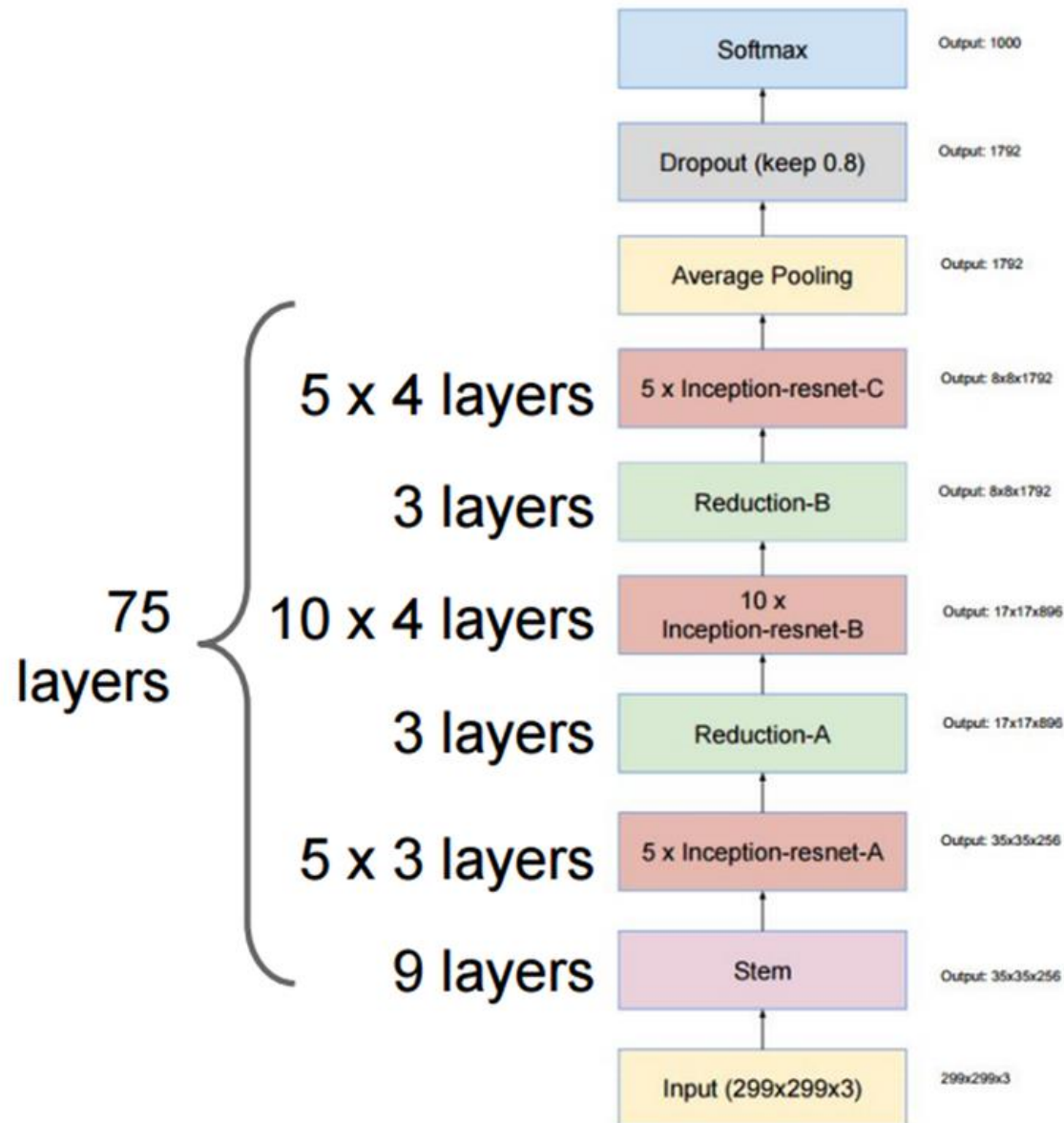# 영상처리특강

Inception-ResNet(Reference Paper)

- Publication Date : 02/2016
- Computer Vision and Pattern Recognition

**Inception-v4, Inception-ResNet and
the Impact of Residual Connections on Learning**

Christian Szegedy, Sergey Ioffe, Vincent Vanhoucke, Alexander A. Alemi
Google Inc.
1600 Amphitheatre Parkway
Mountain View, CA

