945/2500
10/10 [=====] - 0s 871us/step - loss: 1049.2445 - nll_los
s: 1049.2445
Epoch 1946/2500
10/10 [=====] - 0s 803us/step - loss: 1050.0568 - nll_los
s: 1050.0568
Epoch 1947/2500
10/10 [=====] - 0s 846us/step - loss: 1048.2194 - nll_los
s: 1048.2194
Epoch 1948/2500
10/10 [=====] - 0s 754us/step - loss: 1049.1766 - nll_los
s: 1049.1766
Epoch 1949/2500
10/10 [=====] - 0s 746us/step - loss: 1049.2057 - nll_los
s: 1049.2057
Epoch 1950/2500
10/10 [=====] - 0s 834us/step - loss: 1046.7465 - nll_los
s: 1046.7465
Epoch 1951/2500
10/10 [=====] - 0s 834us/step - loss: 1046.5928 - nll_los
s: 1046.5928
Epoch 1952/2500
10/10 [=====] - 0s 849us/step - loss: 1046.2017 - nll_los
s: 1046.2017
Epoch 1953/2500
10/10 [=====] - 0s 819us/step - loss: 1047.7719 - nll_los
s: 1047.7719
Epoch 1954/2500
10/10 [=====] - 0s 877us/step - loss: 1049.1309 - nll_los
s: 1049.1309
Epoch 1955/2500
10/10 [=====] - 0s 950us/step - loss: 1048.7888 - nll_los
s: 1048.7888
Epoch 1956/2500
10/10 [=====] - 0s 780us/step - loss: 1045.3488 - nll_los
s: 1045.3488
Epoch 1957/2500
10/10 [=====] - 0s 845us/step - loss: 1047.8357 - nll_los
s: 1047.8357
Epoch 1958/2500
10/10 [=====] - 0s 820us/step - loss: 1047.2732 - nll_los
s: 1047.2732
Epoch 1959/2500
10/10 [=====] - 0s 815us/step - loss: 1045.2305 - nll_los
s: 1045.2305
Epoch 1960/2500
10/10 [=====] - 0s 810us/step - loss: 1048.4685 - nll_los
s: 1048.4685
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Epoch 1961/2500
10/10 [=====] - 0s 767us/step - loss: 1051.0201 - nll_los
s: 1051.0201
Epoch 1962/2500
10/10 [=====] - 0s 779us/step - loss: 1049.7885 - nll_los
s: 1049.7885
Epoch 1963/2500
10/10 [=====] - 0s 939us/step - loss: 1047.7380 - nll_los
s: 1047.7380
Epoch 1964/2500
10/10 [=====] - 0s 928us/step - loss: 1046.2263 - nll_los
s: 1046.2263
Epoch 1965/2500
10/10 [=====] - 0s 922us/step - loss: 1047.7991 - nll_los
s: 1047.7991
Epoch 1966/2500
10/10 [=====] - 0s 930us/step - loss: 1050.2372 - nll_los
s: 1050.2372
Epoch 1967/2500
10/10 [=====] - 0s 780us/step - loss: 1050.2700 - nll_los
s: 1050.2700
Epoch 1968/2500
10/10 [=====] - 0s 895us/step - loss: 1046.1033 - nll_los
s: 1046.1033
Epoch 1969/2500
10/10 [=====] - 0s 928us/step - loss: 1045.9379 - nll_los
s: 1045.9379
Epoch 1970/2500
10/10 [=====] - 0s 843us/step - loss: 1048.5759 - nll_los
s: 1048.5759
Epoch 1971/2500
10/10 [=====] - 0s 826us/step - loss: 1046.8290 - nll_los
s: 1046.8290
Epoch 1972/2500
10/10 [=====] - 0s 863us/step - loss: 1047.4871 - nll_los
s: 1047.4871
Epoch 1973/2500
10/10 [=====] - 0s 933us/step - loss: 1048.2380 - nll_los
s: 1048.2380
Epoch 1974/2500
10/10 [=====] - 0s 865us/step - loss: 1047.4243 - nll_los
s: 1047.4243
Epoch 1975/2500
10/10 [=====] - 0s 829us/step - loss: 1046.2611 - nll_los
s: 1046.2611
Epoch 1976/2500
10/10 [=====] - 0s 850us/step - loss: 1048.4136 - nll_los
s: 1048.4136
Epoch 1977/2500
10/10 [=====] - 0s 889us/step - loss: 1047.7516 - nll_los
s: 1047.7516
Epoch 1978/2500
10/10 [=====] - 0s 741us/step - loss: 1047.7678 - nll_los
s: 1047.7678
Epoch 1979/2500
10/10 [=====] - 0s 741us/step - loss: 1047.7324 - nll_los
s: 1047.7324
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Epoch 1980/2500
10/10 [=====] - 0s 896us/step - loss: 1046.4082 - nll_los
s: 1046.4082
Epoch 1981/2500
10/10 [=====] - 0s 881us/step - loss: 1048.4291 - nll_los
s: 1048.4291
Epoch 1982/2500
10/10 [=====] - 0s 808us/step - loss: 1047.2925 - nll_los
s: 1047.2925
Epoch 1983/2500
10/10 [=====] - 0s 807us/step - loss: 1046.2483 - nll_los
s: 1046.2483
Epoch 1984/2500
10/10 [=====] - 0s 868us/step - loss: 1047.2240 - nll_los
s: 1047.2240
Epoch 1985/2500
10/10 [=====] - 0s 760us/step - loss: 1049.0317 - nll_los
s: 1049.0317
Epoch 1986/2500
10/10 [=====] - 0s 809us/step - loss: 1049.2458 - nll_los
s: 1049.2458
Epoch 1987/2500
10/10 [=====] - 0s 883us/step - loss: 1048.5674 - nll_los
s: 1048.5674
Epoch 1988/2500
10/10 [=====] - 0s 881us/step - loss: 1048.8839 - nll_los
s: 1048.8839
Epoch 1989/2500
10/10 [=====] - 0s 909us/step - loss: 1047.1001 - nll_los
s: 1047.1001
Epoch 1990/2500
10/10 [=====] - 0s 836us/step - loss: 1048.2439 - nll_los
s: 1048.2439
Epoch 1991/2500
10/10 [=====] - 0s 868us/step - loss: 1050.0208 - nll_los
s: 1050.0208
Epoch 1992/2500
10/10 [=====] - 0s 726us/step - loss: 1049.0536 - nll_los
s: 1049.0536
Epoch 1993/2500
10/10 [=====] - 0s 800us/step - loss: 1047.9690 - nll_los
s: 1047.9690
Epoch 1994/2500
10/10 [=====] - 0s 777us/step - loss: 1051.6299 - nll_los
s: 1051.6299
Epoch 1995/2500
10/10 [=====] - 0s 823us/step - loss: 1048.3943 - nll_los
s: 1048.3943
Epoch 1996/2500
10/10 [=====] - 0s 863us/step - loss: 1051.0880 - nll_los
s: 1051.0880
Epoch 1997/2500
10/10 [=====] - 0s 911us/step - loss: 1047.3750 - nll_los
s: 1047.3750
Epoch 1998/2500
10/10 [=====] - 0s 832us/step - loss: 1046.2633 - nll_los
s: 1046.2633
```

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Epoch 1999/2500
10/10 [=====] - 0s 988us/step - loss: 1048.7390 - nll_los
s: 1048.7390
Epoch 2000/2500
10/10 [=====] - 0s 937us/step - loss: 1047.6108 - nll_los
s: 1047.6108
Epoch 2001/2500
10/10 [=====] - 0s 865us/step - loss: 1046.0927 - nll_los
s: 1046.0927
Epoch 2002/2500
10/10 [=====] - 0s 854us/step - loss: 1049.6775 - nll_los
s: 1049.6775
Epoch 2003/2500
10/10 [=====] - 0s 803us/step - loss: 1047.4514 - nll_los
s: 1047.4514
Epoch 2004/2500
10/10 [=====] - 0s 643us/step - loss: 1048.5242 - nll_los
s: 1048.5242
Epoch 2005/2500
10/10 [=====] - 0s 780us/step - loss: 1052.2413 - nll_los
s: 1052.2413
Epoch 2006/2500
10/10 [=====] - 0s 901us/step - loss: 1053.2863 - nll_los
s: 1053.2863
Epoch 2007/2500
10/10 [=====] - 0s 812us/step - loss: 1048.3461 - nll_los
s: 1048.3461
Epoch 2008/2500
10/10 [=====] - 0s 872us/step - loss: 1048.0511 - nll_los
s: 1048.0511
Epoch 2009/2500
10/10 [=====] - 0s 901us/step - loss: 1048.7395 - nll_los
s: 1048.7395
Epoch 2010/2500
10/10 [=====] - 0s 755us/step - loss: 1048.3251 - nll_los
s: 1048.3251
Epoch 2011/2500
10/10 [=====] - 0s 799us/step - loss: 1048.5872 - nll_los
s: 1048.5872
Epoch 2012/2500
10/10 [=====] - 0s 859us/step - loss: 1049.3440 - nll_los
s: 1049.3440
Epoch 2013/2500
10/10 [=====] - 0s 864us/step - loss: 1051.1597 - nll_los
s: 1051.1597
Epoch 2014/2500
10/10 [=====] - 0s 915us/step - loss: 1051.0835 - nll_los
s: 1051.0835
Epoch 2015/2500
10/10 [=====] - 0s 738us/step - loss: 1046.7834 - nll_los
s: 1046.7834
Epoch 2016/2500
10/10 [=====] - 0s 859us/step - loss: 1046.4490 - nll_los
s: 1046.4490
Epoch 2017/2500
10/10 [=====] - 0s 934us/step - loss: 1046.5397 - nll_los
s: 1046.5397
```

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Epoch 2018/2500
10/10 [=====] - 0s 827us/step - loss: 1048.5585 - nll_loss: 1048.5585
Epoch 2019/2500
10/10 [=====] - 0s 809us/step - loss: 1046.7046 - nll_loss: 1046.7046
Epoch 2020/2500
10/10 [=====] - 0s 806us/step - loss: 1048.4375 - nll_loss: 1048.4375
Epoch 2021/2500
10/10 [=====] - 0s 763us/step - loss: 1045.9324 - nll_loss: 1045.9324
Epoch 2022/2500
10/10 [=====] - 0s 814us/step - loss: 1046.7295 - nll_loss: 1046.7295
Epoch 2023/2500
10/10 [=====] - 0s 782us/step - loss: 1045.7080 - nll_loss: 1045.7080
Epoch 2024/2500
10/10 [=====] - 0s 784us/step - loss: 1049.6071 - nll_loss: 1049.6071
Epoch 2025/2500
10/10 [=====] - 0s 864us/step - loss: 1048.3990 - nll_loss: 1048.3990
Epoch 2026/2500
10/10 [=====] - 0s 834us/step - loss: 1049.0614 - nll_loss: 1049.0614
Epoch 2027/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.0886 - nll_loss: 1048.0886
Epoch 2028/2500
10/10 [=====] - 0s 797us/step - loss: 1046.5323 - nll_loss: 1046.5323
Epoch 2029/2500
10/10 [=====] - 0s 843us/step - loss: 1045.4133 - nll_loss: 1045.4133
Epoch 2030/2500
10/10 [=====] - 0s 822us/step - loss: 1050.3547 - nll_loss: 1050.3547
Epoch 2031/2500
10/10 [=====] - 0s 933us/step - loss: 1049.5381 - nll_loss: 1049.5381
Epoch 2032/2500
10/10 [=====] - 0s 830us/step - loss: 1049.1787 - nll_loss: 1049.1787
Epoch 2033/2500
10/10 [=====] - 0s 851us/step - loss: 1047.3601 - nll_loss: 1047.3601
Epoch 2034/2500
10/10 [=====] - 0s 827us/step - loss: 1049.9587 - nll_loss: 1049.9587
Epoch 2035/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.5588 - nll_loss: 1049.5588
Epoch 2036/2500
10/10 [=====] - 0s 919us/step - loss: 1050.0753 - nll_loss: 1050.0753
s: 1050.0753
```

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Epoch 2037/2500
10/10 [=====] - 0s 813us/step - loss: 1047.7029 - nll_loss: 1047.7029
Epoch 2038/2500
10/10 [=====] - 0s 889us/step - loss: 1048.3862 - nll_loss: 1048.3862
Epoch 2039/2500
10/10 [=====] - 0s 859us/step - loss: 1043.6267 - nll_loss: 1043.6267
Epoch 2040/2500
10/10 [=====] - 0s 822us/step - loss: 1045.4783 - nll_loss: 1045.4783
Epoch 2041/2500
10/10 [=====] - 0s 823us/step - loss: 1048.5754 - nll_loss: 1048.5754
Epoch 2042/2500
10/10 [=====] - 0s 823us/step - loss: 1046.2075 - nll_loss: 1046.2075
Epoch 2043/2500
10/10 [=====] - 0s 892us/step - loss: 1048.4779 - nll_loss: 1048.4779
Epoch 2044/2500
10/10 [=====] - 0s 924us/step - loss: 1046.7222 - nll_loss: 1046.7222
Epoch 2045/2500
10/10 [=====] - 0s 827us/step - loss: 1050.3171 - nll_loss: 1050.3171
Epoch 2046/2500
10/10 [=====] - 0s 834us/step - loss: 1049.2699 - nll_loss: 1049.2699
Epoch 2047/2500
10/10 [=====] - 0s 778us/step - loss: 1050.3987 - nll_loss: 1050.3987
Epoch 2048/2500
10/10 [=====] - 0s 800us/step - loss: 1049.2378 - nll_loss: 1049.2378
Epoch 2049/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.2429 - nll_loss: 1047.2429
Epoch 2050/2500
10/10 [=====] - 0s 854us/step - loss: 1047.7795 - nll_loss: 1047.7795
Epoch 2051/2500
10/10 [=====] - 0s 746us/step - loss: 1049.3372 - nll_loss: 1049.3372
Epoch 2052/2500
10/10 [=====] - 0s 928us/step - loss: 1049.2190 - nll_loss: 1049.2190
Epoch 2053/2500
10/10 [=====] - 0s 798us/step - loss: 1049.7596 - nll_loss: 1049.7596
Epoch 2054/2500
10/10 [=====] - 0s 829us/step - loss: 1048.8914 - nll_loss: 1048.8914
Epoch 2055/2500
10/10 [=====] - 0s 803us/step - loss: 1048.3181 - nll_loss: 1048.3181
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Epoch 2056/2500
10/10 [=====] - 0s 797us/step - loss: 1049.1526 - nll_loss: 1049.1526
Epoch 2057/2500
10/10 [=====] - 0s 813us/step - loss: 1048.4895 - nll_loss: 1048.4895
Epoch 2058/2500
10/10 [=====] - 0s 832us/step - loss: 1048.4293 - nll_loss: 1048.4293
Epoch 2059/2500
10/10 [=====] - 0s 834us/step - loss: 1046.8914 - nll_loss: 1046.8914
Epoch 2060/2500
10/10 [=====] - 0s 729us/step - loss: 1047.6277 - nll_loss: 1047.6277
Epoch 2061/2500
10/10 [=====] - 0s 783us/step - loss: 1046.5681 - nll_loss: 1046.5681
Epoch 2062/2500
10/10 [=====] - 0s 886us/step - loss: 1047.9908 - nll_loss: 1047.9908
Epoch 2063/2500
10/10 [=====] - 0s 765us/step - loss: 1044.2556 - nll_loss: 1044.2556
Epoch 2064/2500
10/10 [=====] - 0s 889us/step - loss: 1045.5862 - nll_loss: 1045.5862
Epoch 2065/2500
10/10 [=====] - 0s 892us/step - loss: 1046.4246 - nll_loss: 1046.4246
Epoch 2066/2500
10/10 [=====] - 0s 888us/step - loss: 1045.4919 - nll_loss: 1045.4919
Epoch 2067/2500
10/10 [=====] - 0s 749us/step - loss: 1046.4885 - nll_loss: 1046.4885
Epoch 2068/2500
10/10 [=====] - 0s 974us/step - loss: 1046.7544 - nll_loss: 1046.7544
Epoch 2069/2500
10/10 [=====] - 0s 864us/step - loss: 1050.0596 - nll_loss: 1050.0596
Epoch 2070/2500
```

