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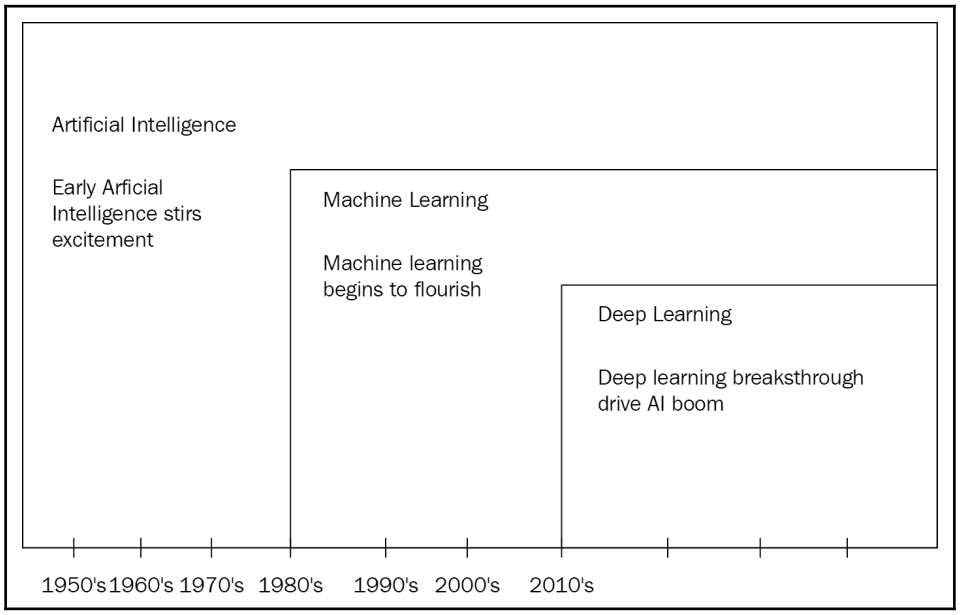