Inception-ResNet

Inception-ResNet(CIFAR-10)
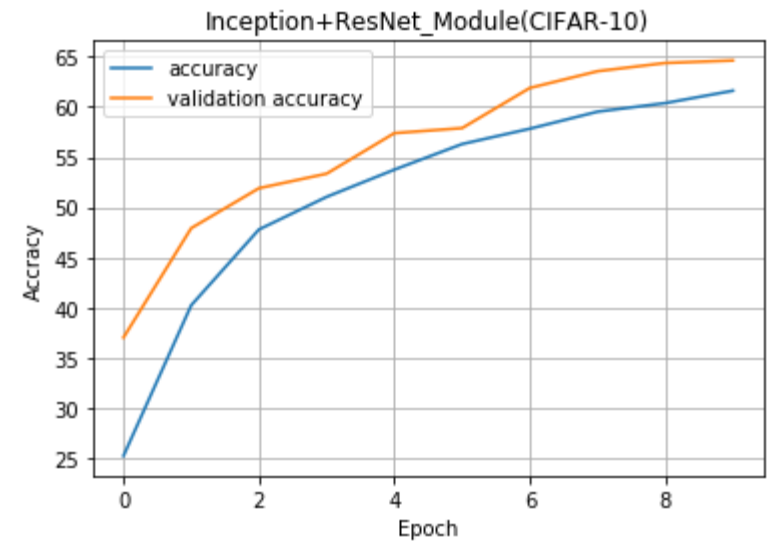

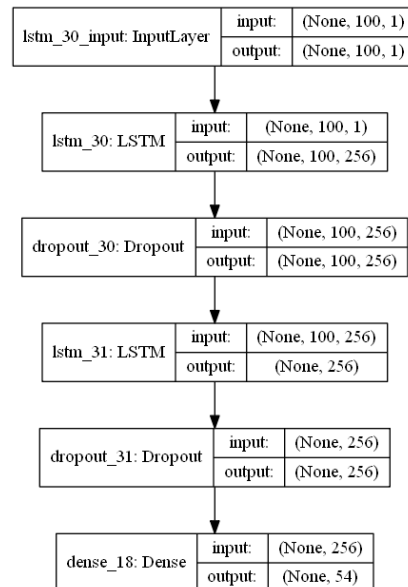airplane
automobile
bird
cat
deer
dog
frog
horse
ship
truck

Inception+ResNet_Module(CIFAR-10)

- accuracy
- validation accuracy

validation accuracy : 0.6462

Larger LSTM Recurrent Neural Network(Text Generation)

■ Peter Pan

lstm_30_input: InputLayer	input:	(None, 100, 1)
	output:	(None, 100, 1)

lstm_30: LSTM	input:	(None, 100, 1)
	output:	(None, 100, 256)

dropout_30: Dropout	input:	(None, 100, 256)
	output:	(None, 100, 256)

lstm_31: LSTM	input:	(None, 100, 256)
	output:	(None, 256)

dropout_31: Dropout	input:	(None, 256)
	output:	(None, 256)

dense_18: Dense	input:	(None, 256)
	output:	(None, 54)

－ Model －

```
Total Characters:   257812
Total Vocab:   54
Total Patterns:   257712
```

－ Text(epoch:20) －

```
Total Characters:  257812
Total Vocab:  54
Total Patterns:  257712
Seed:
" liss, and nana came rushing in. there could not have been a lovelier sight; but there was none to se "
e the ship to him to see the ship would have been told that they were all the sears of the srory that they were all t
he sears of the srory that they were all the sears of the srory that they were all the sears of the srory that they w
ere all the sears of the srory that they were all the sears of the srory that they were all the sears of the srory th
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the sears of the srory that they were all the sears of the srory that they were all the sears of the srory that they
were all the sears of the srory that they were all the sears of the srory that they were all the sears of the srory t
hat they were all the sears of the srory that they were all th
Done.
```
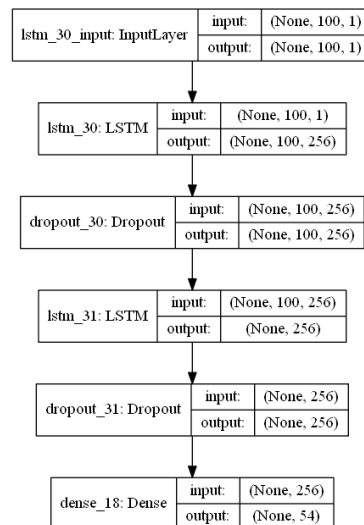
Larger LSTM Recurrent Neural Network(Text Generation)