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10/10 [=====] - 0s 832us/step - loss: 1046.1134 - nll_los  
s: 1046.1134  
Epoch 2071/2500  
10/10 [=====] - 0s 878us/step - loss: 1046.5437 - nll_los  
s: 1046.5437  
Epoch 2072/2500  
10/10 [=====] - 0s 827us/step - loss: 1048.4655 - nll_los  
s: 1048.4655  
Epoch 2073/2500  
10/10 [=====] - 0s 731us/step - loss: 1050.1023 - nll_los  
s: 1050.1023  
Epoch 2074/2500  
10/10 [=====] - 0s 878us/step - loss: 1049.6305 - nll_los  
s: 1049.6305  
Epoch 2075/2500  
10/10 [=====] - 0s 841us/step - loss: 1046.7003 - nll_los  
s: 1046.7003  
Epoch 2076/2500  
10/10 [=====] - 0s 792us/step - loss: 1046.1368 - nll_los  
s: 1046.1368  
Epoch 2077/2500  
10/10 [=====] - 0s 635us/step - loss: 1047.4493 - nll_los  
s: 1047.4493  
Epoch 2078/2500  
10/10 [=====] - 0s 845us/step - loss: 1048.0646 - nll_los  
s: 1048.0646  
Epoch 2079/2500  
10/10 [=====] - 0s 715us/step - loss: 1047.1510 - nll_los  
s: 1047.1510  
Epoch 2080/2500  
10/10 [=====] - 0s 834us/step - loss: 1048.0250 - nll_los  
s: 1048.0250  
Epoch 2081/2500  
10/10 [=====] - 0s 800us/step - loss: 1047.7223 - nll_los  
s: 1047.7223  
Epoch 2082/2500  
10/10 [=====] - 0s 892us/step - loss: 1046.4224 - nll_los  
s: 1046.4224  
Epoch 2083/2500  
10/10 [=====] - 0s 846us/step - loss: 1047.1805 - nll_los  
s: 1047.1805  
Epoch 2084/2500  
10/10 [=====] - 0s 1ms/step - loss: 1045.6976 - nll_los:  
1045.6976  
Epoch 2085/2500  
10/10 [=====] - 0s 809us/step - loss: 1046.4301 - nll_los  
s: 1046.4301  
Epoch 2086/2500  
10/10 [=====] - 0s 873us/step - loss: 1047.6896 - nll_los  
s: 1047.6896  
Epoch 2087/2500  
10/10 [=====] - 0s 852us/step - loss: 1048.1641 - nll_los  
s: 1048.1641  
Epoch 2088/2500  
10/10 [=====] - 0s 807us/step - loss: 1045.0680 - nll_los  
s: 1045.0680  
Epoch 2089/2500
```

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10/10 [=====] - 0s 850us/step - loss: 1051.4993 - nll_loss:  
s: 1051.4993  
Epoch 2090/2500  
10/10 [=====] - 0s 811us/step - loss: 1047.2163 - nll_loss:  
s: 1047.2163  
Epoch 2091/2500  
10/10 [=====] - 0s 926us/step - loss: 1046.0055 - nll_loss:  
s: 1046.0055  
Epoch 2092/2500  
10/10 [=====] - 0s 833us/step - loss: 1046.9763 - nll_loss:  
s: 1046.9763  
Epoch 2093/2500  
10/10 [=====] - 0s 1ms/step - loss: 1047.6627 - nll_loss:  
s: 1047.6627  
Epoch 2094/2500  
10/10 [=====] - 0s 811us/step - loss: 1050.4569 - nll_loss:  
s: 1050.4569  
Epoch 2095/2500  
10/10 [=====] - 0s 896us/step - loss: 1049.5360 - nll_loss:  
s: 1049.5360  
Epoch 2096/2500  
10/10 [=====] - 0s 879us/step - loss: 1051.3306 - nll_loss:  
s: 1051.3306  
Epoch 2097/2500  
10/10 [=====] - 0s 885us/step - loss: 1046.4490 - nll_loss:  
s: 1046.4490  
Epoch 2098/2500  
10/10 [=====] - 0s 1ms/step - loss: 1047.2623 - nll_loss:  
s: 1047.2623  
Epoch 2099/2500  
10/10 [=====] - 0s 786us/step - loss: 1046.9817 - nll_loss:  
s: 1046.9817  
Epoch 2100/2500  
10/10 [=====] - 0s 837us/step - loss: 1048.1060 - nll_loss:  
s: 1048.1060  
Epoch 2101/2500  
10/10 [=====] - 0s 844us/step - loss: 1047.4731 - nll_loss:  
s: 1047.4731  
Epoch 2102/2500  
10/10 [=====] - 0s 784us/step - loss: 1046.2090 - nll_loss:  
s: 1046.2090  
Epoch 2103/2500  
10/10 [=====] - 0s 811us/step - loss: 1045.4363 - nll_loss:  
s: 1045.4363  
Epoch 2104/2500  
10/10 [=====] - 0s 897us/step - loss: 1048.3049 - nll_loss:  
s: 1048.3049  
Epoch 2105/2500  
10/10 [=====] - 0s 874us/step - loss: 1045.6296 - nll_loss:  
s: 1045.6296  
Epoch 2106/2500  
10/10 [=====] - 0s 763us/step - loss: 1046.5909 - nll_loss:  
s: 1046.5909  
Epoch 2107/2500  
10/10 [=====] - 0s 871us/step - loss: 1047.3928 - nll_loss:  
s: 1047.3928  
Epoch 2108/2500
```

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10/10 [=====] - 0s 799us/step - loss: 1046.9834 - nll_los  
s: 1046.9834  
Epoch 2109/2500  
10/10 [=====] - 0s 856us/step - loss: 1049.8307 - nll_los  
s: 1049.8307  
Epoch 2110/2500  
10/10 [=====] - 0s 848us/step - loss: 1047.0433 - nll_los  
s: 1047.0433  
Epoch 2111/2500  
10/10 [=====] - 0s 933us/step - loss: 1045.6838 - nll_los  
s: 1045.6838  
Epoch 2112/2500  
10/10 [=====] - 0s 880us/step - loss: 1048.0798 - nll_los  
s: 1048.0798  
Epoch 2113/2500  
10/10 [=====] - 0s 732us/step - loss: 1047.1451 - nll_los  
s: 1047.1451  
Epoch 2114/2500  
10/10 [=====] - 0s 849us/step - loss: 1046.9803 - nll_los  
s: 1046.9803  
Epoch 2115/2500  
10/10 [=====] - 0s 833us/step - loss: 1046.0673 - nll_los  
s: 1046.0673  
Epoch 2116/2500  
10/10 [=====] - 0s 755us/step - loss: 1044.2399 - nll_los  
s: 1044.2399  
Epoch 2117/2500  
10/10 [=====] - 0s 868us/step - loss: 1043.5583 - nll_los  
s: 1043.5583  
Epoch 2118/2500  
10/10 [=====] - 0s 888us/step - loss: 1046.4008 - nll_los  
s: 1046.4008  
Epoch 2119/2500  
10/10 [=====] - 0s 880us/step - loss: 1044.9219 - nll_los  
s: 1044.9219  
Epoch 2120/2500  
10/10 [=====] - 0s 779us/step - loss: 1045.0381 - nll_los  
s: 1045.0381  
Epoch 2121/2500  
10/10 [=====] - 0s 803us/step - loss: 1047.2267 - nll_los  
s: 1047.2267  
Epoch 2122/2500  
10/10 [=====] - 0s 855us/step - loss: 1045.1910 - nll_los  
s: 1045.1910  
Epoch 2123/2500  
10/10 [=====] - 0s 739us/step - loss: 1046.7566 - nll_los  
s: 1046.7566  
Epoch 2124/2500  
10/10 [=====] - 0s 804us/step - loss: 1048.6835 - nll_los  
s: 1048.6835  
Epoch 2125/2500  
10/10 [=====] - 0s 874us/step - loss: 1045.9154 - nll_los  
s: 1045.9154  
Epoch 2126/2500  
10/10 [=====] - 0s 941us/step - loss: 1048.9460 - nll_los  
s: 1048.9460  
Epoch 2127/2500
```

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10/10 [=====] - 0s 833us/step - loss: 1045.6273 - nll_los  
s: 1045.6273  
Epoch 2128/2500  
10/10 [=====] - 0s 875us/step - loss: 1043.7605 - nll_los  
s: 1043.7605  
Epoch 2129/2500  
10/10 [=====] - 0s 770us/step - loss: 1047.9325 - nll_los  
s: 1047.9325  
Epoch 2130/2500  
10/10 [=====] - 0s 859us/step - loss: 1048.9440 - nll_los  
s: 1048.9440  
Epoch 2131/2500  
10/10 [=====] - 0s 867us/step - loss: 1048.8025 - nll_los  
s: 1048.8025  
Epoch 2132/2500  
10/10 [=====] - 0s 798us/step - loss: 1044.3669 - nll_los  
s: 1044.3669  
Epoch 2133/2500  
10/10 [=====] - 0s 774us/step - loss: 1045.9149 - nll_los  
s: 1045.9149  
Epoch 2134/2500  
10/10 [=====] - 0s 856us/step - loss: 1047.6630 - nll_los  
s: 1047.6630  
Epoch 2135/2500  
10/10 [=====] - 0s 827us/step - loss: 1049.1799 - nll_los  
s: 1049.1799  
Epoch 2136/2500  
10/10 [=====] - 0s 727us/step - loss: 1046.9113 - nll_los  
s: 1046.9113  
Epoch 2137/2500  
10/10 [=====] - 0s 812us/step - loss: 1045.1418 - nll_los  
s: 1045.1418  
Epoch 2138/2500  
10/10 [=====] - 0s 860us/step - loss: 1044.9170 - nll_los  
s: 1044.9170  
Epoch 2139/2500  
10/10 [=====] - 0s 911us/step - loss: 1044.7996 - nll_los  
s: 1044.7996  
Epoch 2140/2500  
10/10 [=====] - 0s 782us/step - loss: 1045.4312 - nll_los  
s: 1045.4312  
Epoch 2141/2500  
10/10 [=====] - 0s 795us/step - loss: 1045.4336 - nll_los  
s: 1045.4336  
Epoch 2142/2500  
10/10 [=====] - 0s 899us/step - loss: 1045.8043 - nll_los  
s: 1045.8043  
Epoch 2143/2500  
10/10 [=====] - 0s 770us/step - loss: 1045.1453 - nll_los  
s: 1045.1453  
Epoch 2144/2500
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10/10 [=====] - 0s 854us/step - loss: 1043.8082 - nll_los  
s: 1043.8082  
Epoch 2145/2500  
10/10 [=====] - 0s 883us/step - loss: 1047.6783 - nll_los  
s: 1047.6783  
Epoch 2146/2500  
10/10 [=====] - 0s 950us/step - loss: 1047.8010 - nll_los  
s: 1047.8010  
Epoch 2147/2500  
10/10 [=====] - 0s 825us/step - loss: 1047.2346 - nll_los  
s: 1047.2346  
Epoch 2148/2500  
10/10 [=====] - 0s 831us/step - loss: 1049.3616 - nll_los  
s: 1049.3616  
Epoch 2149/2500  
10/10 [=====] - 0s 832us/step - loss: 1049.0723 - nll_los  
s: 1049.0723  
Epoch 2150/2500  
10/10 [=====] - 0s 731us/step - loss: 1045.6282 - nll_los  
s: 1045.6282  
Epoch 2151/2500  
10/10 [=====] - 0s 919us/step - loss: 1048.0757 - nll_los  
s: 1048.0757  
Epoch 2152/2500  
10/10 [=====] - 0s 812us/step - loss: 1047.5660 - nll_los  
s: 1047.5660  
Epoch 2153/2500  
10/10 [=====] - 0s 835us/step - loss: 1048.0496 - nll_los  
s: 1048.0496  
Epoch 2154/2500  
10/10 [=====] - 0s 875us/step - loss: 1044.6311 - nll_los  
s: 1044.6311  
Epoch 2155/2500  
10/10 [=====] - 0s 949us/step - loss: 1046.9197 - nll_los  
s: 1046.9197  
Epoch 2156/2500  
10/10 [=====] - 0s 833us/step - loss: 1047.9321 - nll_los  
s: 1047.9321  
Epoch 2157/2500  
10/10 [=====] - 0s 859us/step - loss: 1046.7366 - nll_los  
s: 1046.7366  
Epoch 2158/2500  
10/10 [=====] - 0s 871us/step - loss: 1048.7919 - nll_los  
s: 1048.7919  
Epoch 2159/2500  
10/10 [=====] - 0s 819us/step - loss: 1045.4082 - nll_los  
s: 1045.4082  
Epoch 2160/2500  
10/10 [=====] - 0s 797us/step - loss: 1046.8601 - nll_los  
s: 1046.8601  
Epoch 2161/2500  
10/10 [=====] - 0s 985us/step - loss: 1051.2285 - nll_los  
s: 1051.2285  
Epoch 2162/2500  
10/10 [=====] - 0s 996us/step - loss: 1048.5917 - nll_los  
s: 1048.5917  
Epoch 2163/2500
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10/10 [=====] - 0s 802us/step - loss: 1051.7198 - nll_los  
s: 1051.7198  
Epoch 2164/2500  
10/10 [=====] - 0s 873us/step - loss: 1049.6840 - nll_los  
s: 1049.6840  
Epoch 2165/2500  
10/10 [=====] - 0s 791us/step - loss: 1053.2832 - nll_los  
s: 1053.2832  
Epoch 2166/2500  
10/10 [=====] - 0s 771us/step - loss: 1046.9001 - nll_los  
s: 1046.9001  
Epoch 2167/2500  
10/10 [=====] - 0s 817us/step - loss: 1047.2322 - nll_los  
s: 1047.2322  
Epoch 2168/2500  
10/10 [=====] - 0s 693us/step - loss: 1045.6266 - nll_los  
s: 1045.6266  
Epoch 2169/2500  
10/10 [=====] - 0s 864us/step - loss: 1046.4807 - nll_los  
s: 1046.4807  
Epoch 2170/2500  
10/10 [=====] - 0s 855us/step - loss: 1048.2955 - nll_los  
s: 1048.2955  
Epoch 2171/2500  
10/10 [=====] - 0s 841us/step - loss: 1048.1530 - nll_los  
s: 1048.1530  
Epoch 2172/2500  
10/10 [=====] - 0s 798us/step - loss: 1047.2799 - nll_los  
s: 1047.2799  
Epoch 2173/2500  
10/10 [=====] - 0s 773us/step - loss: 1045.9736 - nll_los  
s: 1045.9736  
Epoch 2174/2500  
10/10 [=====] - 0s 831us/step - loss: 1044.4043 - nll_los  
s: 1044.4043  
Epoch 2175/2500  
10/10 [=====] - 0s 997us/step - loss: 1045.5959 - nll_los  
s: 1045.5959  
Epoch 2176/2500  
10/10 [=====] - 0s 846us/step - loss: 1045.7628 - nll_los  
s: 1045.7628  
Epoch 2177/2500  
10/10 [=====] - 0s 755us/step - loss: 1045.8347 - nll_los  
s: 1045.8347  
Epoch 2178/2500  
10/10 [=====] - 0s 863us/step - loss: 1047.8340 - nll_los  
s: 1047.8340  
Epoch 2179/2500  
10/10 [=====] - 0s 867us/step - loss: 1049.4119 - nll_los  
s: 1049.4119  
Epoch 2180/2500  
10/10 [=====] - 0s 717us/step - loss: 1048.8448 - nll_los  
s: 1048.8448  
Epoch 2181/2500  
10/10 [=====] - 0s 781us/step - loss: 1048.5012 - nll_los  
s: 1048.5012  
Epoch 2182/2500
```

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10/10 [=====] - 0s 870us/step - loss: 1055.6798 - nll_los  
s: 1055.6798  
Epoch 2183/2500  
10/10 [=====] - 0s 900us/step - loss: 1050.0378 - nll_los  
s: 1050.0378  
Epoch 2184/2500  
10/10 [=====] - 0s 869us/step - loss: 1048.6321 - nll_los  
s: 1048.6321  
Epoch 2185/2500  
10/10 [=====] - 0s 775us/step - loss: 1043.9961 - nll_los  
s: 1043.9961  
Epoch 2186/2500  
10/10 [=====] - 0s 854us/step - loss: 1047.4735 - nll_los  
s: 1047.4735  
Epoch 2187/2500  
10/10 [=====] - 0s 880us/step - loss: 1046.3971 - nll_los  
s: 1046.3971  
Epoch 2188/2500  
10/10 [=====] - 0s 875us/step - loss: 1045.8558 - nll_los  
s: 1045.8558  
Epoch 2189/2500  
10/10 [=====] - 0s 760us/step - loss: 1043.3906 - nll_los  
s: 1043.3906  
Epoch 2190/2500  
10/10 [=====] - 0s 728us/step - loss: 1044.8134 - nll_los  
s: 1044.8134  
Epoch 2191/2500  
10/10 [=====] - 0s 878us/step - loss: 1045.2810 - nll_los  
s: 1045.2810  
Epoch 2192/2500  
10/10 [=====] - 0s 878us/step - loss: 1044.6024 - nll_los  
s: 1044.6024  
Epoch 2193/2500  
10/10 [=====] - 0s 807us/step - loss: 1049.5726 - nll_los  
s: 1049.5726  
Epoch 2194/2500  
10/10 [=====] - 0s 1ms/step - loss: 1047.9749 - nll_los: 1047.9749  
Epoch 2195/2500  
10/10 [=====] - 0s 850us/step - loss: 1046.4436 - nll_los  
s: 1046.4436  
Epoch 2196/2500  
10/10 [=====] - 0s 882us/step - loss: 1047.0740 - nll_los  
s: 1047.0740  
Epoch 2197/2500  
10/10 [=====] - 0s 815us/step - loss: 1045.3669 - nll_los  
s: 1045.3669  
Epoch 2198/2500  
10/10 [=====] - 0s 833us/step - loss: 1047.5459 - nll_los  
s: 1047.5459  
Epoch 2199/2500  
10/10 [=====] - 0s 864us/step - loss: 1045.6936 - nll_los  
s: 1045.6936  
Epoch 2200/2500  
10/10 [=====] - 0s 739us/step - loss: 1047.2539 - nll_los  
s: 1047.2539  
Epoch 2201/2500
```

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10/10 [=====] - 0s 708us/step - loss: 1045.9563 - nll_los  
s: 1045.9563  
Epoch 2202/2500  
10/10 [=====] - 0s 854us/step - loss: 1051.1859 - nll_los  
s: 1051.1859  
Epoch 2203/2500  
10/10 [=====] - 0s 816us/step - loss: 1045.5388 - nll_los  
s: 1045.5388  
Epoch 2204/2500  
10/10 [=====] - 0s 877us/step - loss: 1046.6609 - nll_los  
s: 1046.6609  
Epoch 2205/2500  
10/10 [=====] - 0s 785us/step - loss: 1045.2634 - nll_los  
s: 1045.2634  
Epoch 2206/2500  
10/10 [=====] - 0s 884us/step - loss: 1045.4705 - nll_los  
s: 1045.4705  
Epoch 2207/2500  
10/10 [=====] - 0s 852us/step - loss: 1049.2618 - nll_los  
s: 1049.2618  
Epoch 2208/2500  
10/10 [=====] - 0s 807us/step - loss: 1045.9235 - nll_los  
s: 1045.9235  
Epoch 2209/2500  
10/10 [=====] - 0s 873us/step - loss: 1046.5803 - nll_los  
s: 1046.5803  
Epoch 2210/2500  
10/10 [=====] - 0s 861us/step - loss: 1049.2947 - nll_los  
s: 1049.2947  
Epoch 2211/2500  
10/10 [=====] - 0s 807us/step - loss: 1046.0814 - nll_los  
s: 1046.0814  
Epoch 2212/2500  
10/10 [=====] - 0s 833us/step - loss: 1045.9208 - nll_los  
s: 1045.9208  
Epoch 2213/2500  
10/10 [=====] - 0s 863us/step - loss: 1045.6323 - nll_los  
s: 1045.6323  
Epoch 2214/2500  
10/10 [=====] - 0s 929us/step - loss: 1049.3079 - nll_los  
s: 1049.3079  
Epoch 2215/2500  
10/10 [=====] - 0s 976us/step - loss: 1046.6077 - nll_los  
s: 1046.6077  
Epoch 2216/2500  
10/10 [=====] - 0s 833us/step - loss: 1046.5466 - nll_los  
s: 1046.5466  
Epoch 2217/2500  
10/10 [=====] - 0s 838us/step - loss: 1047.6791 - nll_los  
s: 1047.6791
```