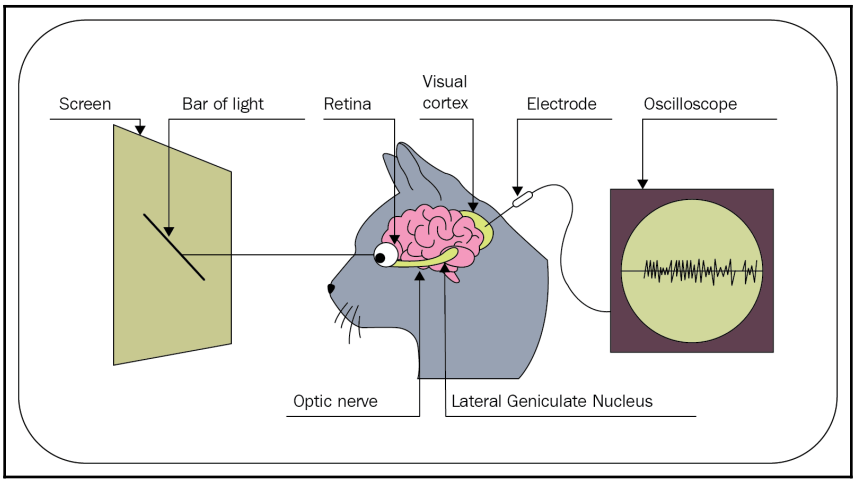
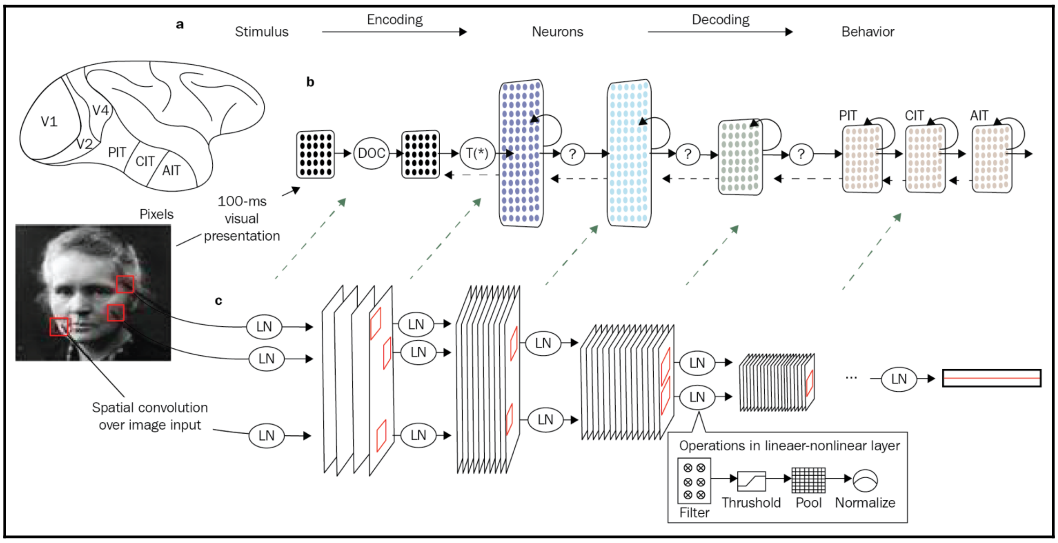
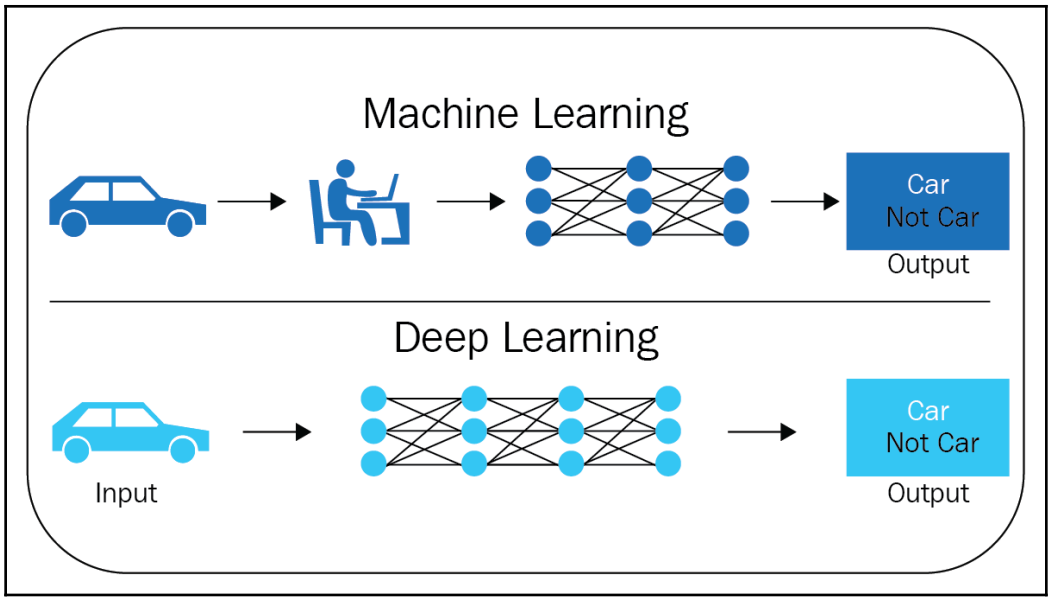
1
Graphics