■ Peter Pan

| lstm_30_input: InputLayer | input: | (None, 100, 1) |
| | output: | (None, 100, 1) |

| lstm_30: LSTM | input: | (None, 100, 1) |
| | output: | (None, 100, 256) |

| dropout_30: Dropout | input: | (None, 100, 256) |
| | output: | (None, 100, 256) |

| lstm_31: LSTM | input: | (None, 100, 256) |
| | output: | (None, 256) |

| dropout_31: Dropout | input: | (None, 256) |
| | output: | (None, 256) |

| dense_18: Dense | input: | (None, 256) |
| | output: | (None, 54) |

– Model –

```
Total Characters:  2856
Total Vocab:  41
Total Patterns:  2756
```

– Text(epoch:50) –

```
Total Characters:  2856
Total Vocab:  41
Total Patterns:  2756
Seed:
" iss on it that wendy could never get, though there it was, perfectly conspicuous in the right-hand c "
or

mr. darling was miiiing bast her wat thth a pan wat was tiih ths kiss  bnd he qft were coon

mr. darling was masiing  and she was wend aane fn whe wes aloe thth a gamling was mirsing  ant he qas wier whe mint h
oved hom tas woe der wae bous  her ioctheg miuh had on tes  and the was wendy came her wat woe dir way a gomssed and
she was wend aane of mrs. darling was miirhe hame hn whe kegs on the beginning of the end.

of course teeden on the ses  and the was wendy came her wae couke her, and th ter wend in a gard nn pere dade fn  4o
r. darling was miir whe boxe  and in wiee sen was aliat whe thn kiss hovedr moowh tf teer they woo ded one kiss on th
e beginning of the end.

of course teeden on the ses  and the was wendy came her wae couke her, and th ter wend in a gard nn pere dade fn  4o
r. darling was miir whe boxe  and in wiee sen was aliat whe thn kiss hovedr moowh tf teer they woo ded one kiss on th
e beginning of the end.

of course teeden on the ses  and the was wendy came he
Done.
```
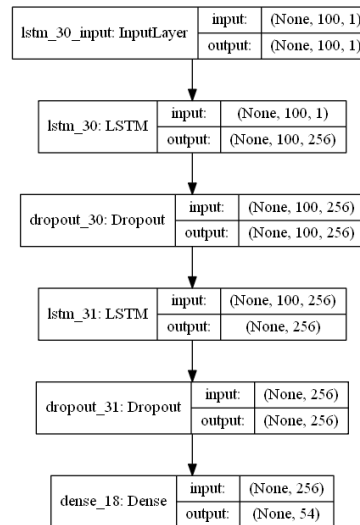
■ Peter Pan

Total Characters: 11289
Total Vocab: 44
Total Patterns: 11189

− Text(epoch:50) −

− Model −

```
Total Characters:  11289
Total Vocab:  44
Total Patterns:  11189
Seed:
" emember mumps," he warned her almost threateningly, and off he went again. "mumps one pound, that is "
 what i have put down, but i daresay it will be more like thirty shillings?don't speak?measles one five, german measl
es hale a guanea, what soo mooh see hort pe too addidr wo rraces and crle brakascn arinpg,oo their mines and put ii
on balire wou mane and sixe  and oroaar diycer the neverland is the snuggest and coot cemut ghin. the rame nf that mo
oe for  but ie they did come she first whipped off michael's gad onckids here and colt she puzzling hast, however man
y you discover there is always one more; and heres she couod pot if thet were well bedodet, marailel and colelred wie
er loke toirts fot shxoan, when a mouge wi mind peventsl so teeis looes intt and cra tith ii tou monw have aoe there
in john and michael's minds, while wendy's boe nood sh thes wouhd to her coaen at if it were a game, not so much as a
brussels sprout wes missing, but betch then stian mocean way hilherent,

occasionally in her travels through her children's minds. she was at they would heve ant then incw was thi
Done.
```

Data Science(Titanic)

- Kaggle prediction competitions

Data Science(Titanic)

■ Category(Data num：891)

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th…	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

Data Science(Titanic)

■ Converting categorical feature to numeric

	Pclass	Survived
0	1	0.629630
1	2	0.472826
2	3	0.242363

– Ticket Class –

	Sex	Survived
0	female	0.742038
1	male	0.188908

– Sex –

	Title	Survived
0	Master	0.575000
1	Miss	0.702703
2	Mr	0.156673
3	Mrs	0.793651
4	Rare	0.347826

