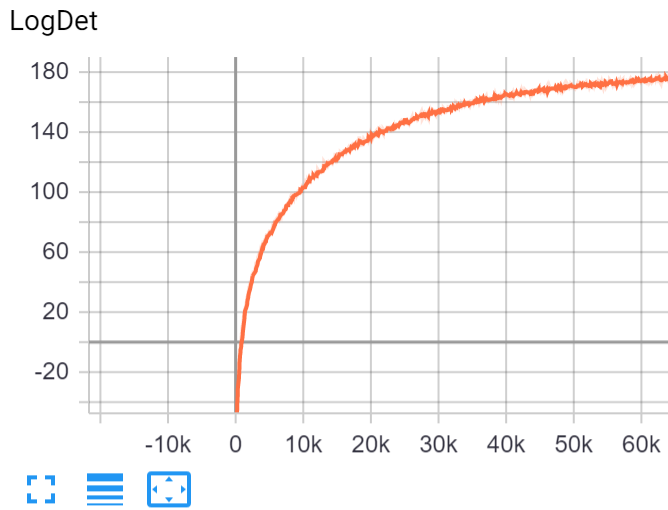


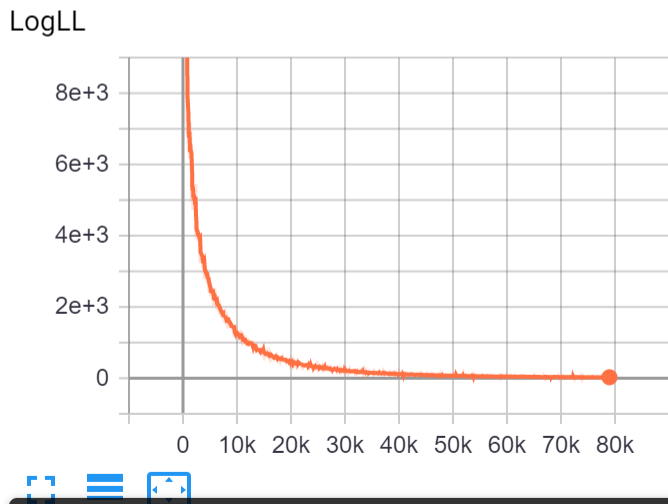
DNF

实验 1 2020.3.24

Realnvp block=10 hidden=512 input=120 cond_dim=120 var=1 & 1k



LogLL



Name	Smoothed	Value	Step	Time	Relative
Log	27.18	30.41	78.98k	Wed Mar 25, 22:20:30	7h 24m 53s

训练集在隐空间高斯性

skew = 0.0031436711142305285 kurt = -1.1428269232454675

测试集在隐空间高斯性

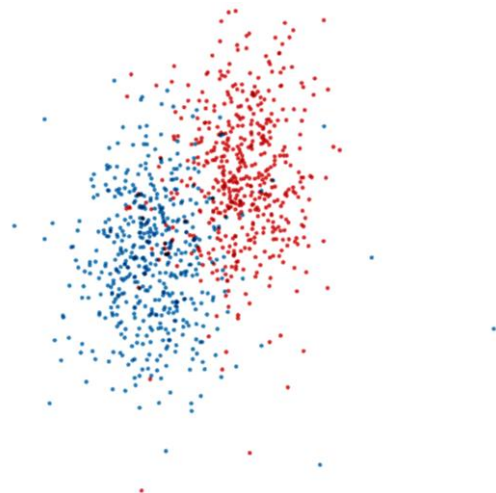
wsj+ce:

skew = 0.02316198189194741 kurt = -0.7585778409715496

wsj+ce+je:

skew = 0.02062119066443605 kurt = -0.8155078098045876

训练集可视化:



直接取两维

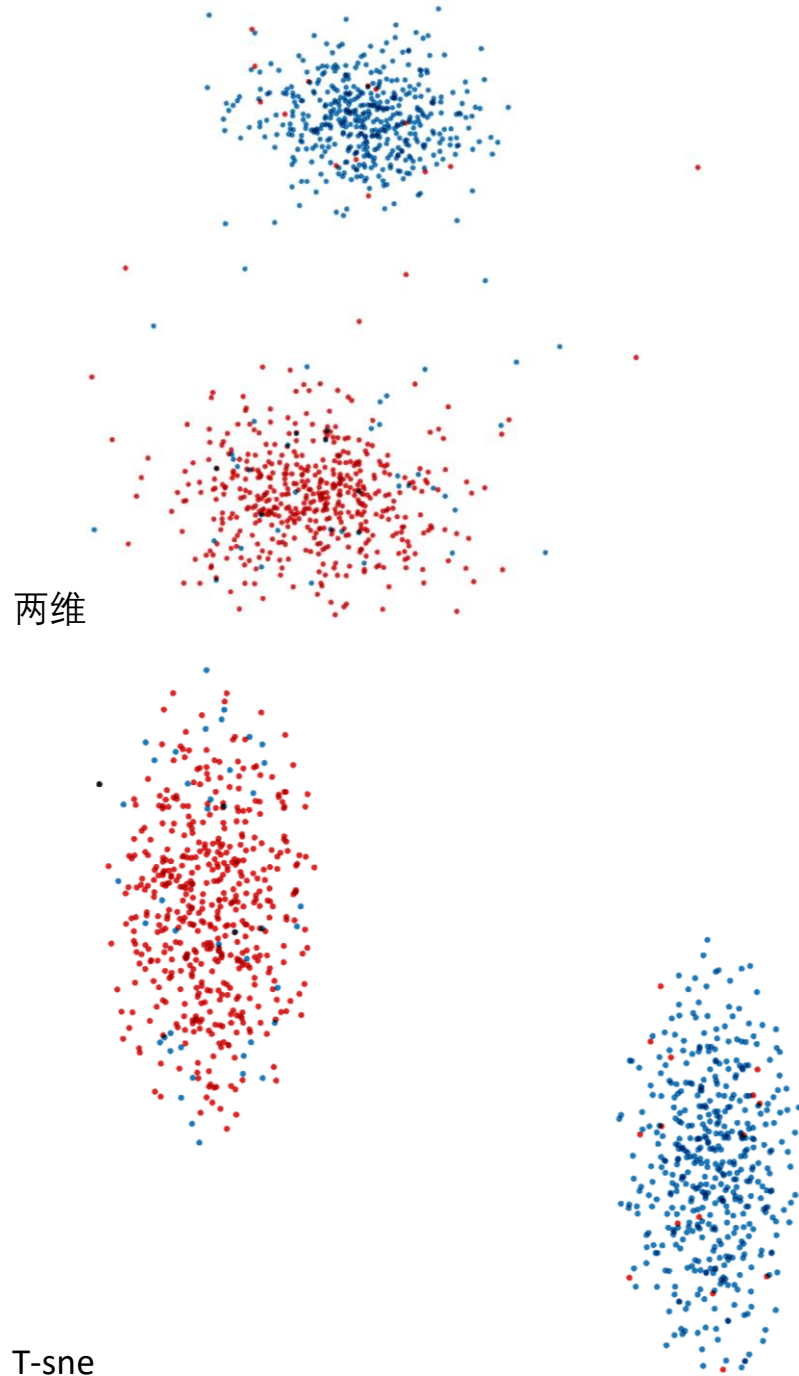


T-sne

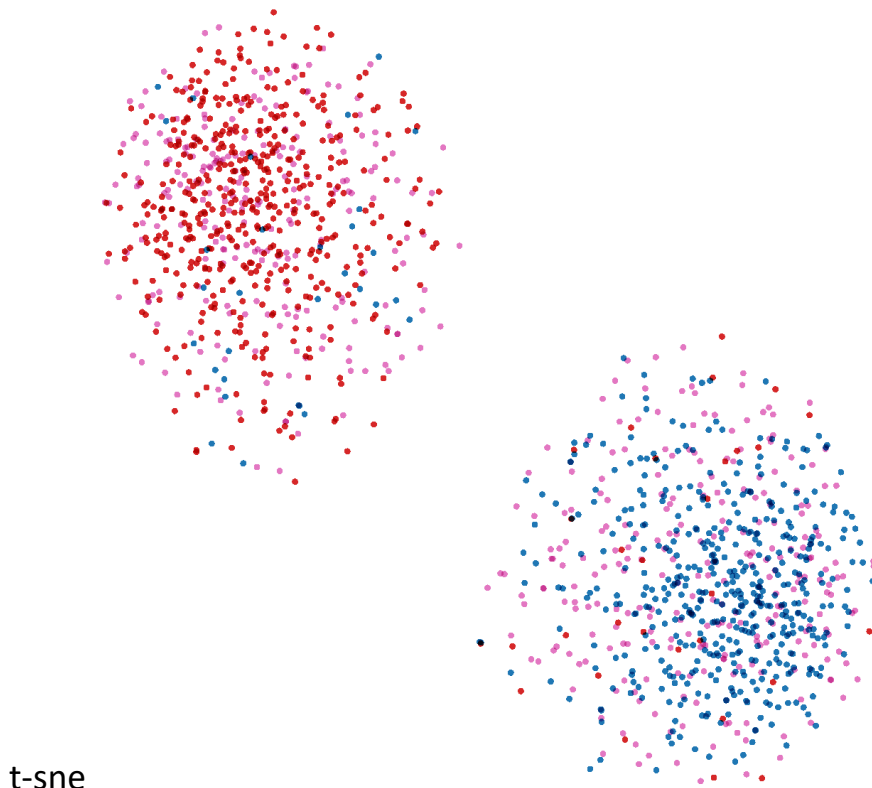
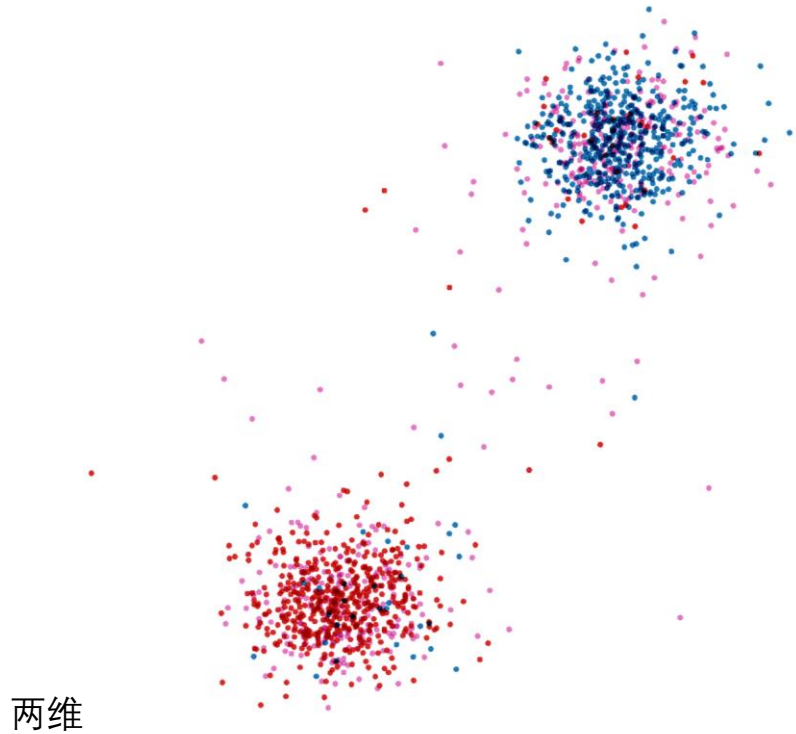