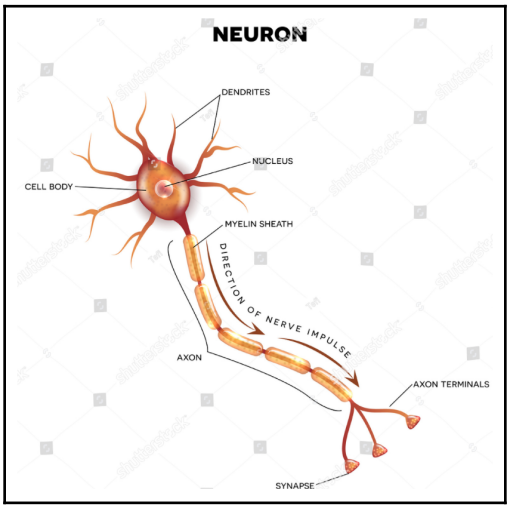
Chapter 01: Artificial Intelligence Concepts and Fundamentals

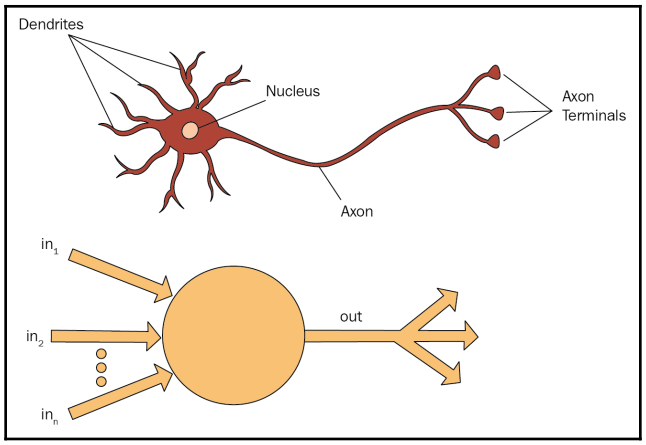


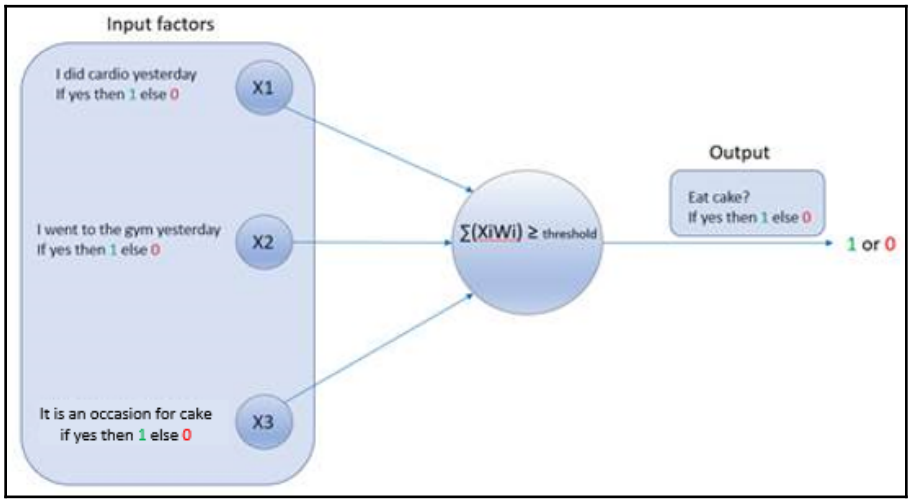

Screen
Bar of light
Retina
Visual cortex
Electrode
Oscilloscope
Optic nerve
Lateral Geniculate Nucleus

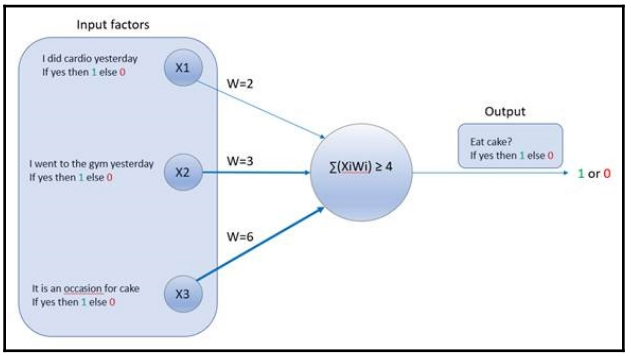

a
Stimulus
Encoding
Neurons
Decoding
Behavior
b
V1
V4
V2
PIT
CIT
AIT
DOG
T(*)
?
100-ms visual presentation
Pixels
c
LN
Spatial convolution over image input
Operations in lineaer-nonlinear layer
Filter
Thrushold
Pool
Normalize