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Epoch 2218/2500
10/10 [=====] - 0s 799us/step - loss: 1046.9150 - nll_los
s: 1046.9150
Epoch 2219/2500
10/10 [=====] - 0s 769us/step - loss: 1048.3085 - nll_los
s: 1048.3085
Epoch 2220/2500
10/10 [=====] - 0s 802us/step - loss: 1048.6420 - nll_los
s: 1048.6420
Epoch 2221/2500
10/10 [=====] - 0s 884us/step - loss: 1046.8911 - nll_los
s: 1046.8911
Epoch 2222/2500
10/10 [=====] - 0s 835us/step - loss: 1044.2220 - nll_los
s: 1044.2220
Epoch 2223/2500
10/10 [=====] - 0s 911us/step - loss: 1045.4268 - nll_los
s: 1045.4268
Epoch 2224/2500
10/10 [=====] - 0s 799us/step - loss: 1049.1917 - nll_los
s: 1049.1917
Epoch 2225/2500
10/10 [=====] - 0s 787us/step - loss: 1045.6034 - nll_los
s: 1045.6034
Epoch 2226/2500
10/10 [=====] - 0s 779us/step - loss: 1047.3380 - nll_los
s: 1047.3380
Epoch 2227/2500
10/10 [=====] - 0s 850us/step - loss: 1047.2786 - nll_los
s: 1047.2786
Epoch 2228/2500
10/10 [=====] - 0s 832us/step - loss: 1045.7073 - nll_los
s: 1045.7073
Epoch 2229/2500
10/10 [=====] - 0s 831us/step - loss: 1045.1951 - nll_los
s: 1045.1951
Epoch 2230/2500
10/10 [=====] - 0s 1ms/step - loss: 1048.3857 - nll_los
s: 1048.3857
Epoch 2231/2500
10/10 [=====] - 0s 891us/step - loss: 1048.8142 - nll_los
s: 1048.8142
Epoch 2232/2500
10/10 [=====] - 0s 740us/step - loss: 1044.8943 - nll_los
s: 1044.8943
Epoch 2233/2500
10/10 [=====] - 0s 904us/step - loss: 1048.4963 - nll_los
s: 1048.4963
Epoch 2234/2500
10/10 [=====] - 0s 883us/step - loss: 1050.9569 - nll_los
s: 1050.9569
Epoch 2235/2500
10/10 [=====] - 0s 853us/step - loss: 1046.2917 - nll_los
s: 1046.2917
Epoch 2236/2500
10/10 [=====] - 0s 844us/step - loss: 1048.9685 - nll_los
s: 1048.9685
```

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Epoch 2237/2500
10/10 [=====] - 0s 807us/step - loss: 1047.3973 - nll_los
s: 1047.3973
Epoch 2238/2500
10/10 [=====] - 0s 828us/step - loss: 1047.1927 - nll_los
s: 1047.1927
Epoch 2239/2500
10/10 [=====] - 0s 831us/step - loss: 1049.1399 - nll_los
s: 1049.1399
Epoch 2240/2500
10/10 [=====] - 0s 866us/step - loss: 1048.2622 - nll_los
s: 1048.2622
Epoch 2241/2500
10/10 [=====] - 0s 820us/step - loss: 1045.3004 - nll_los
s: 1045.3004
Epoch 2242/2500
10/10 [=====] - 0s 833us/step - loss: 1047.7732 - nll_los
s: 1047.7732
Epoch 2243/2500
10/10 [=====] - 0s 636us/step - loss: 1046.6504 - nll_los
s: 1046.6504
Epoch 2244/2500
10/10 [=====] - 0s 940us/step - loss: 1047.5680 - nll_los
s: 1047.5680
Epoch 2245/2500
10/10 [=====] - 0s 841us/step - loss: 1047.6818 - nll_los
s: 1047.6818
Epoch 2246/2500
10/10 [=====] - 0s 804us/step - loss: 1044.4012 - nll_los
s: 1044.4012
Epoch 2247/2500
10/10 [=====] - 0s 742us/step - loss: 1047.9681 - nll_los
s: 1047.9681
Epoch 2248/2500
10/10 [=====] - 0s 763us/step - loss: 1046.2771 - nll_los
s: 1046.2771
Epoch 2249/2500
10/10 [=====] - 0s 815us/step - loss: 1046.0046 - nll_los
s: 1046.0046
Epoch 2250/2500
10/10 [=====] - 0s 831us/step - loss: 1047.2504 - nll_los
s: 1047.2504
Epoch 2251/2500
10/10 [=====] - 0s 910us/step - loss: 1049.9630 - nll_los
s: 1049.9630
Epoch 2252/2500
10/10 [=====] - 0s 882us/step - loss: 1047.6016 - nll_los
s: 1047.6016
Epoch 2253/2500
10/10 [=====] - 0s 923us/step - loss: 1046.0842 - nll_los
s: 1046.0842
Epoch 2254/2500
10/10 [=====] - 0s 946us/step - loss: 1046.2354 - nll_los
s: 1046.2354
Epoch 2255/2500
10/10 [=====] - 0s 830us/step - loss: 1049.4861 - nll_los
s: 1049.4861
```

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Epoch 2256/2500
10/10 [=====] - 0s 856us/step - loss: 1045.5143 - nll_los
s: 1045.5143
Epoch 2257/2500
10/10 [=====] - 0s 865us/step - loss: 1046.8845 - nll_los
s: 1046.8845
Epoch 2258/2500
10/10 [=====] - 0s 792us/step - loss: 1048.6024 - nll_los
s: 1048.6024
Epoch 2259/2500
10/10 [=====] - 0s 734us/step - loss: 1048.6437 - nll_los
s: 1048.6437
Epoch 2260/2500
10/10 [=====] - 0s 811us/step - loss: 1048.8660 - nll_los
s: 1048.8660
Epoch 2261/2500
10/10 [=====] - 0s 836us/step - loss: 1047.7244 - nll_los
s: 1047.7244
Epoch 2262/2500
10/10 [=====] - 0s 603us/step - loss: 1048.9476 - nll_los
s: 1048.9476
Epoch 2263/2500
10/10 [=====] - 0s 876us/step - loss: 1048.6838 - nll_los
s: 1048.6838
Epoch 2264/2500
10/10 [=====] - 0s 813us/step - loss: 1047.6492 - nll_los
s: 1047.6492
Epoch 2265/2500
10/10 [=====] - 0s 958us/step - loss: 1048.3339 - nll_los
s: 1048.3339
Epoch 2266/2500
10/10 [=====] - 0s 822us/step - loss: 1049.0496 - nll_los
s: 1049.0496
Epoch 2267/2500
10/10 [=====] - 0s 809us/step - loss: 1044.2371 - nll_los
s: 1044.2371
Epoch 2268/2500
10/10 [=====] - 0s 773us/step - loss: 1045.5532 - nll_los
s: 1045.5532
Epoch 2269/2500
10/10 [=====] - 0s 797us/step - loss: 1047.9148 - nll_los
s: 1047.9148
Epoch 2270/2500
10/10 [=====] - 0s 855us/step - loss: 1048.1782 - nll_los
s: 1048.1782
Epoch 2271/2500
10/10 [=====] - 0s 851us/step - loss: 1047.1008 - nll_los
s: 1047.1008
Epoch 2272/2500
10/10 [=====] - 0s 817us/step - loss: 1049.8236 - nll_los
s: 1049.8236
Epoch 2273/2500
10/10 [=====] - 0s 649us/step - loss: 1047.0903 - nll_los
s: 1047.0903
Epoch 2274/2500
10/10 [=====] - 0s 868us/step - loss: 1047.0292 - nll_los
s: 1047.0292
```

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Epoch 2275/2500
10/10 [=====] - 0s 855us/step - loss: 1049.2074 - nll_los
s: 1049.2074
Epoch 2276/2500
10/10 [=====] - 0s 841us/step - loss: 1047.7628 - nll_los
s: 1047.7628
Epoch 2277/2500
10/10 [=====] - 0s 775us/step - loss: 1050.4749 - nll_los
s: 1050.4749
Epoch 2278/2500
10/10 [=====] - 0s 753us/step - loss: 1045.2998 - nll_los
s: 1045.2998
Epoch 2279/2500
10/10 [=====] - 0s 847us/step - loss: 1047.2789 - nll_los
s: 1047.2789
Epoch 2280/2500
10/10 [=====] - 0s 854us/step - loss: 1046.1691 - nll_los
s: 1046.1691
Epoch 2281/2500
10/10 [=====] - 0s 901us/step - loss: 1047.4651 - nll_los
s: 1047.4651
Epoch 2282/2500
10/10 [=====] - 0s 801us/step - loss: 1047.6536 - nll_los
s: 1047.6536
Epoch 2283/2500
10/10 [=====] - 0s 887us/step - loss: 1048.5779 - nll_los
s: 1048.5779
Epoch 2284/2500
10/10 [=====] - 0s 826us/step - loss: 1044.7491 - nll_los
s: 1044.7491
Epoch 2285/2500
10/10 [=====] - 0s 835us/step - loss: 1046.7983 - nll_los
s: 1046.7983
Epoch 2286/2500
10/10 [=====] - 0s 877us/step - loss: 1047.0338 - nll_los
s: 1047.0338
Epoch 2287/2500
10/10 [=====] - 0s 851us/step - loss: 1047.1631 - nll_los
s: 1047.1631
Epoch 2288/2500
10/10 [=====] - 0s 739us/step - loss: 1045.4237 - nll_los
s: 1045.4237
Epoch 2289/2500
10/10 [=====] - 0s 875us/step - loss: 1046.0956 - nll_los
s: 1046.0956
Epoch 2290/2500
10/10 [=====] - 0s 954us/step - loss: 1043.9240 - nll_los
s: 1043.9240
Epoch 2291/2500
10/10 [=====] - 0s 783us/step - loss: 1047.0901 - nll_los
s: 1047.0901
Epoch 2292/2500
10/10 [=====] - 0s 803us/step - loss: 1046.3622 - nll_los
s: 1046.3622
Epoch 2293/2500
10/10 [=====] - 0s 853us/step - loss: 1048.4478 - nll_los
s: 1048.4478
```

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Epoch 2294/2500
10/10 [=====] - 0s 981us/step - loss: 1050.0881 - nll_los
s: 1050.0881
Epoch 2295/2500
10/10 [=====] - 0s 811us/step - loss: 1045.8800 - nll_los
s: 1045.8800
Epoch 2296/2500
10/10 [=====] - 0s 876us/step - loss: 1048.8124 - nll_los
s: 1048.8124
Epoch 2297/2500
10/10 [=====] - 0s 802us/step - loss: 1047.2576 - nll_los
s: 1047.2576
Epoch 2298/2500
10/10 [=====] - 0s 805us/step - loss: 1047.8126 - nll_los
s: 1047.8126
Epoch 2299/2500
10/10 [=====] - 0s 784us/step - loss: 1045.6588 - nll_los
s: 1045.6588
Epoch 2300/2500
10/10 [=====] - 0s 763us/step - loss: 1047.1438 - nll_los
s: 1047.1438
Epoch 2301/2500
10/10 [=====] - 0s 832us/step - loss: 1048.4324 - nll_los
s: 1048.4324
Epoch 2302/2500
10/10 [=====] - 0s 791us/step - loss: 1045.1619 - nll_los
s: 1045.1619
Epoch 2303/2500
10/10 [=====] - 0s 821us/step - loss: 1047.7366 - nll_los
s: 1047.7366
Epoch 2304/2500
10/10 [=====] - 0s 826us/step - loss: 1044.7771 - nll_los
s: 1044.7771
Epoch 2305/2500
10/10 [=====] - 0s 832us/step - loss: 1046.2053 - nll_los
s: 1046.2053
Epoch 2306/2500
10/10 [=====] - 0s 796us/step - loss: 1043.9280 - nll_los
s: 1043.9280
Epoch 2307/2500
10/10 [=====] - 0s 740us/step - loss: 1046.1257 - nll_los
s: 1046.1257
Epoch 2308/2500
10/10 [=====] - 0s 788us/step - loss: 1049.4803 - nll_los
s: 1049.4803
Epoch 2309/2500
10/10 [=====] - 0s 933us/step - loss: 1048.7241 - nll_los
s: 1048.7241
Epoch 2310/2500
10/10 [=====] - 0s 850us/step - loss: 1047.2161 - nll_los
s: 1047.2161
Epoch 2311/2500
10/10 [=====] - 0s 829us/step - loss: 1049.1755 - nll_los
s: 1049.1755
Epoch 2312/2500
10/10 [=====] - 0s 881us/step - loss: 1046.0543 - nll_los
s: 1046.0543
```

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Epoch 2313/2500
10/10 [=====] - 0s 792us/step - loss: 1048.9083 - nll_los
s: 1048.9083
Epoch 2314/2500
10/10 [=====] - 0s 837us/step - loss: 1049.3420 - nll_los
s: 1049.3420
Epoch 2315/2500
10/10 [=====] - 0s 825us/step - loss: 1046.3940 - nll_los
s: 1046.3940
Epoch 2316/2500
10/10 [=====] - 0s 803us/step - loss: 1047.3712 - nll_los
s: 1047.3712
Epoch 2317/2500
10/10 [=====] - 0s 831us/step - loss: 1049.0059 - nll_los
s: 1049.0059
Epoch 2318/2500
10/10 [=====] - 0s 784us/step - loss: 1047.9071 - nll_los
s: 1047.9071
Epoch 2319/2500
10/10 [=====] - 0s 929us/step - loss: 1048.8093 - nll_los
s: 1048.8093
Epoch 2320/2500
10/10 [=====] - 0s 817us/step - loss: 1045.7048 - nll_los
s: 1045.7048
Epoch 2321/2500
10/10 [=====] - 0s 838us/step - loss: 1048.2756 - nll_los
s: 1048.2756
Epoch 2322/2500
10/10 [=====] - 0s 860us/step - loss: 1045.5304 - nll_los
s: 1045.5304
Epoch 2323/2500
10/10 [=====] - 0s 823us/step - loss: 1048.3542 - nll_los
s: 1048.3542
Epoch 2324/2500
10/10 [=====] - 0s 798us/step - loss: 1044.8259 - nll_los
s: 1044.8259
Epoch 2325/2500
10/10 [=====] - 0s 762us/step - loss: 1049.8243 - nll_los
s: 1049.8243
Epoch 2326/2500
10/10 [=====] - 0s 849us/step - loss: 1044.0461 - nll_los
s: 1044.0461
Epoch 2327/2500
10/10 [=====] - 0s 876us/step - loss: 1045.5432 - nll_los
s: 1045.5432
Epoch 2328/2500
10/10 [=====] - 0s 742us/step - loss: 1044.7400 - nll_los
s: 1044.7400
Epoch 2329/2500
10/10 [=====] - 0s 935us/step - loss: 1048.2107 - nll_los
s: 1048.2107
Epoch 2330/2500
10/10 [=====] - 0s 824us/step - loss: 1045.0321 - nll_los
s: 1045.0321
Epoch 2331/2500
10/10 [=====] - 0s 851us/step - loss: 1044.5007 - nll_los
s: 1044.5007
```

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Epoch 2332/2500
10/10 [=====] - 0s 810us/step - loss: 1046.5010 - nll_loss: 1046.5010
Epoch 2333/2500
10/10 [=====] - 0s 805us/step - loss: 1047.3459 - nll_loss: 1047.3459
Epoch 2334/2500
10/10 [=====] - 0s 787us/step - loss: 1046.9402 - nll_loss: 1046.9402
Epoch 2335/2500
10/10 [=====] - 0s 654us/step - loss: 1047.5658 - nll_loss: 1047.5658
Epoch 2336/2500
10/10 [=====] - 0s 785us/step - loss: 1048.6046 - nll_loss: 1048.6046
Epoch 2337/2500
10/10 [=====] - 0s 927us/step - loss: 1047.1409 - nll_loss: 1047.1409
Epoch 2338/2500
10/10 [=====] - 0s 899us/step - loss: 1049.4707 - nll_loss: 1049.4707
Epoch 2339/2500
10/10 [=====] - 0s 844us/step - loss: 1047.6067 - nll_loss: 1047.6067
Epoch 2340/2500
10/10 [=====] - 0s 934us/step - loss: 1045.0033 - nll_loss: 1045.0033
Epoch 2341/2500
10/10 [=====] - 0s 851us/step - loss: 1045.4044 - nll_loss: 1045.4044
Epoch 2342/2500
10/10 [=====] - 0s 778us/step - loss: 1047.3590 - nll_loss: 1047.3590
Epoch 2343/2500
10/10 [=====] - 0s 876us/step - loss: 1045.1318 - nll_loss: 1045.1318
Epoch 2344/2500
10/10 [=====] - 0s 771us/step - loss: 1047.6022 - nll_loss: 1047.6022
Epoch 2345/2500
10/10 [=====] - 0s 992us/step - loss: 1046.5830 - nll_loss: 1046.5830
Epoch 2346/2500
10/10 [=====] - 0s 892us/step - loss: 1043.2595 - nll_loss: 1043.2595
Epoch 2347/2500
10/10 [=====] - 0s 760us/step - loss: 1045.6144 - nll_loss: 1045.6144
Epoch 2348/2500
10/10 [=====] - 0s 749us/step - loss: 1047.3739 - nll_loss: 1047.3739
Epoch 2349/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.6477 - nll_loss: 1047.6477
Epoch 2350/2500
10/10 [=====] - 0s 862us/step - loss: 1050.9678 - nll_loss: 1050.9678
```