测试集可视化：

用纯英语和中国英语（取自训练集外的同数据集）



使用纯英语、中国英语、日本英语； 蓝色 wsj, 红色 ce, 粉色 je

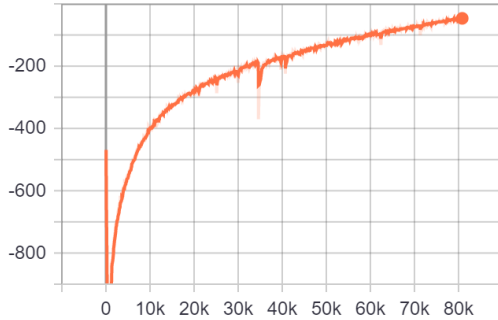


可视化结果表明，模型对于集内（wsj 和 ce）区分性较好

实验 2 2020.3.25

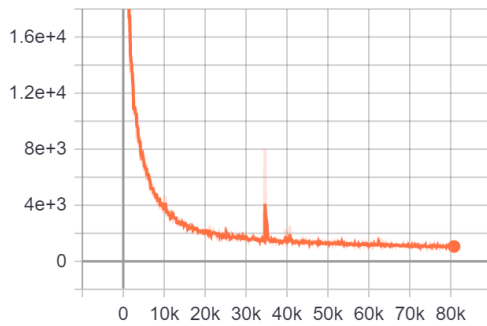
Realnvp block=10 hidden=512 input=440 cond_dim=400 var=1 & 1k

LogDet



LogLL

LogLL



Name	Smoothed	Value	Step	Time	Relative
LogLL	1058	1036	80.84k	Thu Mar 26, 09:45:21	9h 37m 36s

有一个明显的、奇怪的波动。

训练集在隐空间高斯性：

$c(\text{dim}=400)$: skew = 0.0006283868383616209 kurt = -1.5424493272780615

$r(\text{dim}=40)$: skew = 0.008583634172100573 kurt = 0.7271008120156788

测试集在隐空间高斯性:

wsj+ce:

c(dim=400): skew = 0.0001360115630782843 kurt = -1.6097791542651472

r(dim=40): skew = 0.0037121913279406725 kurt = 0.7380078159736696

wsj+ce+je:

c(dim=400): skew = 7.981912058312446e-05 kurt = -1.5953344626309138

r(dim=40): skew = 0.00020940345712006092 kurt = 0.7430761053304892

训练集分布

两维

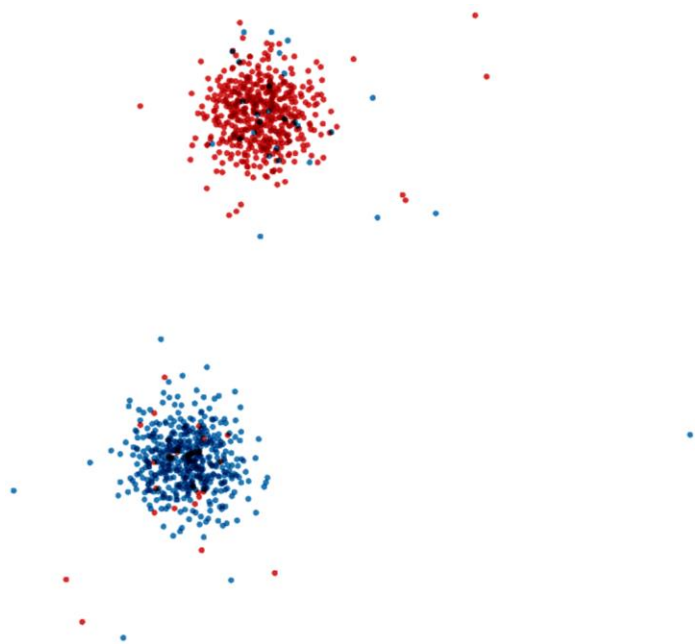


T-sne

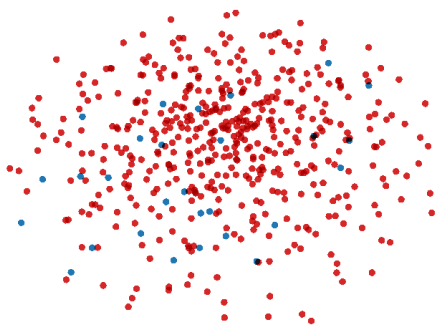


测试集分布

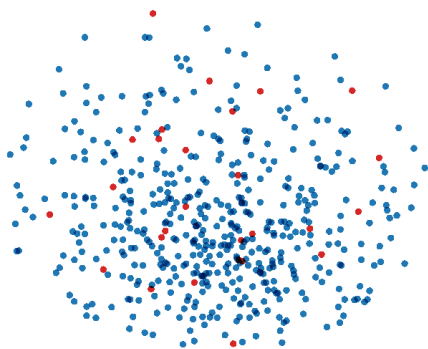
wsj+ce



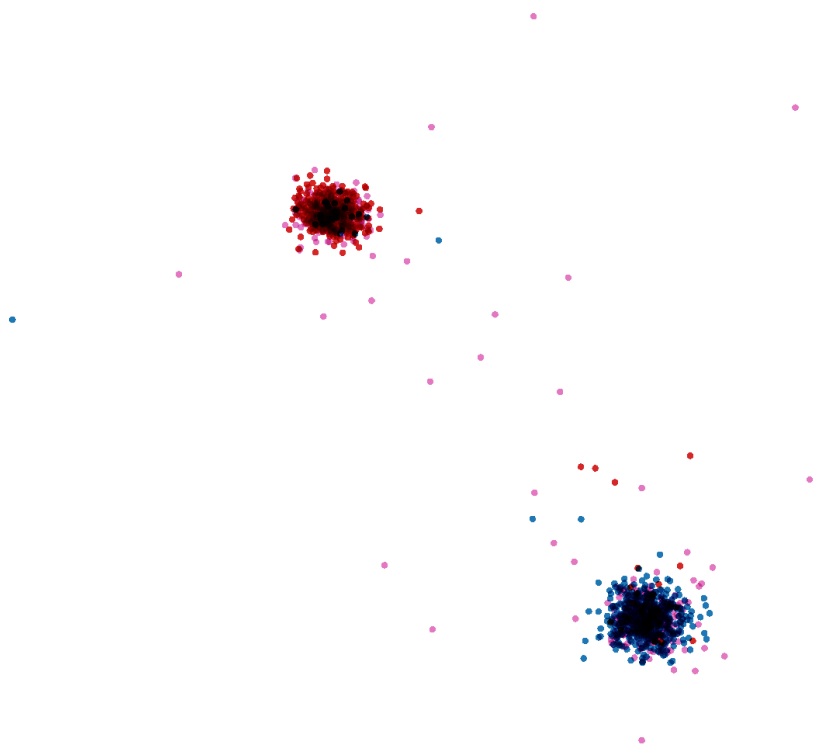
两维



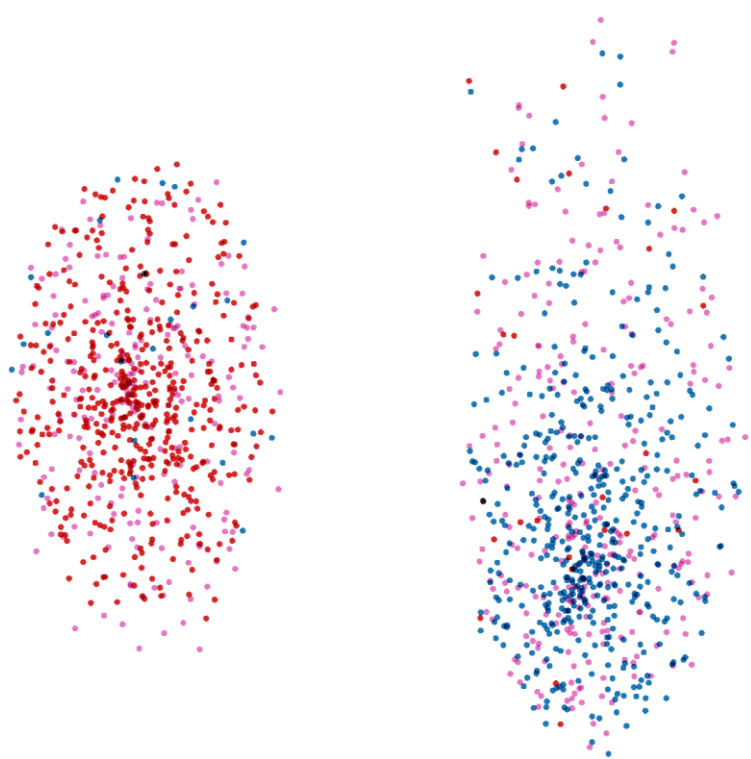