Machine Learning
Car
Not Car
Output
Deep Learning
Input
Car
Not Car
Output

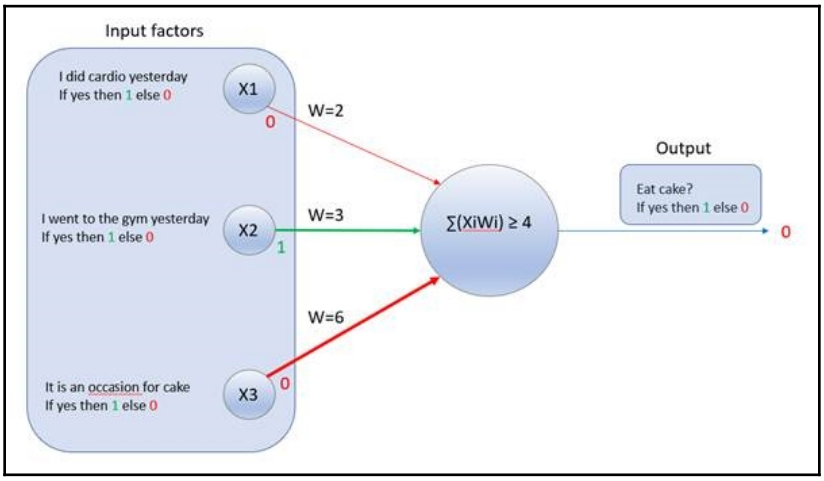

NEURON
DENDRITES
NUCLEUS
CELL BODY
MYELIN SHEATH
DIRECTION OF NERVE IMPULSE
AXON
AXON TERMINALS
SYNAPSE


Dendrites
Nucleus
Axon Terminals
Axon
in1
in2
inn
out


Input factors
I did cardio yesterday
If yes then 1 else 0
X1
I went to the gym yesterday
If yes then 1 else 0
X2
It is an occasion for cake
if yes then 1 else 0
X3
∑(XiWi) ≥ threshold
Output
Eat cake?
If yes then 1 else 0
1 or 0


Input factors
I did cardio yesterday
If yes then 1 else 0
X1
W=2
I went to the gym yesterday
If yes then 1 else 0
X2
W=3
W=6
It is an occasion for cake
If yes then 1 else 0
X3
∑(XiWi) ≥ 4
Output
Eat cake?
If yes then 1 else 0
1 or 0

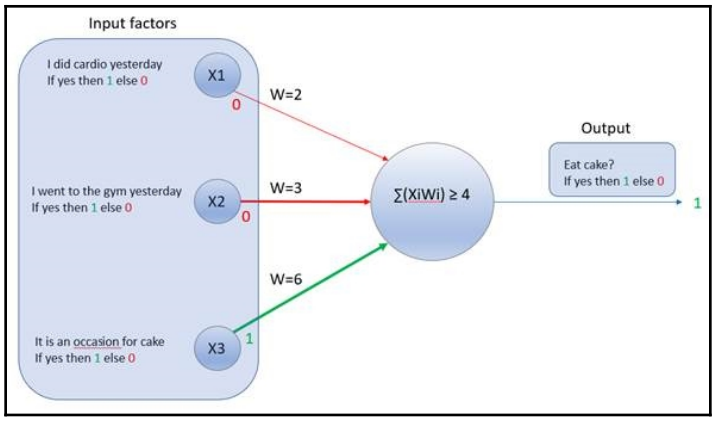
$$output \begin{cases} 1 & IF \sum(WiXi + WiiXii + WiiiXiii) \geq threshold \\ 0 & IF \sum(WiXi + WiiXii + WiiiXiii) < threshold \end{cases}$$



