



PRACTICAL DEEP LEARNING FOR CODERS

Vizle

Lesson 5
Jeremy Howard



<https://vizle.offnote.co>

Contact us: vizle@offnote.co

This document was generated automatically by **Vizle**

Your **Personal Video Reader Assistant**

Learn from Videos **Faster** and **Smarter**

VIZLE PRO / BIZ

PDF, PPT Watermarks

- Convert *entire* videos
- *Customize* to retain all essential content
- Include Spoken *Transcripts*
- Customer support

Visit <https://vizle.offnote.co/pricing> to learn more

VIZLE FREE PLAN

PDF only Watermarks

- Convert videos *partially*
- Slides may be *skipped**
- Usage restrictions
- No Customer support

Visit <https://vizle.offnote.co> to try free

Login to Vizle to unlock more slides*



```
[5]: PassengerId    0  
      Survived      0  
      Pclass       0  
      Name         0  
      Sex          0  
      Age         177  
      SibSp        0  
      Parch        0  
      Ticket       0  
      Fare         0  
      Cabin       687  
      Embarked     2  
      dtype: int64
```

```
[6]: modes = df.mode().iloc[0]  
      modes
```

```
[6]: PassengerId    1  
      Survived     0.0  
      Pclass       3.0  
      Name         Abbing, Mr. Anthony  
      Sex          male  
      Age         24.0  
      SibSp        0.0  
      Parch        0.0  
      Ticket       1601  
      Fare         8.05  
      Cabin       B96 B98  
      Embarked     S  
      Name: 0, dtype: object
```





```
df.columns
```

```
[15]: Index(['PassengerId', 'Survived', 'Name', 'Age', 'SibSp', 'Parch', 'Ticket', 'Fare', 'Cabin', 'LogFare', 'Sex_female', 'Sex_male', 'Pclass_1', 'Pclass_2', 'Pclass_3', 'Embarked_C', 'Embarked_Q', 'Embarked_S'], dtype='object')
```

```
[16]: added_cols = ['Sex_male', 'Sex_female', 'Pclass_1', 'Pclass_2', 'Pclass_3', 'Embarked_C', 'Embarked_Q', 'Embarked_S']  
df[added_cols].head()
```

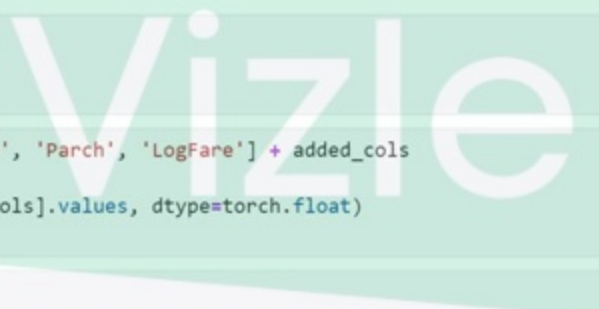
```
[16]:
```

	Sex_male	Sex_female	Pclass_1	Pclass_2	Pclass_3	Embarked_C	Embarked_Q	Embarked_S
0	1	0	0	0	1	0	0	1
1	0	1	1	0	0	1	0	0
2	0	1	0	0	1	0	0	1
3	0	1	1	0	0	0	0	1
4	1	0	0	0	1	0	0	1

```
[ ]: from torch import tensor  
t_dep = tensor(df.Survived)
```

```
[ ]: indep_cols = ['Age', 'SibSp', 'Parch', 'LogFare'] + added_cols  
t_indep = tensor(df[indep_cols].values, dtype=torch.float)  
t_indep
```

```
[ ]: t_indep.shape
```





```
[ 0.0000, 0.3625],  
[-11.1096, 0.1386, 0.4818, -0.7229, -0.0000, -0.3147, 0.0000, 0.0000, 0.2799, -0.0000,  
0.0000, 0.3625],  
[-12.0354, 0.0000, 0.0000, -0.7766, -0.2632, -0.0000, 0.4876, 0.0000, 0.0000, -0.4392,  
0.0000, 0.0000],  
[-14.8128, 0.0000, 0.0000, -0.4905, -0.2632, -0.0000, 0.0000, 0.0000, 0.2799, -0.0000,  
0.2103, 0.0000]]
```

```
[ ]: vals, indices = t_indep.max(dim=0)  
t_indep = t_indep / vals
```

```
[ ]: t_indep*coeffs
```

```
[ ]: preds = (t_indep*coeffs).sum(axis=1)
```

```
[ ]: preds[:10]
```

```
[ ]: loss = torch.abs(preds-t_dep).mean()  
loss
```

```
[ ]: def calc_preds(coeffs, indeps): return (indeps*coeffs).sum(axis=1)  
def calc_loss(coeffs, indeps, deps): return torch.abs(calc_preds(coeffs, indeps)-deps).mean()
```

Doing a gradient descent step

```
[ ]: coeffs.requires_grad_()
```

```
[ ]: loss = calc_loss(coeffs, t_indep, t_dep)
```



Measuring accuracy

```
[50]: preds = calc_preds(coeffs, val_indep)
[51]: results = val_dep.bool()==(preds>0.5)
      results[:16]
[51]: tensor([ True,  True,  True,  True,  True,  True,  True,  True,  True,  True,  True, False, False, False,  True,
             True, False])
[52]: results.float().mean()
[52]: tensor(0.7921)
[53]: def acc(coeffs): return (val_dep.bool()==(calc_preds(coeffs, val_indep)>0.5)).float().mean()
      acc(coeffs)
[53]: tensor(0.7921)
```

Using sigmoid

```
[ ]: preds[:28]
[ ]: import sympy
      sympy.plot("1/(1+exp(-x))", xlim=(-5,5));
```





<https://vizle.offnote.co>

Contact us: vizle@offnote.co

This document was generated automatically by **Vizle**

Your **Personal Video Reader Assistant**

Learn from Videos **Faster** and **Smarter**

VIZLE PRO / BIZ

PDF, PPT Watermarks

- Convert *entire* videos
- *Customize* to retain all essential content
- Include Spoken *Transcripts*
- Customer support

Visit <https://vizle.offnote.co/pricing> to learn more

VIZLE FREE PLAN

PDF only Watermarks

- Convert videos *partially*
- Slides may be *skipped**
- Usage restrictions
- No Customer support

Visit <https://vizle.offnote.co> to try free

Login to Vizle to unlock more slides*