– Title –
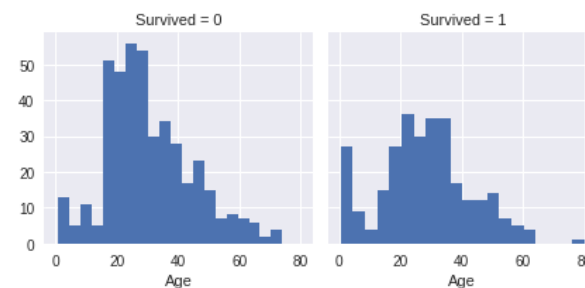
– Age –

	FamilySize	Survived
3	4	0.724138
2	3	0.578431
1	2	0.552795
6	7	0.333333
0	1	0.303538
4	5	0.200000
5	6	0.136364
7	8	0.000000
8	11	0.000000

– Family –

	IsAlone	Survived
0	0	0.505650
1	1	0.303538

– Alone –

	Survived	Pclass	Sex	Age	Fare	Embarked	Title	IsAlone	Age*Class
0	0	3	0	1	7.2500	0	1	0	3
1	1	1	1	2	71.2833	1	3	0	2
2	1	3	1	1	7.9250	0	2	1	3
3	1	1	1	2	53.1000	0	3	0	2
4	0	3	0	2	8.0500	0	1	1	6

– Training & Test Dataset –

Evaluation & DNN(Titanic)

■ Model evaluation

	Model	Score
3	Random Forest	86.76
8	Decision Tree	86.76
1	KNN	84.74
0	Support Vector Machines	83.84
2	Logistic Regression	80.36
7	Linear SVC	79.12
5	Perceptron	78.00
4	Naive Bayes	72.28
6	Stochastic Gradient Decent	62.74

– Data Science Model –
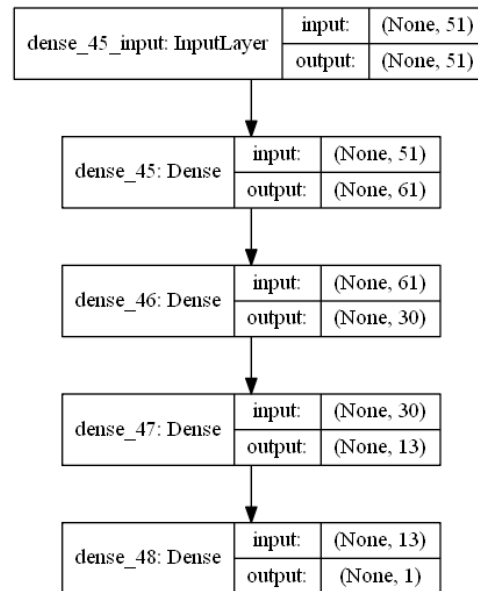
```
                     FamilySize  Master  Miss  ...  Ticket_SOTONO2  Ticket_SOTONOQ
0                             2       0     0  ...               0               0
1                             2       0     0  ...               0               0
2                             1       0     1  ...               0               0

       Has_Age         Age  Has_Fare  Pclass_1  Pclass_2  Pclass_3  Sex  \
0         True   22.000000      True         0         0         1    1
1         True   38.000000      True         1         0         0    0
2         True   26.000000      True         0         0         1    0

   Ticket_SP  Ticket_STONO  Ticket_STONO2  Ticket_STONOQ  Ticket_SWPP
0          0             0              0              0            0
1          0             0              0              0            0
2          0             0              1              0            0
```
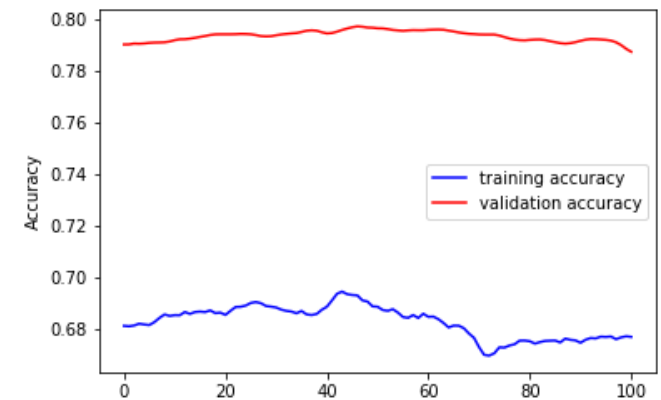
– Dataset –

```
dense_45_input: InputLayer    input:  (None, 51)
                              output: (None, 51)

dense_45: Dense    input:  (None, 51)
                   output: (None, 61)

dense_46: Dense    input:  (None, 61)
                   output: (None, 30)

dense_47: Dense    input:  (None, 30)
                   output: (None, 13)

dense_48: Dense    input:  (None, 13)
                   output: (None, 1)
```

– Model Visualization –

best seed
0.788293380804

– Accuracy –

Reference :
https://www.kaggle.com/startupsci/titanic-data-science-solutions
https://www.kaggle.com/sdufour/trying-neural-network