$$\sum(WiXi + WiiXii + WiiiXiii) \geq threshold$$

$$\sum(2 * 0 + 3 * 1 + 6 * 0) \geq 4$$

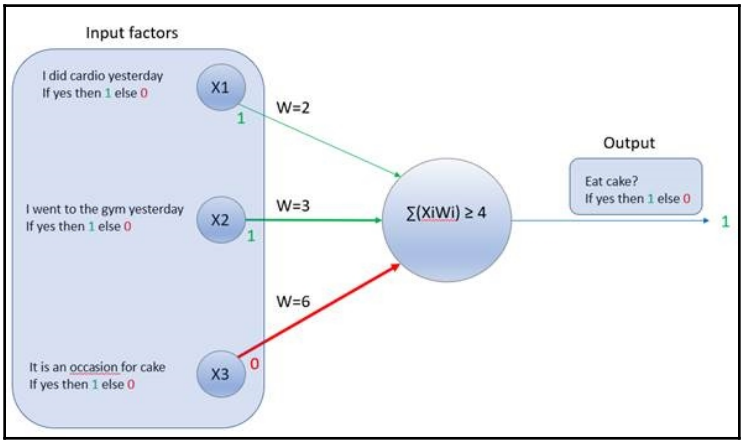
$$\sum(0 + 3 + 0) \geq 4$$



$$\sum (WiXi + WiiXii + WiiiXiii) \geq threshold$$

$$\sum (2 * 0 + 3 * 0 + 6 * 1) \geq 4$$

$$\sum (0 + 0 + 6) \geq 4$$



$$\sum(WiXi + WiiXii + WiiiXiii) \geq threshold$$

$$\sum(2 * 1 + 3 * 1 + 6 * 0) \geq 4$$

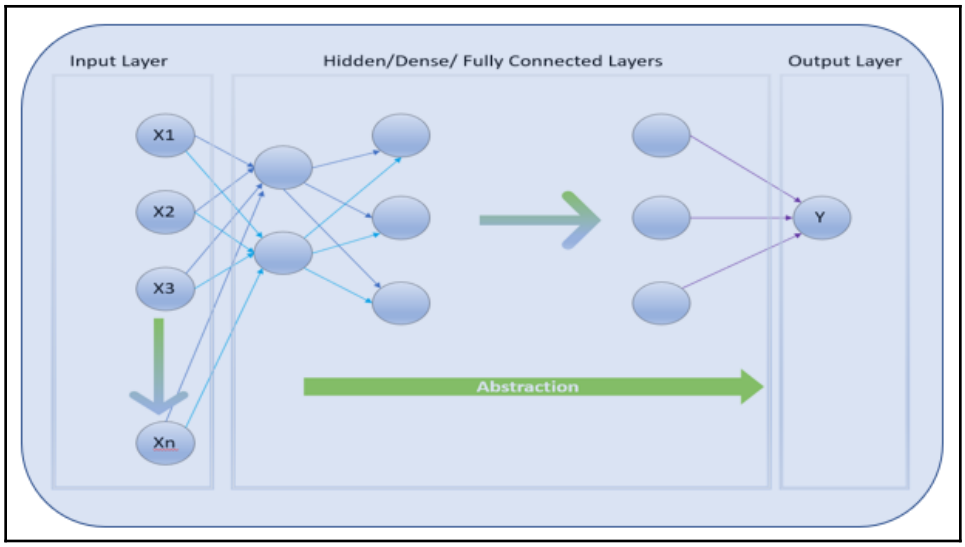
$$\sum(2 + 3 + 0) \geq 4$$

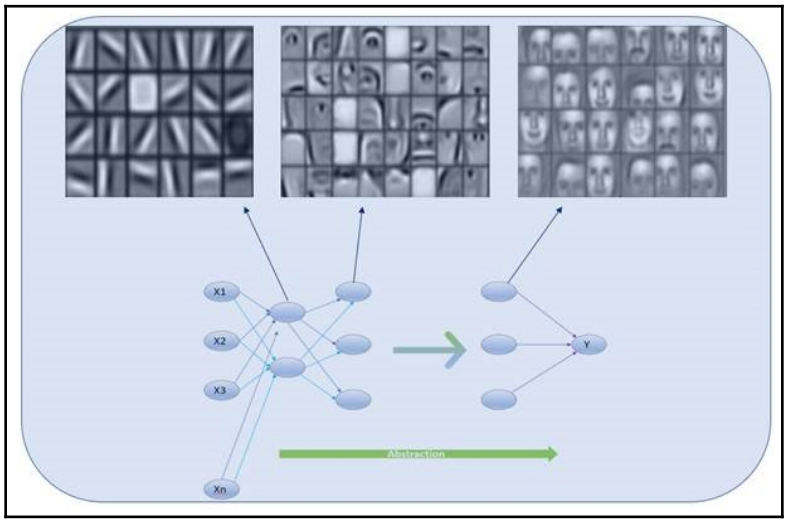
$$\sum(WiXi + WiiXii + WiiiXiii) = w.x$$

$$output \begin{cases} 1 & IF \sum(WiXi + WiiXii + WiiiXiii) \geq threshold \\ 0 & IF \sum(WiXi + WiiXii + WiiiXiii) < threshold \end{cases}$$