t-sne



wsj+ce+je (wsj&ce 来自同集) 蓝色 wsj, 红色 ce, 粉色 je



两维

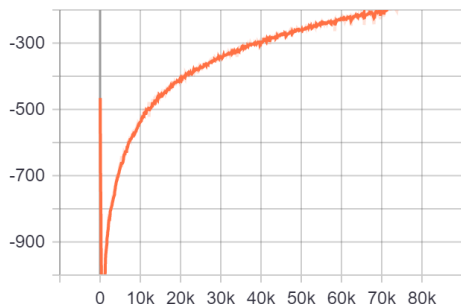


t-sne

实验 3 2020.3.25

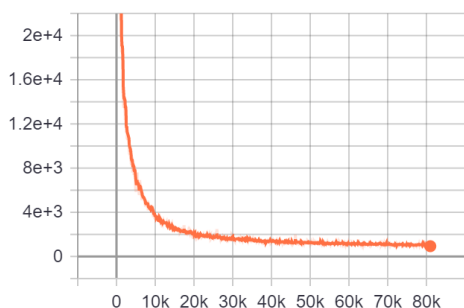
Realnvp block=10 hidden=512 input=440 cond_dim=440 var=1 & 1k

LogDet



LogLL

LogLL



Name	Smoothed	Value	Step	Time	Relative
LogLL	931.7	819.7	81k	Thu Mar 26, 10:38:43	17h 21m 24s