```
Epoch 2351/2500
10/10 [=====] - 0s 760us/step - loss: 1047.3110 - nll_los
s: 1047.3110
Epoch 2352/2500
10/10 [=====] - 0s 816us/step - loss: 1046.0901 - nll_los
s: 1046.0901
Epoch 2353/2500
10/10 [=====] - 0s 906us/step - loss: 1045.7139 - nll_los
s: 1045.7139
Epoch 2354/2500
10/10 [=====] - 0s 780us/step - loss: 1045.5743 - nll_los
s: 1045.5743
Epoch 2355/2500
10/10 [=====] - 0s 804us/step - loss: 1045.5242 - nll_los
s: 1045.5242
Epoch 2356/2500
10/10 [=====] - 0s 832us/step - loss: 1047.2654 - nll_los
s: 1047.2654
Epoch 2357/2500
10/10 [=====] - 0s 835us/step - loss: 1048.3688 - nll_los
s: 1048.3688
Epoch 2358/2500
10/10 [=====] - 0s 856us/step - loss: 1046.0256 - nll_los
s: 1046.0256
Epoch 2359/2500
10/10 [=====] - 0s 971us/step - loss: 1046.4827 - nll_los
s: 1046.4827
Epoch 2360/2500
10/10 [=====] - 0s 810us/step - loss: 1048.1025 - nll_los
s: 1048.1025
Epoch 2361/2500
10/10 [=====] - 0s 923us/step - loss: 1047.4602 - nll_los
s: 1047.4602
Epoch 2362/2500
10/10 [=====] - 0s 793us/step - loss: 1046.9165 - nll_los
s: 1046.9165
Epoch 2363/2500
10/10 [=====] - 0s 952us/step - loss: 1050.0970 - nll_los
s: 1050.0970
Epoch 2364/2500
10/10 [=====] - 0s 900us/step - loss: 1047.4648 - nll_los
s: 1047.4648
```

```
Epoch 2365/2500
10/10 [=====] - 0s 767us/step - loss: 1044.2507 - nll_los
s: 1044.2507
Epoch 2366/2500
10/10 [=====] - 0s 785us/step - loss: 1043.9956 - nll_los
s: 1043.9956
Epoch 2367/2500
10/10 [=====] - 0s 824us/step - loss: 1048.2600 - nll_los
s: 1048.2600
Epoch 2368/2500
10/10 [=====] - 0s 854us/step - loss: 1044.1829 - nll_los
s: 1044.1829
Epoch 2369/2500
10/10 [=====] - 0s 769us/step - loss: 1044.3048 - nll_los
s: 1044.3048
Epoch 2370/2500
10/10 [=====] - 0s 856us/step - loss: 1045.7479 - nll_los
s: 1045.7479
Epoch 2371/2500
10/10 [=====] - 0s 790us/step - loss: 1046.7419 - nll_los
s: 1046.7419
Epoch 2372/2500
10/10 [=====] - 0s 819us/step - loss: 1046.5400 - nll_los
s: 1046.5400
Epoch 2373/2500
10/10 [=====] - 0s 818us/step - loss: 1044.0103 - nll_los
s: 1044.0103
Epoch 2374/2500
10/10 [=====] - 0s 742us/step - loss: 1048.3243 - nll_los
s: 1048.3243
Epoch 2375/2500
10/10 [=====] - 0s 817us/step - loss: 1047.8978 - nll_los
s: 1047.8978
Epoch 2376/2500
10/10 [=====] - 0s 803us/step - loss: 1046.3513 - nll_los
s: 1046.3513
Epoch 2377/2500
10/10 [=====] - 0s 832us/step - loss: 1044.4600 - nll_los
s: 1044.4600
Epoch 2378/2500
10/10 [=====] - 0s 810us/step - loss: 1048.9515 - nll_los
s: 1048.9515
Epoch 2379/2500
10/10 [=====] - 0s 875us/step - loss: 1048.2960 - nll_los
s: 1048.2960
Epoch 2380/2500
10/10 [=====] - 0s 844us/step - loss: 1048.2152 - nll_los
s: 1048.2152
Epoch 2381/2500
10/10 [=====] - 0s 800us/step - loss: 1048.7158 - nll_los
s: 1048.7158
Epoch 2382/2500
10/10 [=====] - 0s 797us/step - loss: 1045.9219 - nll_los
s: 1045.9219
Epoch 2383/2500
10/10 [=====] - 0s 955us/step - loss: 1044.5786 - nll_los
s: 1044.5786
```

```
Epoch 2384/2500
10/10 [=====] - 0s 892us/step - loss: 1047.1429 - nll_loss: 1047.1429
Epoch 2385/2500
10/10 [=====] - 0s 724us/step - loss: 1046.5907 - nll_loss: 1046.5907
Epoch 2386/2500
10/10 [=====] - 0s 815us/step - loss: 1046.8528 - nll_loss: 1046.8528
Epoch 2387/2500
10/10 [=====] - 0s 829us/step - loss: 1046.4404 - nll_loss: 1046.4404
Epoch 2388/2500
10/10 [=====] - 0s 873us/step - loss: 1046.6672 - nll_loss: 1046.6672
Epoch 2389/2500
10/10 [=====] - 0s 927us/step - loss: 1046.8147 - nll_loss: 1046.8147
Epoch 2390/2500
10/10 [=====] - 0s 1ms/step - loss: 1042.0520 - nll_loss: 1042.0520
Epoch 2391/2500
10/10 [=====] - 0s 781us/step - loss: 1044.5083 - nll_loss: 1044.5083
Epoch 2392/2500
10/10 [=====] - 0s 863us/step - loss: 1048.3949 - nll_loss: 1048.3949
Epoch 2393/2500
10/10 [=====] - 0s 833us/step - loss: 1049.2709 - nll_loss: 1049.2709
Epoch 2394/2500
10/10 [=====] - 0s 912us/step - loss: 1044.7092 - nll_loss: 1044.7092
Epoch 2395/2500
10/10 [=====] - 0s 859us/step - loss: 1045.5908 - nll_loss: 1045.5908
Epoch 2396/2500
10/10 [=====] - 0s 853us/step - loss: 1047.7020 - nll_loss: 1047.7020
Epoch 2397/2500
10/10 [=====] - 0s 850us/step - loss: 1050.0057 - nll_loss: 1050.0057
Epoch 2398/2500
10/10 [=====] - 0s 558us/step - loss: 1046.0303 - nll_loss: 1046.0303
Epoch 2399/2500
10/10 [=====] - 0s 992us/step - loss: 1046.5190 - nll_loss: 1046.5190
Epoch 2400/2500
10/10 [=====] - 0s 852us/step - loss: 1046.9272 - nll_loss: 1046.9272
Epoch 2401/2500
10/10 [=====] - 0s 765us/step - loss: 1049.2141 - nll_loss: 1049.2141
Epoch 2402/2500
10/10 [=====] - 0s 782us/step - loss: 1046.2629 - nll_loss: 1046.2629
```

```
Epoch 2403/2500
10/10 [=====] - 0s 818us/step - loss: 1045.0637 - nll_loss: 1045.0637
Epoch 2404/2500
10/10 [=====] - 0s 799us/step - loss: 1047.7292 - nll_loss: 1047.7292
Epoch 2405/2500
10/10 [=====] - 0s 884us/step - loss: 1044.7550 - nll_loss: 1044.7550
Epoch 2406/2500
10/10 [=====] - 0s 858us/step - loss: 1045.7750 - nll_loss: 1045.7750
Epoch 2407/2500
10/10 [=====] - 0s 1ms/step - loss: 1047.9359 - nll_loss: 1047.9359
Epoch 2408/2500
10/10 [=====] - 0s 803us/step - loss: 1048.1333 - nll_loss: 1048.1333
Epoch 2409/2500
10/10 [=====] - 0s 894us/step - loss: 1045.2638 - nll_loss: 1045.2638
Epoch 2410/2500
10/10 [=====] - 0s 916us/step - loss: 1045.4128 - nll_loss: 1045.4128
Epoch 2411/2500
10/10 [=====] - 0s 747us/step - loss: 1048.1948 - nll_loss: 1048.1948
Epoch 2412/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.7356 - nll_loss: 1049.7356
Epoch 2413/2500
10/10 [=====] - 0s 685us/step - loss: 1047.9290 - nll_loss: 1047.9290
Epoch 2414/2500
10/10 [=====] - 0s 826us/step - loss: 1048.0612 - nll_loss: 1048.0612
Epoch 2415/2500
10/10 [=====] - 0s 808us/step - loss: 1047.8469 - nll_loss: 1047.8469
Epoch 2416/2500
10/10 [=====] - 0s 812us/step - loss: 1044.4126 - nll_loss: 1044.4126
Epoch 2417/2500
10/10 [=====] - 0s 832us/step - loss: 1044.9125 - nll_loss: 1044.9125
Epoch 2418/2500
10/10 [=====] - 0s 865us/step - loss: 1049.0591 - nll_loss: 1049.0591
Epoch 2419/2500
10/10 [=====] - 0s 833us/step - loss: 1046.5029 - nll_loss: 1046.5029
Epoch 2420/2500
10/10 [=====] - 0s 827us/step - loss: 1046.5013 - nll_loss: 1046.5013
Epoch 2421/2500
10/10 [=====] - 0s 841us/step - loss: 1045.0969 - nll_loss: 1045.0969
```

```
Epoch 2422/2500
10/10 [=====] - 0s 1ms/step - loss: 1049.0167 - nll_loss:
1049.0167
Epoch 2423/2500
10/10 [=====] - 0s 831us/step - loss: 1046.8870 - nll_los
s: 1046.8870
Epoch 2424/2500
10/10 [=====] - 0s 1ms/step - loss: 1046.3040 - nll_loss:
1046.3040
Epoch 2425/2500
10/10 [=====] - 0s 989us/step - loss: 1051.4451 - nll_los
s: 1051.4451
Epoch 2426/2500
10/10 [=====] - 0s 789us/step - loss: 1048.0795 - nll_los
s: 1048.0795
Epoch 2427/2500
10/10 [=====] - 0s 883us/step - loss: 1045.1276 - nll_los
s: 1045.1276
Epoch 2428/2500
10/10 [=====] - 0s 752us/step - loss: 1046.8495 - nll_los
s: 1046.8495
Epoch 2429/2500
10/10 [=====] - 0s 845us/step - loss: 1046.4653 - nll_los
s: 1046.4653
Epoch 2430/2500
10/10 [=====] - 0s 850us/step - loss: 1048.7195 - nll_los
s: 1048.7195
Epoch 2431/2500
10/10 [=====] - 0s 916us/step - loss: 1048.4480 - nll_los
s: 1048.4480
Epoch 2432/2500
10/10 [=====] - 0s 928us/step - loss: 1048.1467 - nll_los
s: 1048.1467
Epoch 2433/2500
10/10 [=====] - 0s 802us/step - loss: 1049.4016 - nll_los
s: 1049.4016
Epoch 2434/2500
10/10 [=====] - 0s 809us/step - loss: 1046.5293 - nll_los
s: 1046.5293
Epoch 2435/2500
10/10 [=====] - 0s 749us/step - loss: 1046.5675 - nll_los
s: 1046.5675
Epoch 2436/2500
10/10 [=====] - 0s 813us/step - loss: 1047.9340 - nll_los
s: 1047.9340
Epoch 2437/2500
10/10 [=====] - 0s 829us/step - loss: 1046.7991 - nll_los
s: 1046.7991
Epoch 2438/2500
10/10 [=====] - 0s 865us/step - loss: 1048.7958 - nll_los
s: 1048.7958
Epoch 2439/2500
10/10 [=====] - 0s 905us/step - loss: 1050.1431 - nll_los
s: 1050.1431
Epoch 2440/2500
10/10 [=====] - 0s 800us/step - loss: 1051.9552 - nll_los
s: 1051.9552
```

```
Epoch 2441/2500
10/10 [=====] - 0s 824us/step - loss: 1047.8464 - nll_los
s: 1047.8464
Epoch 2442/2500
10/10 [=====] - 0s 925us/step - loss: 1049.5828 - nll_los
s: 1049.5828
Epoch 2443/2500
10/10 [=====] - 0s 811us/step - loss: 1049.7854 - nll_los
s: 1049.7854
Epoch 2444/2500
10/10 [=====] - 0s 968us/step - loss: 1049.0009 - nll_los
s: 1049.0009
Epoch 2445/2500
10/10 [=====] - 0s 800us/step - loss: 1047.1746 - nll_los
s: 1047.1746
Epoch 2446/2500
10/10 [=====] - 0s 918us/step - loss: 1045.9723 - nll_los
s: 1045.9723
Epoch 2447/2500
10/10 [=====] - 0s 833us/step - loss: 1044.2781 - nll_los
s: 1044.2781
Epoch 2448/2500
10/10 [=====] - 0s 764us/step - loss: 1048.8187 - nll_los
s: 1048.8187
Epoch 2449/2500
10/10 [=====] - 0s 766us/step - loss: 1045.1721 - nll_los
s: 1045.1721
Epoch 2450/2500
10/10 [=====] - 0s 822us/step - loss: 1049.1625 - nll_los
s: 1049.1625
Epoch 2451/2500
10/10 [=====] - 0s 903us/step - loss: 1045.6475 - nll_los
s: 1045.6475
Epoch 2452/2500
10/10 [=====] - 0s 895us/step - loss: 1043.6051 - nll_los
s: 1043.6051
Epoch 2453/2500
10/10 [=====] - 0s 982us/step - loss: 1047.1360 - nll_los
s: 1047.1360
Epoch 2454/2500
10/10 [=====] - 0s 888us/step - loss: 1048.6697 - nll_los
s: 1048.6697
Epoch 2455/2500
10/10 [=====] - 0s 709us/step - loss: 1051.4133 - nll_los
s: 1051.4133
Epoch 2456/2500
10/10 [=====] - 0s 770us/step - loss: 1053.3181 - nll_los
s: 1053.3181
Epoch 2457/2500
10/10 [=====] - 0s 906us/step - loss: 1049.8717 - nll_los
s: 1049.8717
Epoch 2458/2500
10/10 [=====] - 0s 942us/step - loss: 1050.2886 - nll_los
s: 1050.2886
Epoch 2459/2500
10/10 [=====] - 0s 767us/step - loss: 1050.0715 - nll_los
s: 1050.0715
```

```
Epoch 2460/2500
10/10 [=====] - 0s 865us/step - loss: 1045.7898 - nll_los
s: 1045.7898
Epoch 2461/2500
10/10 [=====] - 0s 895us/step - loss: 1045.5977 - nll_los
s: 1045.5977
Epoch 2462/2500
10/10 [=====] - 0s 868us/step - loss: 1046.2689 - nll_los
s: 1046.2689
Epoch 2463/2500
10/10 [=====] - 0s 933us/step - loss: 1048.6648 - nll_los
s: 1048.6648
Epoch 2464/2500
10/10 [=====] - 0s 849us/step - loss: 1048.4783 - nll_los
s: 1048.4783
Epoch 2465/2500
10/10 [=====] - 0s 869us/step - loss: 1047.9397 - nll_los
s: 1047.9397
Epoch 2466/2500
10/10 [=====] - 0s 788us/step - loss: 1047.4496 - nll_los
s: 1047.4496
Epoch 2467/2500
10/10 [=====] - 0s 871us/step - loss: 1048.8782 - nll_los
s: 1048.8782
Epoch 2468/2500
10/10 [=====] - 0s 859us/step - loss: 1046.1698 - nll_los
s: 1046.1698
Epoch 2469/2500
10/10 [=====] - 0s 864us/step - loss: 1044.6887 - nll_los
s: 1044.6887
Epoch 2470/2500
10/10 [=====] - 0s 864us/step - loss: 1044.4534 - nll_los
s: 1044.4534
Epoch 2471/2500
10/10 [=====] - 0s 790us/step - loss: 1043.8396 - nll_los
s: 1043.8396
Epoch 2472/2500
10/10 [=====] - 0s 832us/step - loss: 1045.9507 - nll_los
s: 1045.9507
Epoch 2473/2500
10/10 [=====] - 0s 875us/step - loss: 1044.8049 - nll_los
s: 1044.8049
Epoch 2474/2500
10/10 [=====] - 0s 800us/step - loss: 1049.5863 - nll_los
s: 1049.5863
Epoch 2475/2500
10/10 [=====] - 0s 822us/step - loss: 1047.5724 - nll_los
s: 1047.5724
Epoch 2476/2500
10/10 [=====] - 0s 914us/step - loss: 1047.2875 - nll_los
s: 1047.2875
Epoch 2477/2500
10/10 [=====] - 0s 930us/step - loss: 1048.8413 - nll_los
s: 1048.8413
Epoch 2478/2500
10/10 [=====] - 0s 841us/step - loss: 1046.6620 - nll_los
s: 1046.6620
```