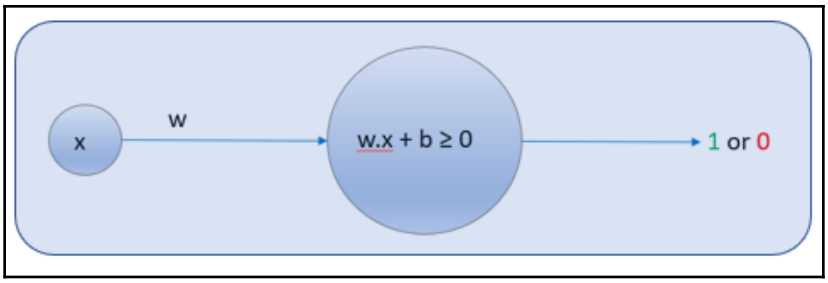
$$output \begin{cases} 1 & IF(w.x \geq b) \\ 0 & IF(w.x < b) \end{cases}$$

$$IF\, w.x + b \geq 0$$

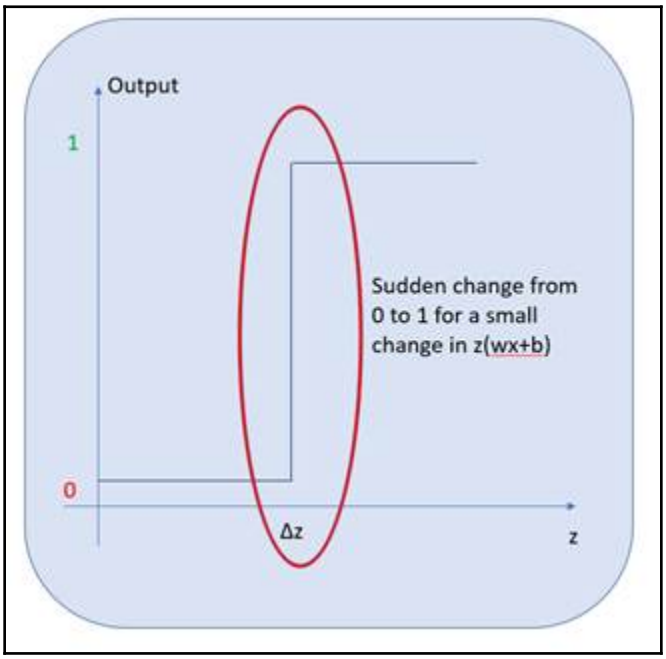

Input Layer
Hidden/Dense/ Fully Connected Layers
Output Layer
X1
X2
X3
Xn
Y
Abstraction