同样的数据，这次没有出现奇怪的波动。

训练集在隐空间高斯性：

c(dim=440): skew = -0.014642360260371457 kurt = -1.4761772624802512

测试集在隐空间高斯性：

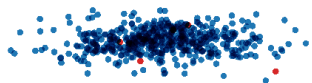
wsj+ce 两分类：

c(dim=440): skew = -0.005829388468092392 kurt = -1.5395667708074203

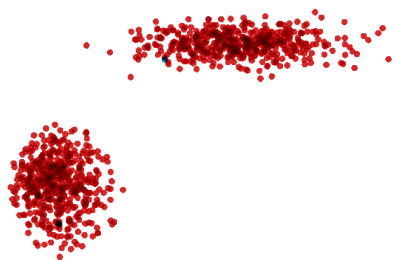
wsj+ce+je 三分类：

c(dim=440): skew = -0.005821182986123445 kurt = -1.5287577271416113

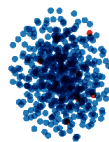
训练集分布：



两维



t-sne

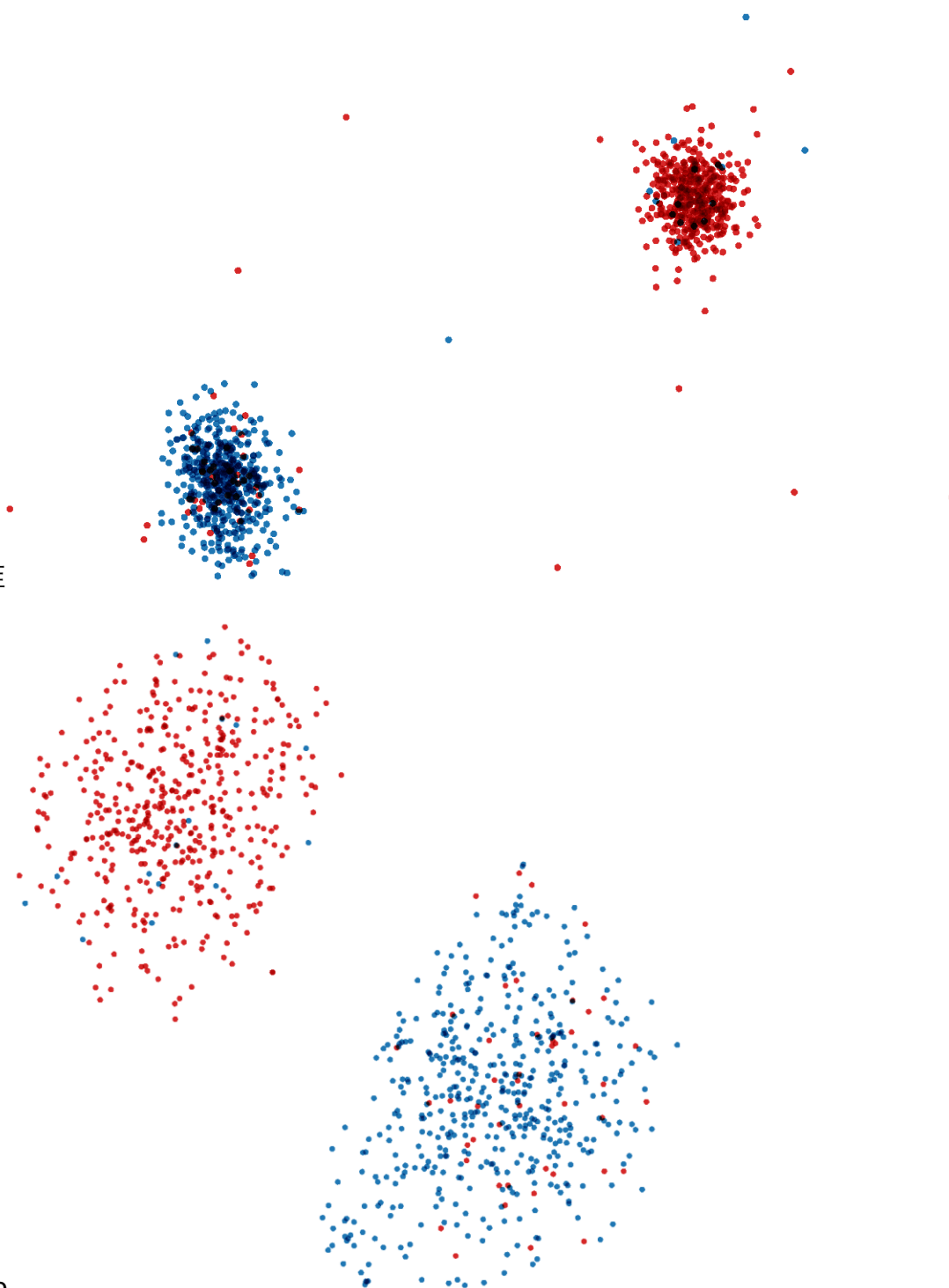


测试集分布:

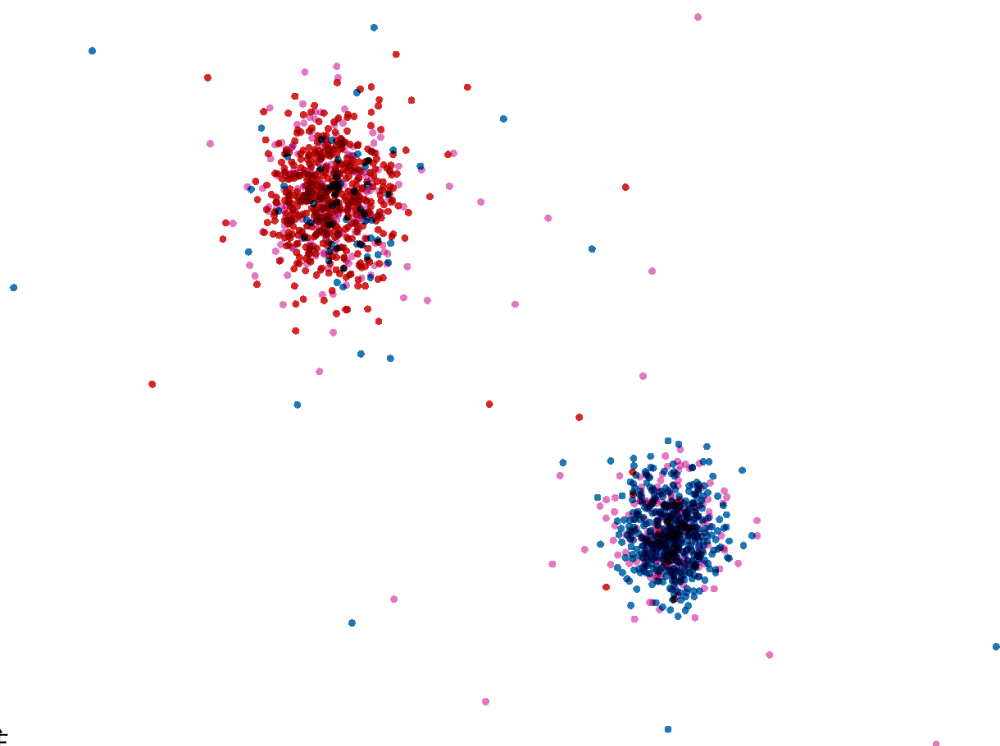
Wsj+ce:

两维

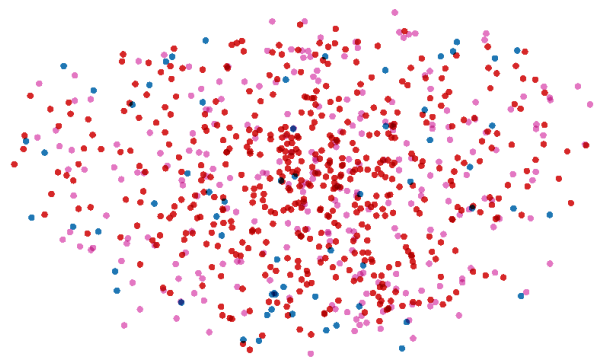
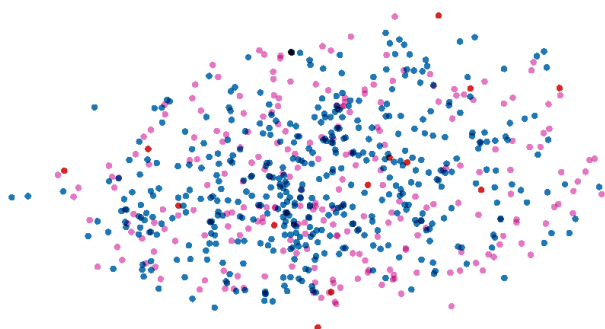
t-sne



wsj+ce+je; 蓝色 wsj, 红色 ce, 粉色 je



两维



t-sne

实验 1、2、3 说明，在可视化的层面上，对于 wsj 和 ce 分类性较好。

对于没见过的 je，依然不会分布到极其外围的位置，说明可能学到了英文发音的信息。

Normal flow model

用 wsj-50h 中的 9/10 训练

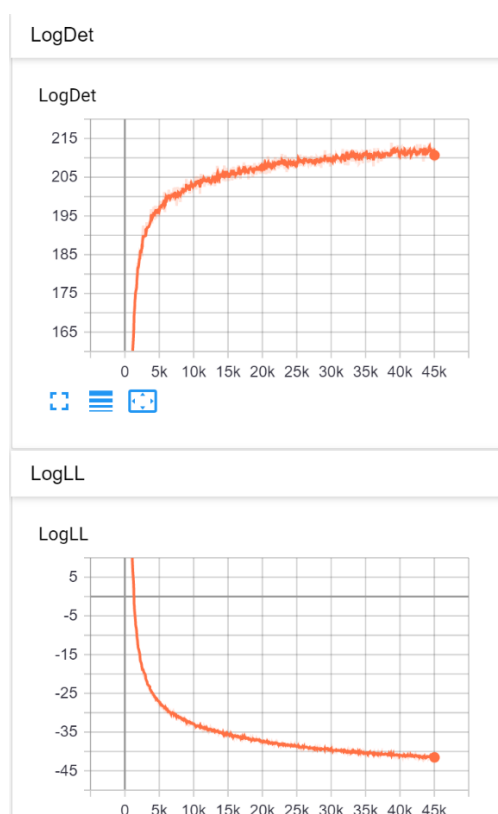
--epochs 100 --batch-size 10000 --lr 0.0001 --num-blocks 10

real_nvp / relu / num_hidden = 256

以下 test 均用 epoch=95 的 model

a. 训练结果:

LogLL (loss) = -41.869190 LogP = -170.205643 LogDet = 212.074829



b. 训练集 (约 45h) 在 latent 空间:

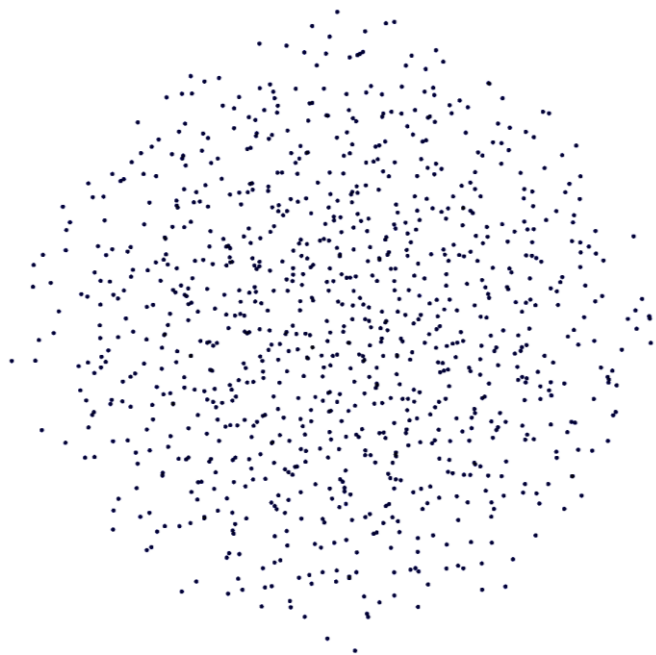
LogLL = 1479.559040 LogP = -1443.457739 LogDet = -36.101301

456 万帧, 120 维

c. wsj-50h 训练集外的 1/10 (约 5h) 在 latent 空间:

LogLL = 1466.184247 LogP = -1429.757313 LogDet = -36.426934

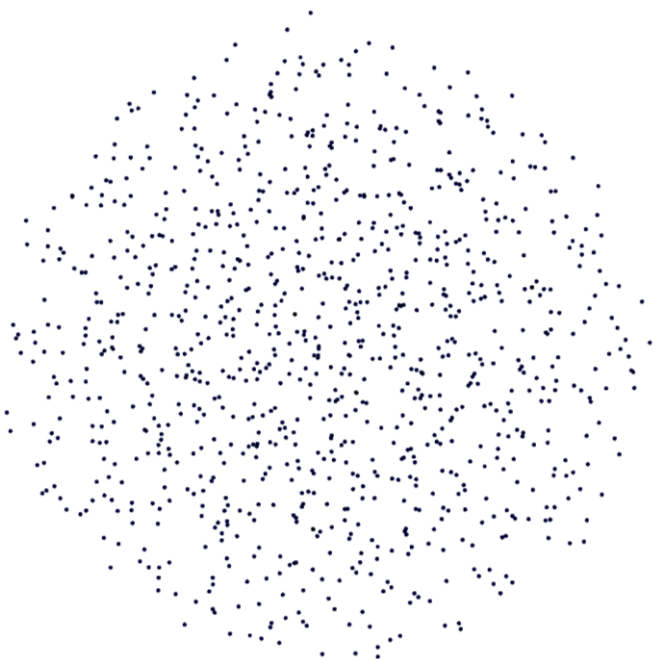
46 万帧, 120 维



d. L2 (Chinglish 集, 约 30h) 在 latent 空间:

LogLL = 1655.813159 LogP = -1601.595372 LogDet = -54.217786

422 万帧, 120 维



e. JE (Japanese English, about 2h. Include score 1~5)

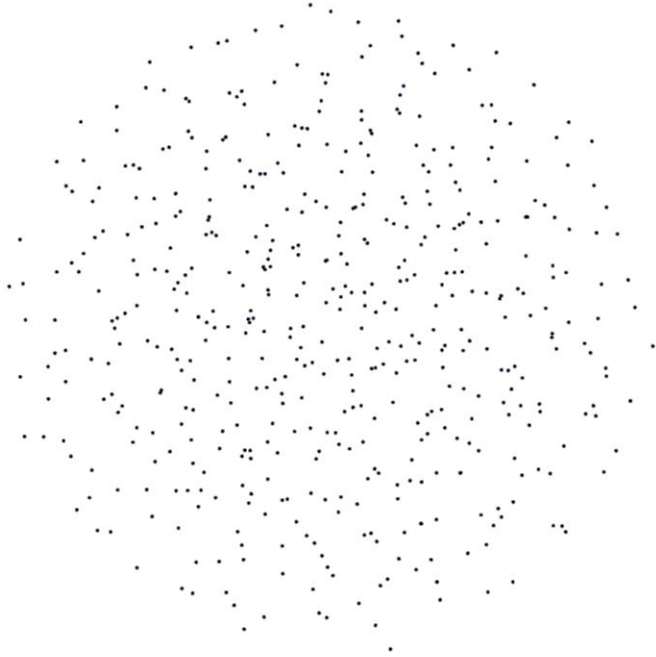
LogLL = 1573.815700 LogP = -1529.885478 LogDet = -43.930221

20 万帧, 120 维

f. JE(Score 1&2)

LogLL = 1568.640994 LogP = -1525.555617 LogDet = -43.085376

75000 帧, 120 维



g. wsj-test ce je(1&2)在 latent 空间中分布