```
Epoch 2479/2500
10/10 [=====] - 0s 787us/step - loss: 1047.3577 - nll_los
s: 1047.3577
Epoch 2480/2500
10/10 [=====] - 0s 780us/step - loss: 1049.3752 - nll_los
s: 1049.3752
Epoch 2481/2500
10/10 [=====] - 0s 802us/step - loss: 1045.7406 - nll_los
s: 1045.7406
Epoch 2482/2500
10/10 [=====] - 0s 712us/step - loss: 1047.7139 - nll_los
s: 1047.7139
Epoch 2483/2500
10/10 [=====] - 0s 891us/step - loss: 1049.1218 - nll_los
s: 1049.1218
Epoch 2484/2500
10/10 [=====] - 0s 826us/step - loss: 1048.3204 - nll_los
s: 1048.3204
Epoch 2485/2500
10/10 [=====] - 0s 850us/step - loss: 1044.7449 - nll_los
s: 1044.7449
Epoch 2486/2500
10/10 [=====] - 0s 796us/step - loss: 1043.8398 - nll_los
s: 1043.8398
Epoch 2487/2500
10/10 [=====] - 0s 924us/step - loss: 1044.0559 - nll_los
s: 1044.0559
Epoch 2488/2500
10/10 [=====] - 0s 806us/step - loss: 1045.4968 - nll_los
s: 1045.4968
Epoch 2489/2500
10/10 [=====] - 0s 803us/step - loss: 1047.7291 - nll_los
s: 1047.7291
Epoch 2490/2500
10/10 [=====] - 0s 849us/step - loss: 1045.3224 - nll_los
s: 1045.3224
Epoch 2491/2500
10/10 [=====] - 0s 744us/step - loss: 1046.9635 - nll_los
s: 1046.9635
Epoch 2492/2500
10/10 [=====] - 0s 924us/step - loss: 1047.3722 - nll_los
s: 1047.3722
Epoch 2493/2500
10/10 [=====] - 0s 870us/step - loss: 1046.4717 - nll_los
s: 1046.4717
Epoch 2494/2500
10/10 [=====] - 0s 832us/step - loss: 1047.7173 - nll_los
s: 1047.7173
Epoch 2495/2500
10/10 [=====] - 0s 884us/step - loss: 1047.1733 - nll_los
s: 1047.1733
Epoch 2496/2500
10/10 [=====] - 0s 743us/step - loss: 1043.8616 - nll_los
s: 1043.8616
Epoch 2497/2500
10/10 [=====] - 0s 887us/step - loss: 1048.4783 - nll_los
s: 1048.4783
```

```
Epoch 2498/2500
10/10 [=====] - 0s 793us/step - loss: 1048.0311 - nll_loss: 1048.0311
Epoch 2499/2500
10/10 [=====] - 0s 853us/step - loss: 1047.1624 - nll_loss: 1047.1624
Epoch 2500/2500
10/10 [=====] - 0s 876us/step - loss: 1044.9338 - nll_loss: 1044.9338
```

In [18]: df['pred'] = scores

In [44]: ds.concordance_eval(X = None, event_times = None, event_observed = None)
ds.concordance_eval(X = ds.X, event_times = ds.label, event_observed = ds.event)

```
concordance index value is: 0.611331160304067
concordance index value is: 0.611331160304067
```

Out[44]: 0.611331160304067

In [7]:

```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
%matplotlib inline

from sklearn import set_config
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import OrdinalEncoder

from sksurv.datasets import load_gbsg2
from sksurv.preprocessing import OneHotEncoder
from sksurv.ensemble import RandomSurvivalForest

set_config(display="text") # displays text representation of estimators
```

In [8]:

```
data_y = data2[['状态', '生涯长度']].to_numpy()
#List of tuples
aux = [(e1, e2) for e1, e2 in data_y]

#Structured array
y_train = np.array(aux, dtype=[('状态', '?'), ('生存年限', '<f8')])

random_state = 123
X_train = data2.loc[:, "场均出手数": "体重"]
# X_train, X_test, y_train, y_test = train_test_split(
#     Xt, y, test_size=0, random_state=random_state)
```

```
In [281]: # from sklearn.impute import KNNImputer
# imputer = KNNImputer(n_neighbors=2, metric='nan_euclidean')
# imputer.fit(X_train)
# X_train = imputer.transform(X_train)
```

```
In [90]: # from sklearn.model_selection import GridSearchCV
# param_grid={'min_samples_leaf':np.arange(10, 16, 5)}
# rsf = RandomSurvivalForest(n_estimators=250,
#                            n_jobs=-1,
#                            random_state=random_state, oob_score=True)
# GS = GridSearchCV(rsf, param_grid, cv=10)
# GS.fit(X_train, y_train)
```

```
In [10]: for i in range(85, 100, 1):
    rsf = RandomSurvivalForest(n_estimators=2000,
                               min_samples_split=2
                               min_samples_leaf=i,
                               n_jobs=-1,
                               random_state=random_state, oob_score=True)
    rsf.fit(X_train, y_train)
    print(i, rsf.oob_score_)
```

```
85 0.767022359314527
86 0.7670787171195489
87 0.7669774204111762
88 0.7669287979911573
89 0.7668208709527821
90 0.7668606529327976
91 0.766879070516138
92 0.766937270079494
93 0.7669512674428327
94 0.7670079935995214
95 0.7669280612878238
96 0.7669951012911831
97 0.7671137105278958
98 0.7669954696428499
99 0.7670374617328662
```

```
In [69]: # rsf = RandomSurvivalForest(n_estimators=2000,
#                               min_samples_split=10,
#                               min_samples_leaf=97,
#                               n_jobs=-1,
#                               random_state=random_state, oob_score=True)
# rsf.fit(X_train, y_train)
print(1-rsf.oob_score_)
```

```
0.2328862894721042
```

```
In [249]: print(rsf.oob_score_)
```

```
0.7612466350290011
```

In [11]:

```
oob_errors = []
for n_estimators in range(1, 2001, 10):
    model = RandomSurvivalForest(n_estimators=n_estimators,
                                  min_samples_split=10,
                                  min_samples_leaf=97,
                                  n_jobs=-1,
                                  random_state=random_state, oob_score=True)
    model.fit(X_train, y_train)
#     pred_oob = model.oob_prediction_
    oob_errors.append(1-model.oob_score_)
plt.plot(range(1, 2001, 10), oob_errors)
plt.xlabel('Number of Trees')
plt.ylabel('Error Rate')
plt.title('误差曲线')
```

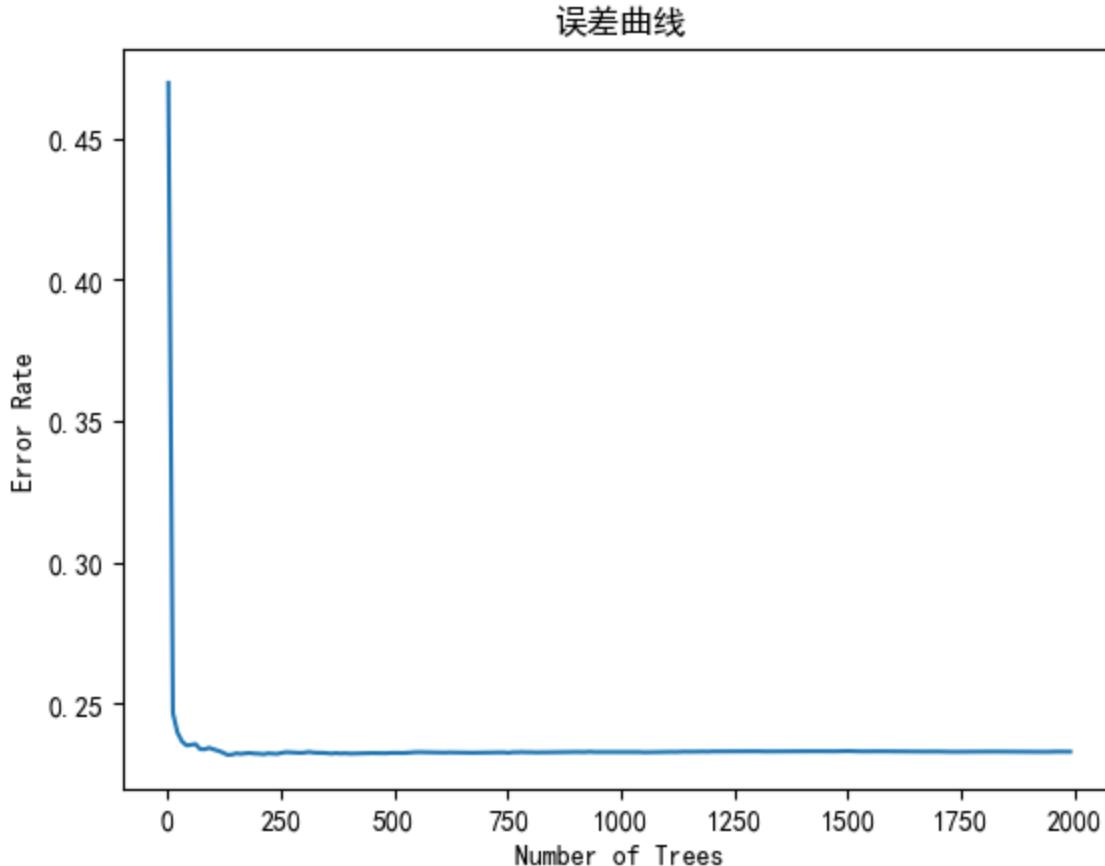
C:\Users\香香\AppData\Local\Temp\ipykernel_21312\2910568952.py:8: UserWarning: Some inputs do not have OOB scores. This probably means too few trees were used to compute any reliable oob estimates.

```
model.fit(X_train, y_train)
```

C:\Users\香香\AppData\Local\Temp\ipykernel_21312\2910568952.py:8: UserWarning: Some inputs do not have OOB scores. This probably means too few trees were used to compute any reliable oob estimates.

```
model.fit(X_train, y_train)
```

Out[11]: Text(0.5, 1.0, '误差曲线')



```
In [9]: rsf = RandomSurvivalForest(n_estimators=1000,
                                  min_samples_split=10,
                                  min_samples_leaf=94,
                                  n_jobs=-1,
                                  random_state=random_state, oob_score=True)
rsf.fit(X_train, y_train)
print(1-rsf.oob_score_)
```

0.232774310565394

```
In [ ]: import matplotlib.pyplot as plt
from collections import OrderedDict
from sklearn.datasets import make_classification
from sklearn.ensemble import RandomForestClassifier
# 作者: Kian Ho #          Gilles Louppe #          Andreas Mueller ## 许可证: BSD 3 Cla
RANDOM_STATE = 123
# 生成一个二分类数据集。
X, y = make_classification(n_samples=500, n_features=25,
                           n_clusters_per_class=1, n_informative=15,
                           random_state=RANDOM_STATE)# 注意: 将构造参数 "warm_start" 留
ensemble_clfs = [
    ("RandomForestClassifier", max_features='sqrt'),
    RandomForestClassifier(warm_start=True, oob_score=True
                           , max_features="sqrt",
                           random_state=RANDOM_STATE)), ("RandomForestClassifier",

```



In [471]: X_train.head()

Out[471]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	场均犯规数	身高	体重
1605	1.5	0.1	0.3	0.167	0.364	1.2	0.5	0.1	0.0	0.3	0.7	188	88
189	5.5	0.5	1.2	0.393	0.421	6.1	2.2	0.8	0.4	0.7	2.2	201	83
206	2.9	0.4	0.4	0.297	0.393	2.9	0.6	0.2	0.1	0.5	0.7	201	97
805	9.5	0.6	2.0	0.368	0.510	11.5	1.9	1.2	0.2	1.1	1.8	193	95
891	1.5	0.3	0.4	0.200	0.333	1.2	0.8	0.2	0.2	0.3	0.2	203	85

```
In [10]: from sklearn.inspection import permutation_importance

result = permutation_importance(
    rsf, X_train, y_train, n_repeats=15, random_state=random_state
)

pd.DataFrame(
    {k: result[k] for k in ("importances_mean", "importances_std")}, 
    index=X_train.columns
).sort_values(by="importances_mean", ascending=False)
```

Out[10]:

	importances_mean	importances_std
场均防守篮板数	0.015502	0.001726
场均得分	0.012293	0.002229
场均犯规数	0.009269	0.001757
二分命中率	0.003965	0.000461
场均出手数	0.002981	0.001468
场均进攻篮板数	0.002333	0.000673
场均失误数	0.001621	0.001132
场均抢断数	0.001345	0.000586
三分命中率	0.001244	0.000192
位置	0.001177	0.000289
场均助攻数	0.000825	0.000488
场均盖帽数	0.000571	0.000222
身高	0.000479	0.000124
体重	0.000452	0.000122
进入NBA年龄	0.000415	0.000070

In [509]:

```
X_test_sorted = X_test.sort_values(by=["场均防守篮板数"])
X_test_sel = pd.concat((X_test_sorted.head(2), X_test_sorted.tail(2)))

X_test_sel
```

Out[509]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	场均犯规数	进入NBA年龄	位置	身高	体重
279	1.8	0.3	0.6	0.000	0.281	1.3	0.1	0.1	0.1	0.6	0.6	23	3	198	97
2227	1.8	0.0	0.1	0.231	0.273	1.3	0.1	0.2	0.0	0.5	0.5	23	3	193	86
716	14.5	2.2	3.7	0.275	0.504	17.8	7.8	1.3	1.4	2.2	2.4	19	0	211	108
995	9.7	3.3	1.3	0.214	0.590	15.7	8.4	0.9	1.8	2.7	3.1	19	0	208	120

In [510]:

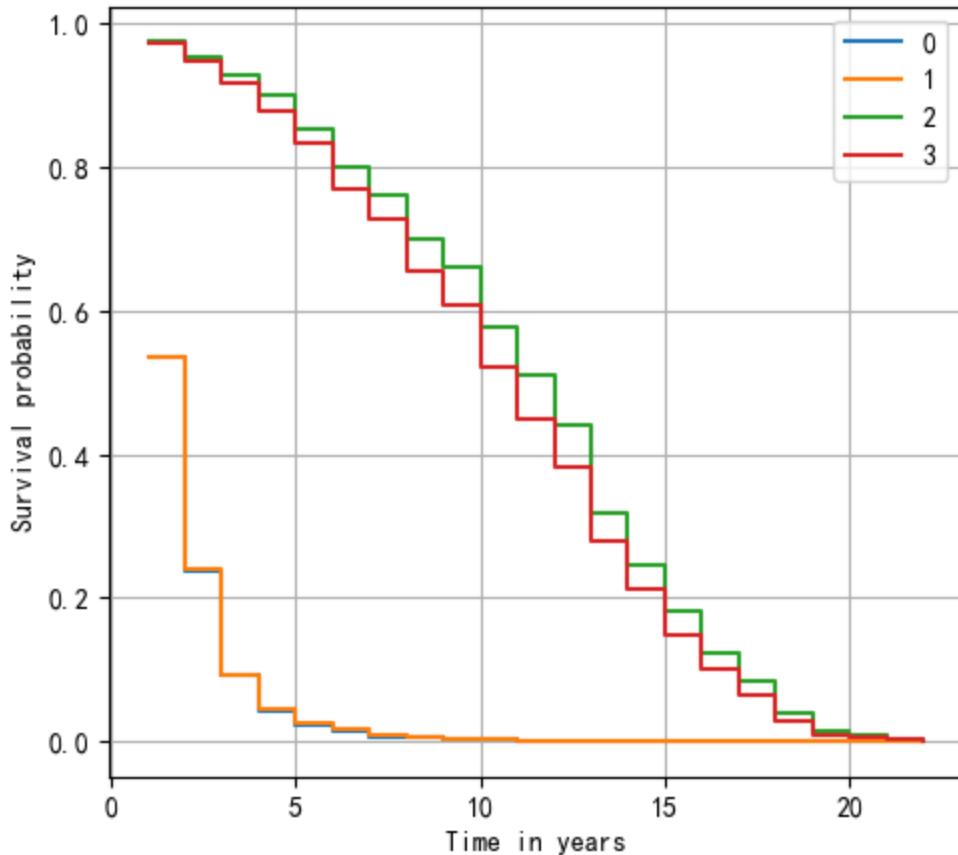
```
pd.Series(rsf.predict(X_test_sel))
```

Out[510]:

```
0    72.565163
1    72.557627
2    30.168857
3    32.951157
dtype: float64
```

```
In [511]: surv = rsf.predict_survival_function(X_test_sel, return_array=True)

for i, s in enumerate(surv):
    plt.step(rsf.event_times_, s, where="post", label=str(i))
plt.ylabel("Survival probability")
plt.xlabel("Time in years")
plt.legend()
plt.grid(True)
```

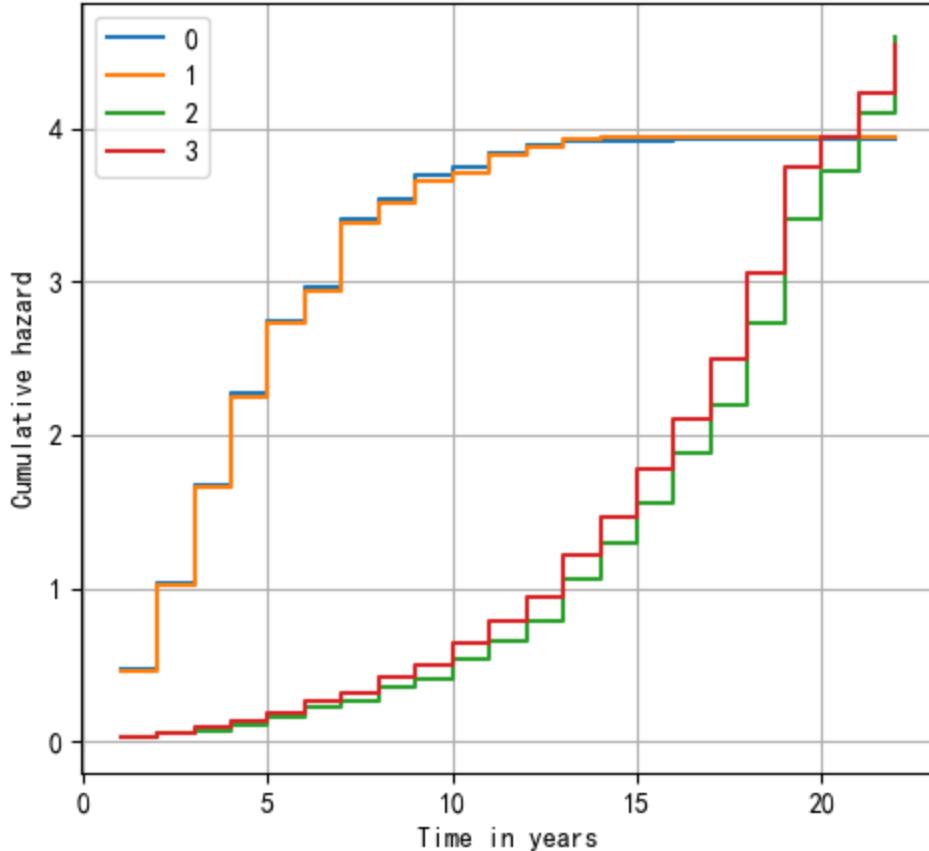