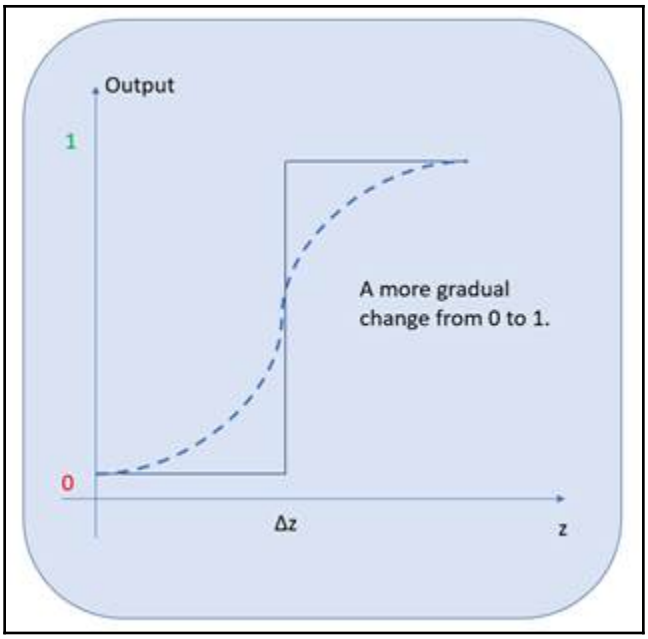

X1
X2
X3
Xn
Y
Abstraction

$$w.x + b \geq 0$$


x
w
w.x + b ≥ 0
1 or 0

$$w.x + b = z$$

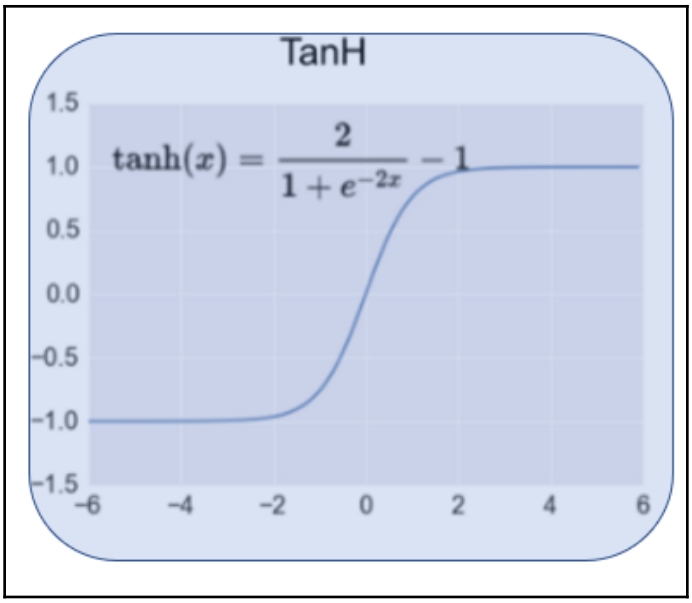

Output
1
0
Sudden change from
0 to 1 for a small
change in z(wx+b)
Δz
z

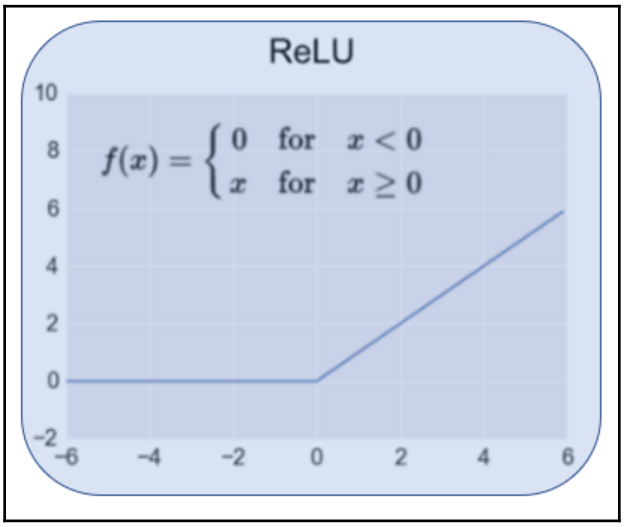


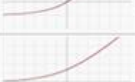
$$\theta(z) = 1/(1 + e^{-z})$$

$$z = wx + b$$

$$0 > \theta(z) \leq 1$$


TanH
$\tanh(x) = \frac{2}{1+e^{-2x}} - 1$
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−6
−4
−2
0
2
4
6


ReLU
$f(x) = \begin{cases} 0 & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$
10
8
6
4
2
0
−2
−6
−4
−2
0
2
4
6

Name	Plot	Equation
Identity		$f(x) = x$
Binary step		$f(x) = \begin{cases} 0 & \text{for } x < 0 \\ 1 & \text{for } x \geq 0 \end{cases}$
Logistic (a.k.a Soft step)		$f(x) = \frac{1}{1+e^{-x}}$
TanH		$f(x) = \tanh(x) = \frac{2}{1+e^{-2x}} - 1$
ArcTan		$f(x) = \tan^{-1}(x)$
Rectified Linear Unit (ReLU)		$f(x) = \begin{cases} 0 & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$
Parameteric Rectified Linear Unit (PReLU) [2]		$f(x) = \begin{cases} \alpha x & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$
Exponential Linear Unit (ELU) [3]		$f(x) = \begin{cases} \alpha(e^x - 1) & \text{for } x < 0 \\ x & \text{for } x \geq 0 \end{cases}$
SoftPlus		$f(x) = \log_e(1 + e^x)$