```
In [304]: pd.Series(rsf.predict(X_test_sel))
```

```
Out[304]: 0    47.488354
1    46.312489
2    49.066832
3    51.345020
4    50.063004
5    50.844079
6    22.508294
7    25.094172
8    30.473674
9    25.407920
10   28.966312
11   31.754983
dtype: float64
```

```
In [512]: surv = rsf.predict_cumulative_hazard_function(X_test_sel, return_array=True)

for i, s in enumerate(surv):
    plt.step(rsf.event_times_, s, where="post", label=str(i))
plt.ylabel("Cumulative hazard")
plt.xlabel("Time in years")
plt.legend()
plt.grid(True)
```



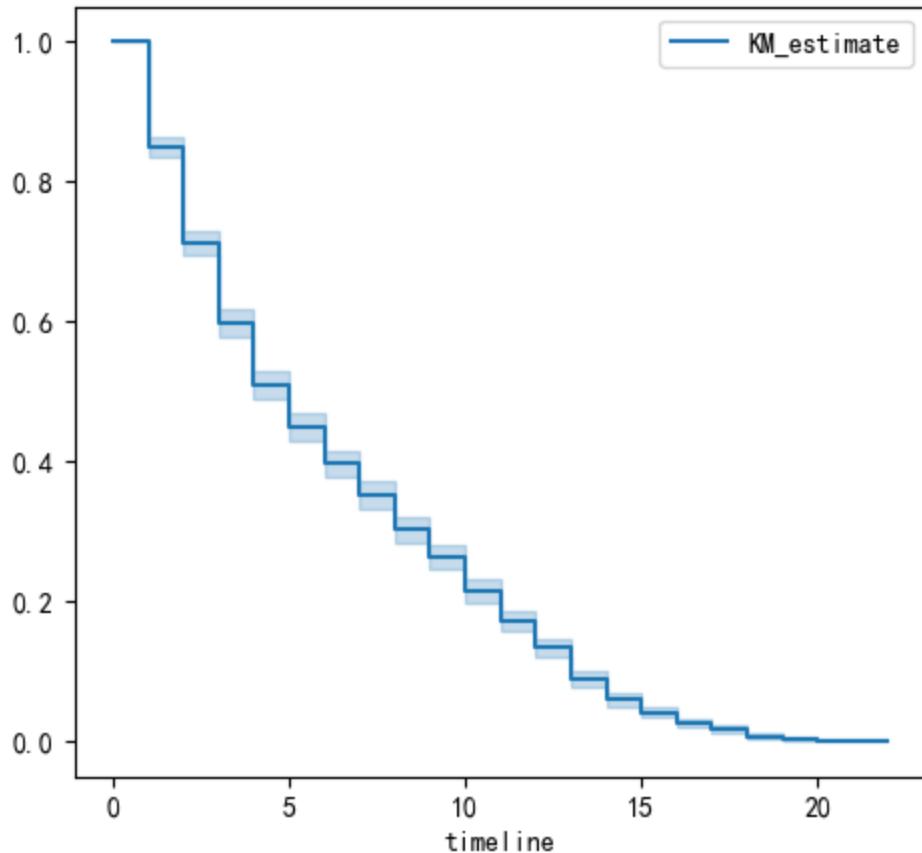
KM Curve

```
In [436]: data2.isnull().sum()
```

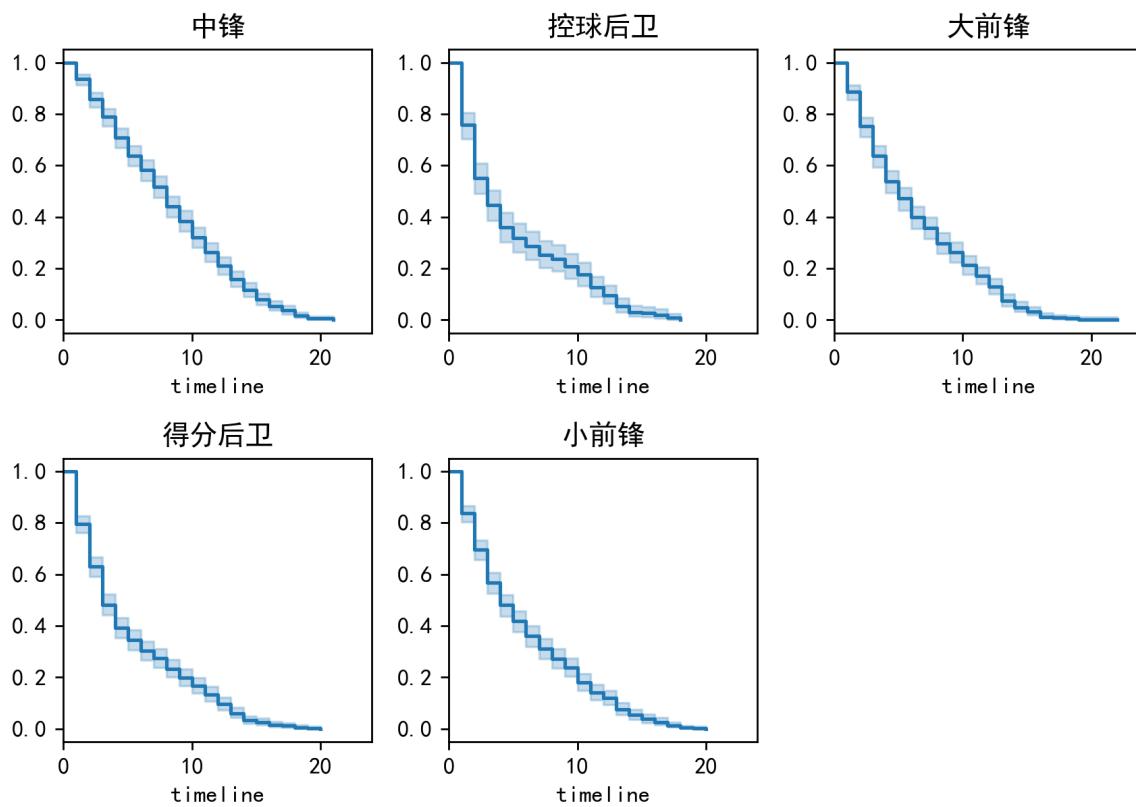
```
Out[436]: career_length      0
nba_debut                      0
height                          0
weight                          0
age                            0
..
位置                          0
身高                          0
体重                          0
状态                          0
生涯长度                      0
Length: 77, dtype: int64
```

```
In [437]: T = data2['生涯长度']
E = data2['状态']
kmf = KaplanMeierFitter()
kmf.fit(durations = T, event_observed = E)
kmf.plot_survival_function()
```

Out[437]: <Axes: xlabel='timeline'>



```
In [438]: def location(x):
    if x == "Center":
        return 0
    elif x == "Point Guard":
        return 1
    elif x == "Power Forward":
        return 2
    elif x == "Shooting Guard":
        return 3
    else:
        return 4
data["位置"] = data[“位置”].apply(lambda x:location(x))
ecog_types = data2.sort_values(by = [‘位置’])[“位置”].unique()
plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams[‘figure.figsize’]=(5. 5, 5)
for i, ecog_types in enumerate(ecog_types):
    ax = plt.subplot(2, 3, i + 1)
    ix = data2[‘位置’] == ecog_types
    kmf.fit(T[ix], E[ix], label = ecog_types)
    kmf.plot_survival_function(ax = ax, legend = False)
#    plt.figure(figsize=(7, 5), dpi=250)
#    plt.rcParams[‘figure.figsize’]=(5. 5, 5)
    if ecog_types ==0:
        plt.title(“中锋”)
    elif ecog_types ==1:
        plt.title(“控球后卫”)
    elif ecog_types ==2:
        plt.title(“大前锋”)
    elif ecog_types ==3:
        plt.title(“得分后卫”)
    else:
        plt.title(“小前锋”)
    plt.xlim(0, 24)
plt.tight_layout()
```

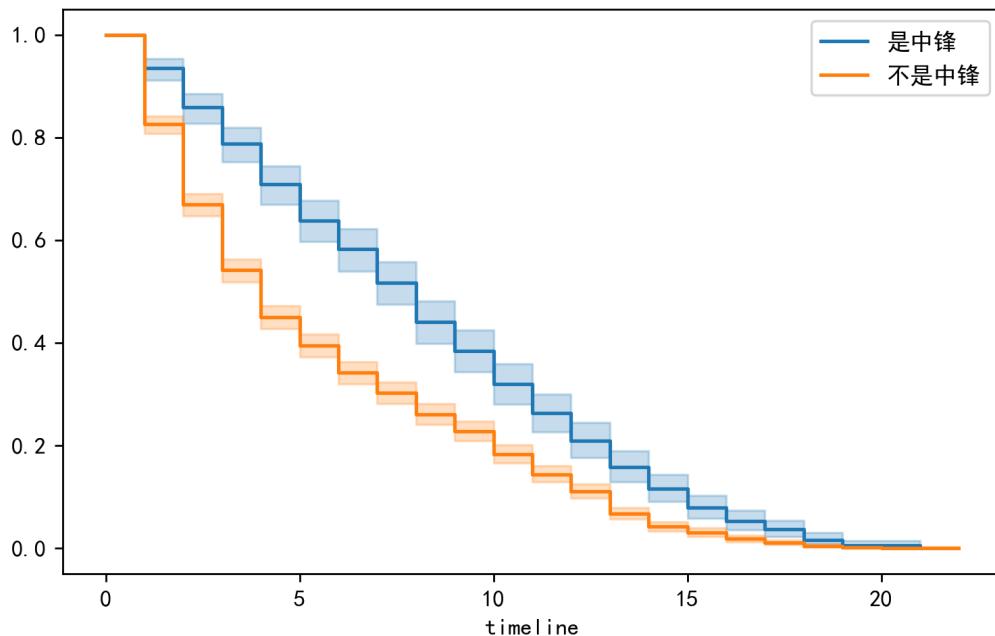



```
In [446]: def location(x):
    if x == "Center":
        return 0
    elif x == "Point Guard":
        return 1
    elif x == "Power Forward":
        return 2
    elif x == "Shooting Guard":
        return 3
    else:
        return 4
data2['位置']=data2['Position'].apply(lambda x:location(x) )
def cen(i):
    if i == 0:
        return 1
    else:
        return 0
def pgg(i):
    if i == 1:
        return 1
    else:
        return 0
def pff(i):
    if i == 2:
        return 1
    else:
        return 0
def sgg(i):
    if i == 3:
        return 1
    else:
        return 0
def sff(i):
    if i == 4:
        return 1
    else:
        return 0
data2['中锋'] = data2['位置'].apply(lambda x:cen(x))
data2['控球后卫'] = data2['位置'].apply(lambda x:pgg(x))
data2['大前锋'] = data2['位置'].apply(lambda x:pff(x))
data2['得分后卫'] = data2['位置'].apply(lambda x:sgg(x))
data2['小前锋'] = data2['位置'].apply(lambda x:sff(x))

plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize']=(5, 5, 5)
ax = plt.subplot(111)
m = (data2["中锋"] == 1)
kmf.fit(durations = T[m], event_observed = E[m], label = "是中锋")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "不是中锋")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
```

Out[446]: Text(0.5, 1.0, 'Survival of 中锋')

Survival of 中锋



	不是中锋
At risk	1903
Censored	0
Events	0

	730
At risk	730
Censored	31
Events	1142

	335
At risk	335
Censored	38
Events	1530

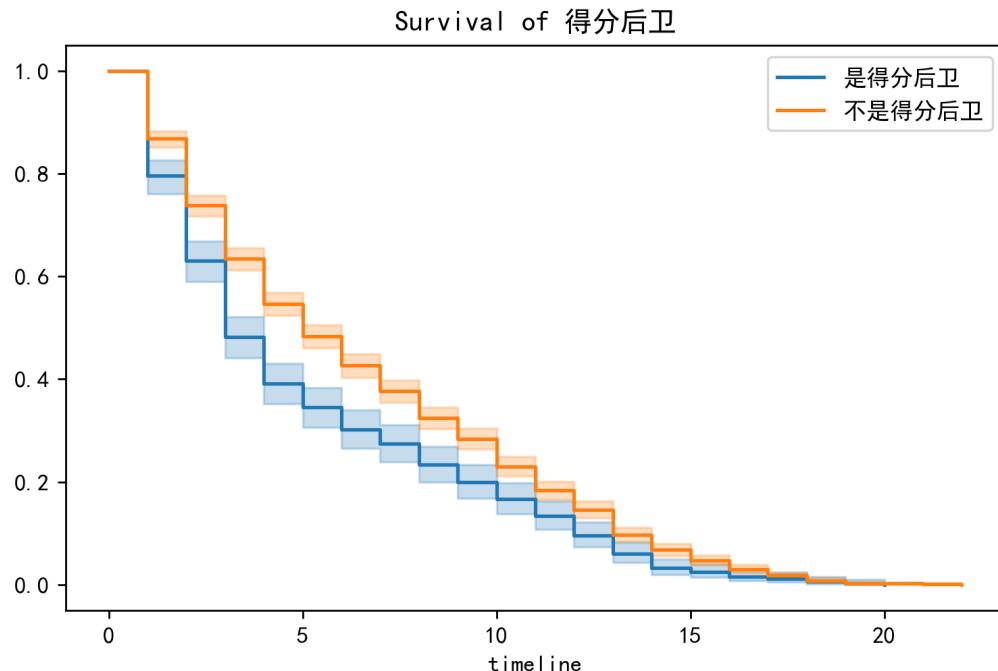
	55
At risk	55
Censored	41
Events	1807

	1
At risk	1
Censored	41
Events	1861

In [451]:

```
plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5, 5, 5)
ax = plt.subplot(111)
m = (data2["得分后卫"] == 1)
kmf.fit(durations = T[m], event_observed = E[m], label = "是得分后卫")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "不是得分后卫")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
```

Out[451]: Text(0.5, 1.0, 'Survival of 得分后卫')

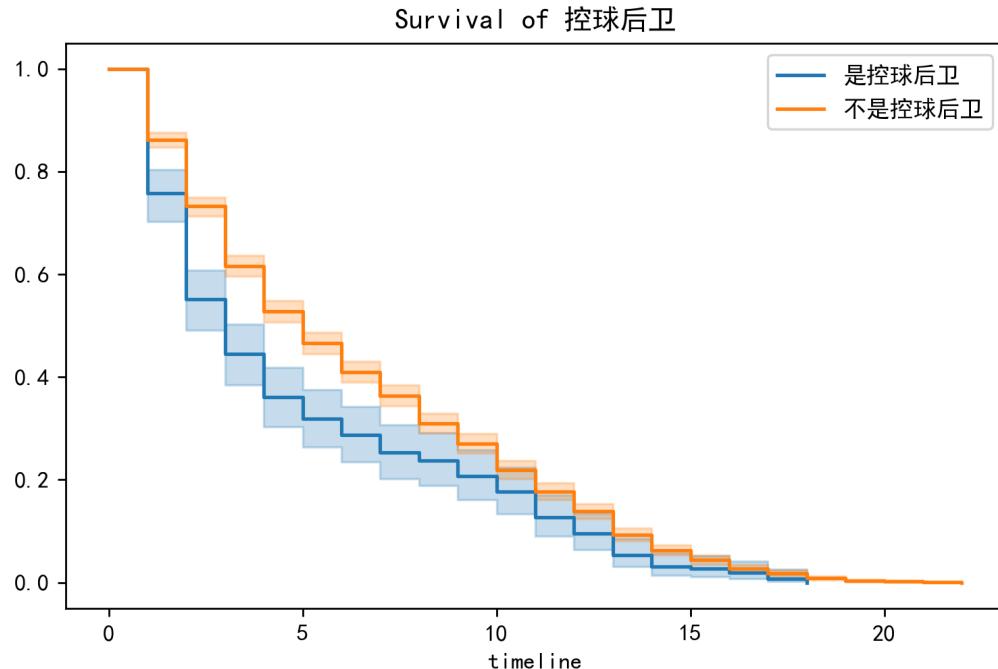


	不是得分后卫	
At risk	1874	887
Censored	0	26
Events	0	961

In [452]:

```
plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5, 5, 5)
ax = plt.subplot(111)
m = (data2["控球后卫"] == 1)
kmf.fit(durations = T[m], event_observed = E[m], label = "是控球后卫")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "不是控球后卫")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
```

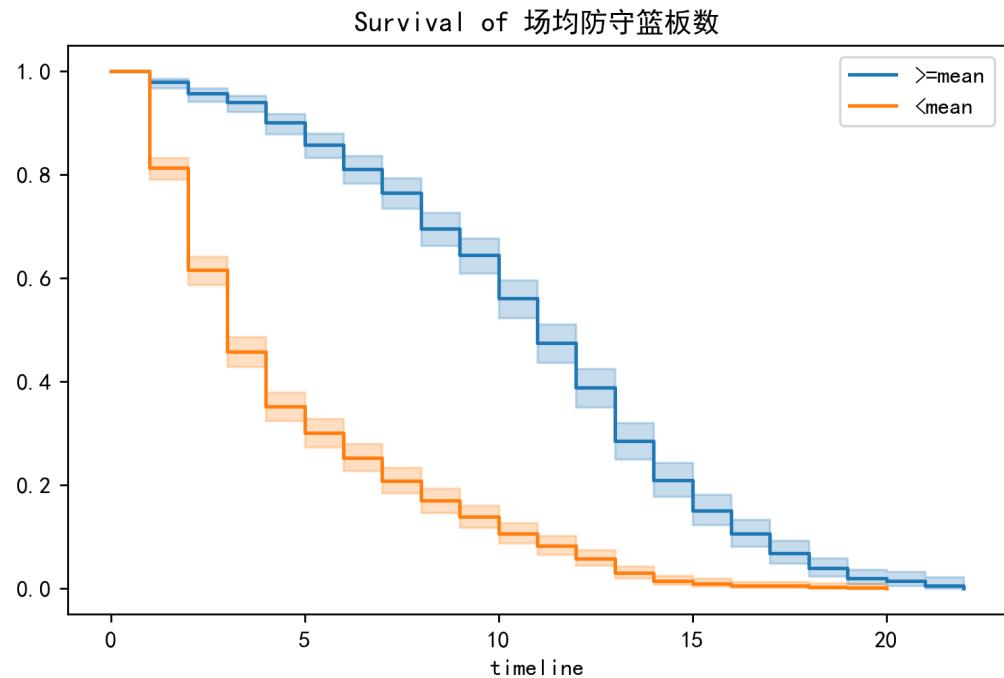
Out[452]: Text(0.5, 1.0, 'Survival of 控球后卫')



		不是控球后卫	
	At risk	Censored	Events
	2189	0	0
	999	30	
	1160		
	463	40	
	1686		
	91	43	
	2055		
	4	43	
	2142		

```
In [86]: plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5, 5, 5)
ax = plt.subplot(111)
m = (data2["场均防守篮板数"] >= data2['场均防守篮板数'].mean())
kmf.fit(durations = T[m], event_observed = E[m], label = ">=mean")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "<mean")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
```

Out[86]: Text(0.5, 1.0, 'Survival of 场均防守篮板数')

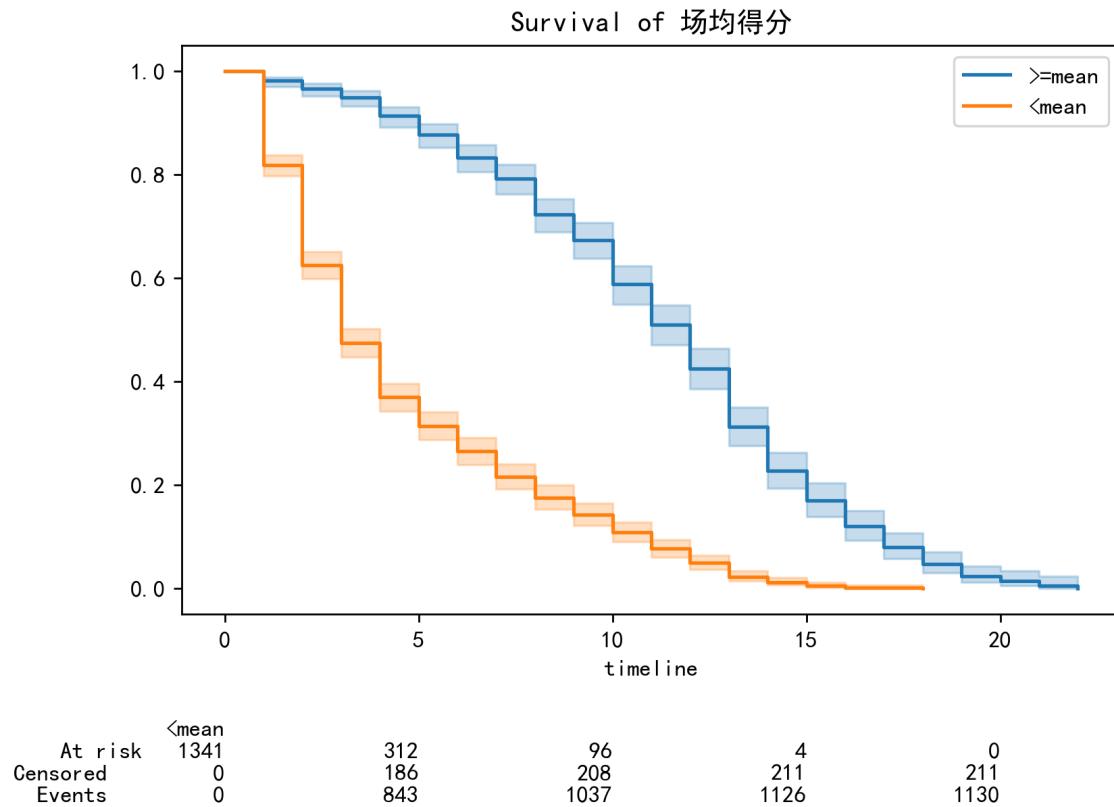


```
In [87]: print(data2['场均得分'].mean())
```

6.865389815232086

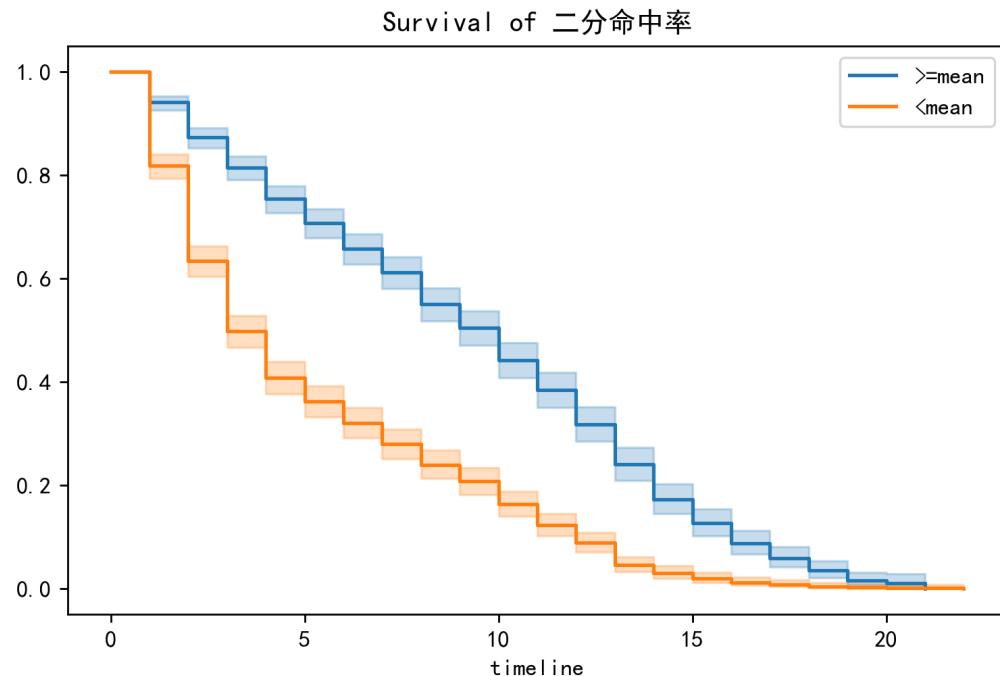
```
In [88]: plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5, 5, 5)
ax = plt.subplot(111)
m = (data2["场均得分"] >= data2['场均得分'].mean())
kmf.fit(durations = T[m], event_observed = E[m], label = ">=mean")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "<mean")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
plt.title("Survival of 场均得分")
```

Out[88]: Text(0.5, 1.0, 'Survival of 场均得分')



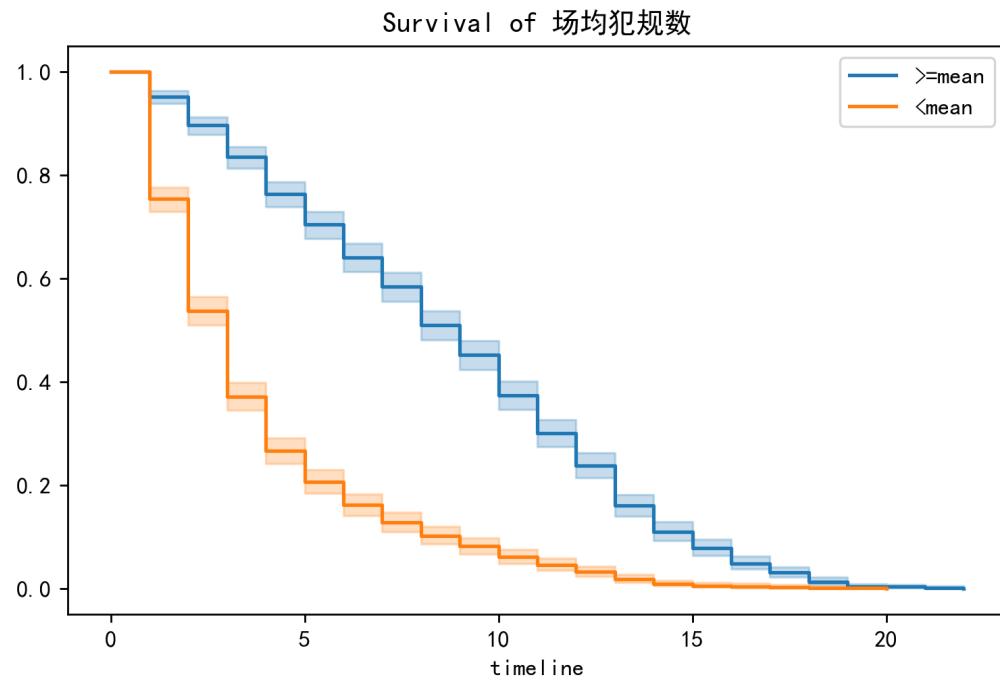
```
In [89]: plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5, 5, 5)
ax = plt.subplot(111)
m = (data2["二分命中率"] >= data2['二分命中率'].mean())
kmf.fit(durations = T[m], event_observed = E[m], label = ">=mean")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "<mean")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
plt.title("Survival of 二分命中率")
```

Out[89]: Text(0.5, 1.0, 'Survival of 二分命中率')



```
In [526]: plt.figure(figsize=(7, 5), dpi=250)
plt.rcParams['figure.figsize'] = (5.5, 5)
ax = plt.subplot(111)
m = (data2["场均犯规数"] >= data2['场均犯规数'].mean())
kmf.fit(durations = T[m], event_observed = E[m], label = ">=mean")
kmf.plot_survival_function(ax = ax)
kmf.fit(T[~m], event_observed = E[~m], label = "<mean")
kmf.plot_survival_function(ax = ax, at_risk_counts = True)
plt.title("Survival of 场均犯规数")
```

Out[526]: Text(0.5, 1.0, 'Survival of 均均犯规数')



	<mean					
At risk	1266	248	72	6		0
Censored	0	27	30	32		32
Events	0	991	1164	1228		1234

```
In [226]: data2 = pd.read_csv("NBA球员信息2.csv", index_col = 0)
def sol(x):
    if x == "1 year":
        return 1
    elif x == "Rookie":
        return 0
    else:
        x = x[:-6]
        x = int(x)
        return x
data2['career_length'] = data2['career_length'].apply(lambda x:sol(x))
data2['height'] = data2['height'].apply(lambda x:x[:-2])
data2['weight'] = data2['weight'].apply(lambda x:x[:-2])
data2["career_length"] = pd.to_numeric(data2["career_length"], downcast="integer")
data2["height"] = pd.to_numeric(data2["height"], downcast="integer")
data2["weight"] = pd.to_numeric(data2["weight"], downcast="integer")
data2["nba_debut"] = pd.to_numeric(data2["nba_debut"], downcast="integer")

data2["last_year"]=data2.apply(lambda x:x["nba_debut"]+x["career_length"]-1, axis=1)
data2 = data2.drop(data2[data2.career_length > 22].index)
data2 = data2.drop(data2[data2.nba_debut < 1985].index)
data2 = data2.drop(data2[data2.nba_debut > 2021].index)
data2 = data2.drop(data2[data2.height < 160].index)
data2 = data2.drop(data2[data2.height > 232].index)
data2 = data2.drop(data2[data2.weight < 80].index)
data2 = data2.drop(data2[data2.weight > 140].index)
```

```
In [227]: def is_center(x):
    if x == "Center":
        return 1
    else:
        return 0
def is_pg(x):
    if x == "Point Guard":
        return 1
    else:
        return 0
def is_pf(x):
    if x == "Power Forward":
        return 1
    else:
        return 0
def is_sg(x):
    if x == "Shooting Guard":
        return 1
    else:
        return 0
def is_sf(x):
    if x == "Small Forward":
        return 1
    else:
        return 0
def status(x):
    if x <= 2021:
        return 1
    else:
        return 0
def location(x):
    if x == "Center":
        return 0
    elif x == "Point Guard":
        return 1
    elif x == "Power Forward":
        return 2
    elif x == "Shooting Guard":
        return 3
    else:
        return 4
data2['KM_Center'] = data2['Position'].apply(lambda x:is_center(x))
data2['KM_pg'] = data2['Position'].apply(lambda x:is_pg(x))
data2['KM_pf'] = data2['Position'].apply(lambda x:is_pf(x))
data2['KM_sg'] = data2['Position'].apply(lambda x:is_sg(x))
data2['KM_sf'] = data2['Position'].apply(lambda x:is_sf(x))
data2['status'] = data2['last_year'].apply(lambda x:status(x))
data2['location'] = data2['Position'].apply(lambda x:location(x))
```

```
In [228]: data2["场均出手数"] = data2["per game FGA"]
data2["场均进攻篮板数"] = data2["per game ORB"]
data2["场均助攻数"] = data2["per game AST"]
data2["三分命中率"] = data2["per game 3P%"]
data2["二分命中率"] = data2["per game 2P%"]
data2["场均得分"] = data2["per game PTS"]
data2["场均防守篮板数"] = data2["per game DRB"]
data2["场均抢断数"] = data2["per game STL"]
data2["场均盖帽数"] = data2["per game BLK"]
data2["场均失误数"] = data2["per game TOV"]
data2["场均犯规数"] = data2["per game PF"]
data2["第二年"] = data2.apply(lambda x: x["nba_debut"] - (2023 - x['age']) + 1, axis=1)
data2["位置"] = data2["location"]
data2["身高"] = data2["height"]
data2["体重"] = data2["weight"]
data2['状态'] = data2['status']
data2["生涯长度"] = data2["career_length"]
plt.rcParams['font.sans-serif'] = ['SimHei']
plt.rcParams['axes.unicode_minus'] = False
```

```
In [229]: df = data2.copy()
df['场均上场时间'] = df['per game MP']
df['罚球命中率'] = df['per game FT%']
df['进入NBA年龄'] = df['第二年'].apply(lambda x: x - 1)
df.shape
```

Out[229]: (2219, 86)

```
In [230]: df.drop(df.columns[0:66], axis=1, inplace=True)
df = df.reset_index(drop=True)
df.head()
```

Out[230]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	场均犯规数	第二年	位置	身高	体重	状态	生涯长度	场均上场时间
0	4.8	1.1	0.3	0.000	0.503	5.7	2.2	0.3	0.3	1.0	1.9	23	2	208	108	1	5	12.5
1	13.9	2.3	2.5	0.297	0.480	18.1	5.3	1.0	0.8	2.6	2.8	21	0	206	102	1	12	34.8
2	4.5	0.3	0.5	0.368	0.443	5.3	1.1	0.5	0.1	0.4	1.7	24	3	198	90	1	3	16.0
3	6.5	1.7	0.9	0.321	0.508	7.7	3.6	0.5	0.5	1.0	1.9	22	0	203	102	1	2	19.2
4	3.9	0.9	0.6	0.350	0.506	4.9	2.6	0.4	0.4	0.6	2.0	23	2	201	108	1	7	16.0

```
In [517]: def cen(i):
    if i == 0:
        return 1
    else:
        return 0
def pgg(i):
    if i == 1:
        return 1
    else:
        return 0
def pff(i):
    if i == 2:
        return 1
    else:
        return 0
def sgg(i):
    if i == 3:
        return 1
    else:
        return 0
def sff(i):
    if i == 4:
        return 1
    else:
        return 0
df['中锋'] = df['位置'].apply(lambda x:cen(x))
df['控球后卫'] = df['位置'].apply(lambda x:pgg(x))
df['大前锋'] = df['位置'].apply(lambda x:pff(x))
df['得分后卫'] = df['位置'].apply(lambda x:sgg(x))
df['小前锋'] = df['位置'].apply(lambda x:sff(x))
df = df.drop(labels='位置', axis=1)

df.head()
```

Out[517]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	...	进入NBA年龄	身高	体重	状态	生涯长度	中锋
name																	
Alaa Abdelnaby	4.8	1.1	0.3	0.000	0.503	5.7	2.2	0.3	0.3	1.0	...	22	208	108	1	5	0
Shareef Abdur- Rahim	13.9	2.3	2.5	0.297	0.480	18.1	5.3	1.0	0.8	2.6	...	20	206	102	1	12	1
alex Abrines	4.5	0.3	0.5	0.368	0.443	5.3	1.1	0.5	0.1	0.4	...	23	198	90	1	3	0
Precious Achiuwa	6.5	1.7	0.9	0.321	0.508	7.7	3.6	0.5	0.5	1.0	...	21	203	102	1	2	0
Quincy Acy	3.9	0.9	0.6	0.350	0.506	4.9	2.6	0.4	0.4	0.6	...	22	201	108	1	7	0

5 rows × 21 columns



```
In [232]: from lifelines import CoxPHFitter
cph = CoxPHFitter(penalizer=0.00001)
cph.fit(df, duration_col = '生涯长度', event_col = '状态')
cph.print_summary()
```

model lifelines.CoxPHFitter

duration col '生涯长度'

event col '状态'

penalizer 0.00001

l1 ratio 0.0

baseline estimation breslow

number of observations 2219

number of events observed 2170

partial log-likelihood -13704.41

time fit was run 2023-04-15 12:02:50 UTC

	coef	exp(coef)	se(coef)	lower 95%	upper 95%	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	log2(
场均出手数	0.31	1.37	0.05	0.22	0.41	1.24	1.50	0.00	6.47	<0.005	33.1
场均进攻篮板数	-0.11	0.90	0.08	-0.26	0.05	0.77	1.05	0.00	-1.35	0.18	2.3
场均助攻数	-0.12	0.88	0.05	-0.21	-0.04	0.81	0.96	0.00	-2.77	0.01	7.4
三分命中率	-0.31	0.73	0.21	-0.73	0.11	0.48	1.12	0.00	-1.45	0.15	2.1
二分命中率	0.95	2.59	0.40	0.17	1.73	1.19	5.62	0.00	2.40	0.02	5.9
场均得分	-0.15	0.86	0.04	-0.23	-0.08	0.79	0.92	0.00	-3.99	<0.005	13.8
场均防守篮板数	0.20	1.22	0.04	0.12	0.29	1.12	1.33	0.00	4.59	<0.005	17.9
场均抢断数	-0.18	0.84	0.13	-0.43	0.08	0.65	1.08	0.00	-1.37	0.17	2.3
场均盖帽数	-0.02	0.98	0.09	-0.20	0.17	0.82	1.18	0.00	-0.19	0.85	0.0
场均失误数	0.26	1.30	0.12	0.04	0.49	1.04	1.63	0.00	2.28	0.02	5.4

	coef	exp(coef)	se(coef)	lower 95%	upper 95%	coef	exp(coef)	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	log2(
场均 犯规 数	-0.22	0.80	0.07	-0.35	-0.08	0.70	0.92	0.00	-3.15	<0.005	9.1		
身高	0.01	1.01	0.01	-0.00	0.02	1.00	1.02	0.00	1.81	0.07	3.0		
体重	0.00	1.00	0.00	-0.00	0.01	1.00	1.01	0.00	1.22	0.22	2.1		
场均 上场 时间	-0.17	0.84	0.01	-0.20	-0.15	0.82	0.86	0.00	-15.12	<0.005	169.0		
罚球 命中 率	-0.70	0.50	0.23	-1.14	-0.25	0.32	0.78	0.00	-3.07	<0.005	8.0		
进入 NBA 年龄	0.06	1.06	0.01	0.04	0.09	1.04	1.09	0.00	5.14	<0.005	21.0		
中锋	-0.74	0.47	7.55	-15.54	14.05	0.00	1.27e+06	0.00	-0.10	0.92	0.0		
控球 后卫	0.70	2.01	7.55	-14.10	15.50	0.00	5.38e+06	0.00	0.09	0.93	0.0		
大前 锋	-0.23	0.80	7.55	-15.03	14.57	0.00	2.12e+06	0.00	-0.03	0.98	0.0		
得分 后卫	0.35	1.42	7.55	-14.44	15.15	0.00	3.80e+06	0.00	0.05	0.96	0.0		
小前 锋	0.18	1.19	7.55	-14.62	14.97	0.00	3.19e+06	0.00	0.02	0.98	0.0		
Concordance				0.79									
Partial AIC				27450.82									
log-likelihood ratio test				1674.58 on 21 df									
-log2(p) of II-ratio test				inf									

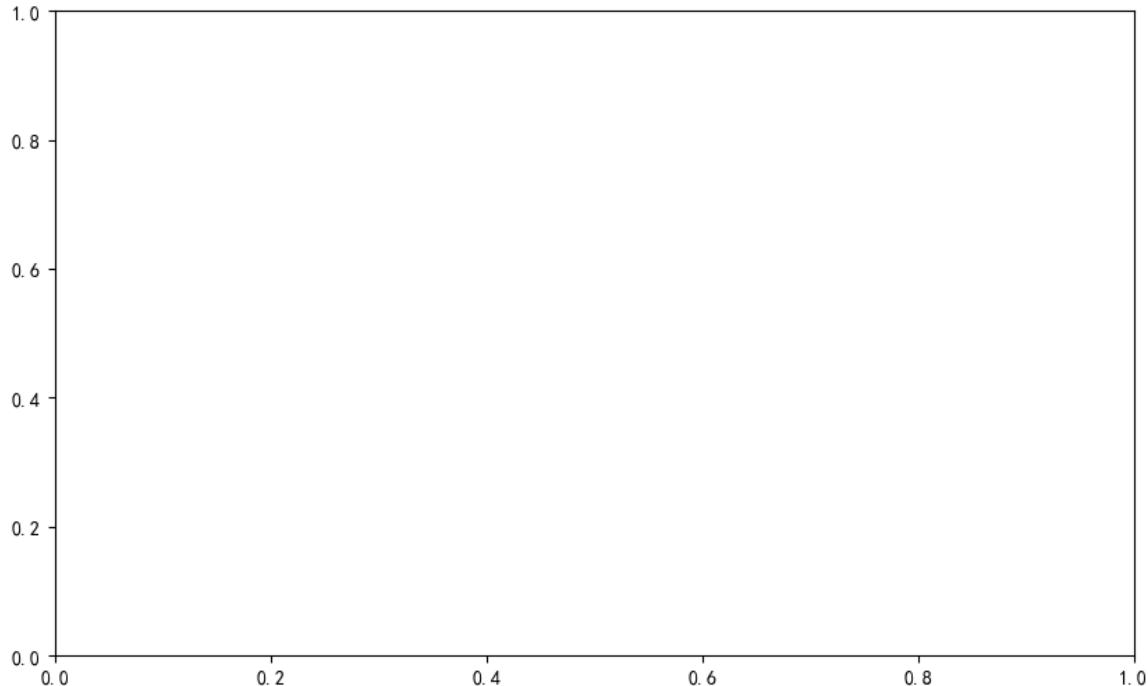
In [233]: df.shape

Out[233]: (2219, 23)

```
In [68]: plt.subplots(figsize = (10, 6))
cph.plot()
```

```
-----
NameError                                 Traceback (most recent call last)
Cell In[68], line 2
      1 plt.subplots(figsize = (10, 6))
----> 2 cph.plot()

NameError: name 'cph' is not defined
```



```
In [235]: # cph.plot_partial_effects_on_outcome(covariates = '第二年', values = [18, 20, 22, 24,
```

```
In [236]: # df = df.reset_index(drop=True)
cph.check_assumptions(df, p_value_threshold = 0.05)
```

	三分命中率	km	1.21	0.27	1.88
		rank	1.45	0.23	2.13
	中锋	km	0.00	1.00	0.00
		rank	0.00	1.00	0.01
	二分命中率	km	7.17	0.01	7.07
		rank	7.38	0.01	7.25
	体重	km	1.98	0.16	2.65
		rank	1.99	0.16	2.66
	场均上场时间	km	6.73	0.01	6.72
		rank	6.05	0.01	6.17
	场均出手数	km	3.79	0.05	4.28
		rank	4.19	0.04	4.62
		km	0.18	0.67	0.58

Time covariate

```
In [ ]: # from lifelines.utils import to_episodic_format
# df2 = to_episodic_format(df, duration_col='生涯长度', event_col='状态', time_gaps=1.
# df2['time*二分'] = df2['二分命中率'] * (np.log(df2['stop']+20))
# df2
```

```
In [ ]: # from lifelines import CoxTimeVaryingFitter
# cph = CoxTimeVaryingFitter(penalizer=0.00001)
# cph.fit(df2, event_col='状态', id_col='id')
# cph.print_summary()
```

```
In [ ]: # cph.check_assumptions(df2.drop(['id','stop','start'],axis = 1), p_value_threshold =
```

```
In [518]: df=data2.copy()
```

```
In [519]: def cen(i):
    if i == 0:
        return 1
    else:
        return 0
def pgg(i):
    if i == 1:
        return 1
    else:
        return 0
def pff(i):
    if i == 2:
        return 1
    else:
        return 0
def sgg(i):
    if i == 3:
        return 1
    else:
        return 0
def sff(i):
    if i == 4:
        return 1
    else:
        return 0
df['中锋'] = df['位置'].apply(lambda x:cen(x))
df['控球后卫'] = df['位置'].apply(lambda x:pgg(x))
df['大前锋'] = df['位置'].apply(lambda x:pff(x))
df['得分后卫'] = df['位置'].apply(lambda x:sgg(x))
df['小前锋'] = df['位置'].apply(lambda x:sff(x))
df = df.drop(labels='位置', axis=1)
# df = df.drop(labels='第二年', axis=1)
# df = df.drop(labels='中锋', axis=1)
# df = df.drop(labels='控球后卫', axis=1)
# df = df.drop(labels='大前锋', axis=1)
# df = df.drop(labels='得分后卫', axis=1)
# df = df.drop(labels='小前锋', axis=1)
df.head()
```

Out[519]:

	场均出手数	场均进攻篮板数	场均助攻数	三分命中率	二分命中率	场均得分	场均防守篮板数	场均抢断数	场均盖帽数	场均失误数	...	进入NBA年龄	身高	体重	状态	生涯长度	中锋
name																	
Alaa Abdelnaby	4.8	1.1	0.3	0.000	0.503	5.7	2.2	0.3	0.3	1.0	...	22	208	108	1	5	0
Shareef Abdur- Rahim	13.9	2.3	2.5	0.297	0.480	18.1	5.3	1.0	0.8	2.6	...	20	206	102	1	12	1
alex Abrines	4.5	0.3	0.5	0.368	0.443	5.3	1.1	0.5	0.1	0.4	...	23	198	90	1	3	0
Precious Achiuwa	6.5	1.7	0.9	0.321	0.508	7.7	3.6	0.5	0.5	1.0	...	21	203	102	1	2	0
Quincy Acy	3.9	0.9	0.6	0.350	0.506	4.9	2.6	0.4	0.4	0.6	...	22	201	108	1	7	0

5 rows × 21 columns



In [521]: df = df.reset_index(drop=True)

Strata

```
In [522]: cph.fit(df, '生涯长度', '状态', strata=['二分命中率', '场均失误数'])
cph.check_assumptions(df, p_value_threshold = 0.05)
```

Proportional hazard assumption looks okay.

Out[522]: []

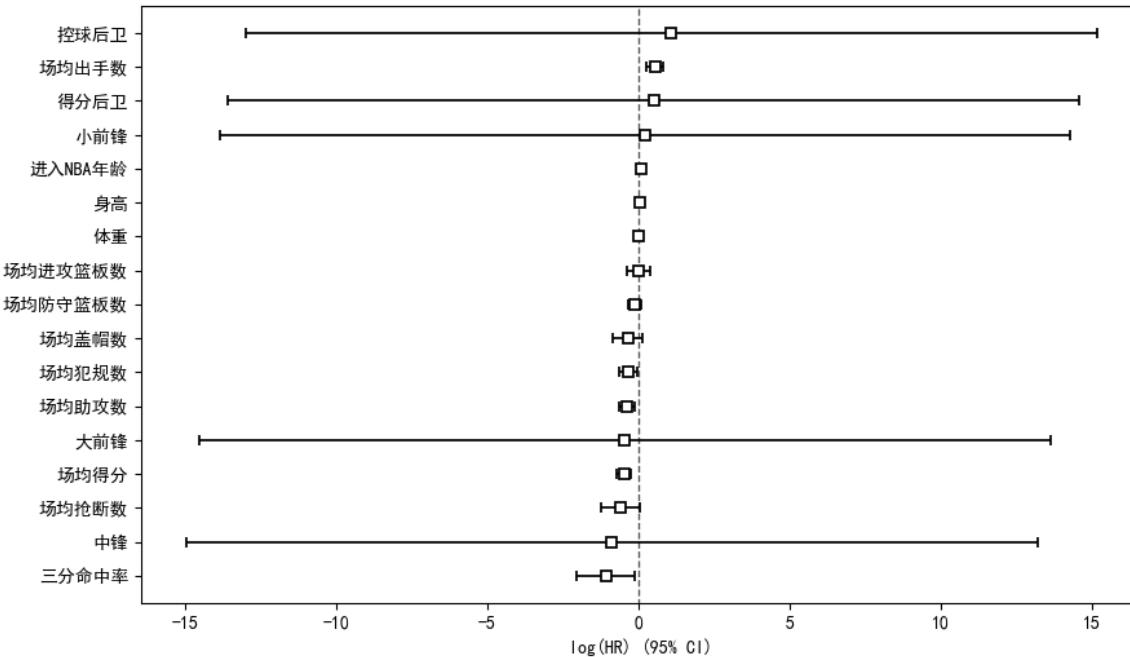
```
In [523]: cph.print_summary(model="二分 in strata")
```

model	lifelines.CoxPHFitter											
duration col	'生涯长度'											
event col	'状态'											
penalizer	0.00001											
l1 ratio	0.0											
strata	[二分命中率, 场均失误数]											
baseline estimation	breslow											
number of observations	2461											
number of events observed	2412											
partial log-likelihood	-458.40											
time fit was run	2023-04-17 17:16:01 UTC											
model	二分 in strata											
	coef	exp(coef)	se(coef)	coef lower 95%	coef upper 95%	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	log2(p)	
场均出手数	0.54	1.72	0.14	0.27	0.82	1.30	2.26	0.00	3.85	<0.005	13.0	
场均进攻篮板数	0.00	1.00	0.19	-0.38	0.38	0.68	1.46	0.00	0.00	1.00	0.0	
场均助攻数	-0.41	0.67	0.13	-0.66	-0.15	0.52	0.86	0.00	-3.14	<0.005	9.1	
三分命中率	-1.09	0.34	0.49	-2.04	-0.14	0.13	0.87	0.00	-2.24	0.03	5.3	
场均得分	-0.49	0.61	0.12	-0.73	-0.25	0.48	0.78	0.00	-4.02	<0.005	14.0	
场均防守篮板数	-0.13	0.88	0.11	-0.35	0.10	0.70	1.10	0.00	-1.12	0.26	1.9	
场均抢断数	-0.61	0.54	0.32	-1.25	0.02	0.29	1.02	0.00	-1.90	0.06	4.1	
场均盖帽数	-0.36	0.70	0.25	-0.84	0.13	0.43	1.14	0.00	-1.44	0.15	2.7	
场均犯规数	-0.36	0.70	0.15	-0.66	-0.06	0.52	0.94	0.00	-2.37	0.02	5.8	

	coef	exp(coef)	se(coef)	coef lower 95%	coef upper 95%	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	log2(p)
进入 NBA 年龄	0.07	1.07	0.03	0.01	0.13	1.01	1.13	0.00	2.42	0.02	6.0
身高	0.02	1.02	0.01	-0.01	0.05	0.99	1.05	0.00	1.57	0.12	3.1
体重	0.01	1.01	0.01	-0.01	0.03	0.99	1.03	0.00	1.16	0.25	2.0
中锋	-0.89	0.41	7.18	-14.96	13.18	0.00	5.30e+05	0.00	-0.12	0.90	0.1
控球 后卫	1.07	2.92	7.18	-13.00	15.14	0.00	3.78e+06	0.00	0.15	0.88	0.1
大前 锋	-0.46	0.63	7.18	-14.52	13.61	0.00	8.10e+05	0.00	-0.06	0.95	0.0
得分 后卫	0.49	1.64	7.18	-13.57	14.56	0.00	2.10e+06	0.00	0.07	0.95	0.0
小前 锋	0.19	1.21	7.17	-13.87	14.26	0.00	1.55e+06	0.00	0.03	0.98	0.0
Concordance			0.70								
Partial AIC			950.79								
log-likelihood ratio test			118.08 on 17 df								
-log2(p) of II-ratio test			54.63								

```
In [527]: plt.subplots(figsize = (10, 6))
cph.plot()
```

Out[527]: <Axes: xlabel=' log(HR) (95% CI)'>



```
In [240]: cph.strata
```

Out[240]: ['三分命中率', '场均失误数']

```
In [62]: cph.plot_partial_effects_on_outcome(covariates = '进入NBA年龄', values = [24], cmap =
```

C:\Anaconda\lib\site-packages\lifelines\fitters\coxph_fitter.py:971: RuntimeWarning: More than 20 figures have been opened. Figures created through the pyplot interface (`matplotlib.pyplot.figure`) are retained until explicitly closed and may consume too much memory. (To control this warning, see the rcParam `figure.max_open_warning`). Consider using `matplotlib.pyplot.close()`.

```
    ax = plt.figure().add_subplot(1, 1, 1)
```

```
Out[62]: [<Axes: >,
<Axes: >]
```

```
In [60]: chf_funcs = cph.predict_cumulative_hazard_function(X_test)

for fn in chf_funcs:
    plt.step(fn.x, fn(fn.x), where="post")
plt.ylim(0, 1)
plt.show()
```

```
-----
-----
AttributeError                               Traceback (most recent call last)
Cell In[60], line 1
----> 1 chf_funcs = cph.predict_cumulative_hazard_function(X_test)
      3 for fn in chf_funcs:
      4     plt.step(fn.x, fn(fn.x), where="post")

File C:\Anaconda\lib\site-packages\lifelines\fitters\coxph_fitter.py:597,
in CoxPHFitter.__getattr__(self, attr)
    594 if hasattr(self._model, attr):
    595     return getattr(self._model, attr)
--> 597 raise AttributeError("%s has no attribute '%s'" % (self._class_name, a
ttr))

AttributeError: CoxPHFitter has no attribute 'predict_cumulative_hazard_function'
```

```
In [58]: plt.rcParams['axes.unicode_minus'] =False
```

```
In [ ]:
```