$$MSE = \sum (y - a)^2 / n$$

$$MSE = \sum (2 - 3)^2 / 1$$

$$MSE = (-1)^2$$

$$MSE = 1$$

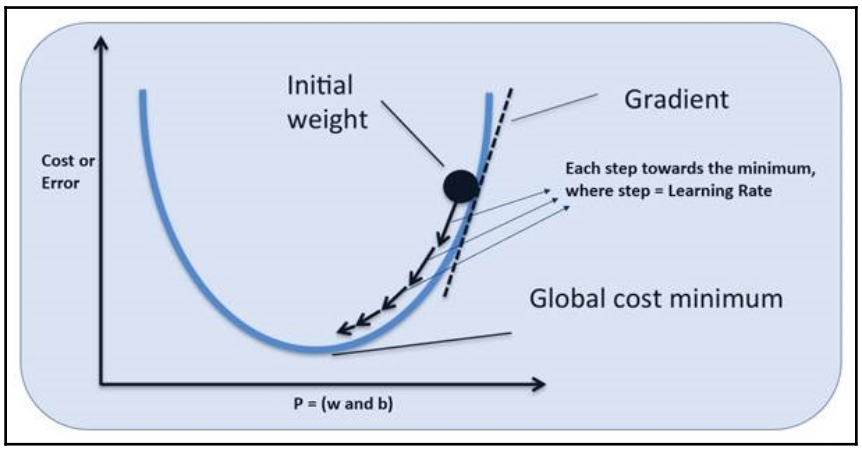
$$MSE = \sum (3 - 2)^2 / 1$$

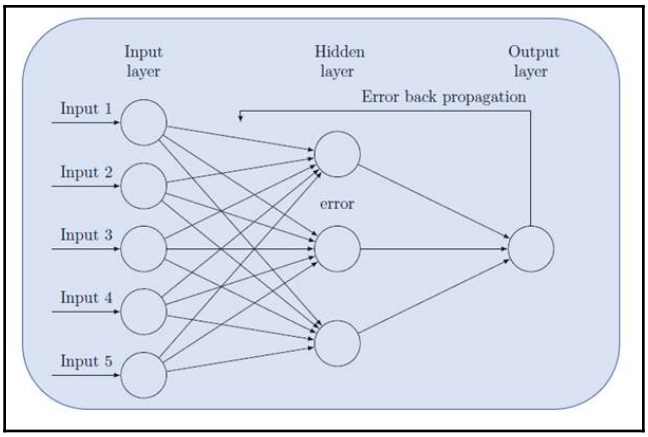
$$MSE = (1)^2$$

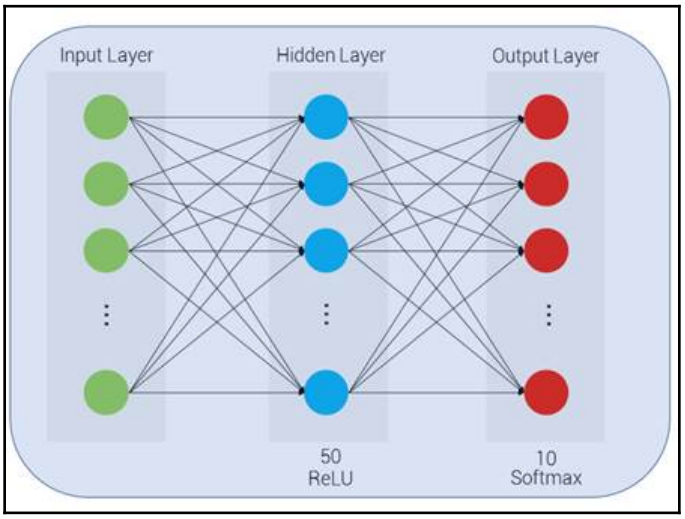
$$MSE = 1$$

$$CrossEntropy = 1/n * (y * Ln\,(a) + (1 - y) * Ln\,(1 - a))$$

$$w.x + b = z$$







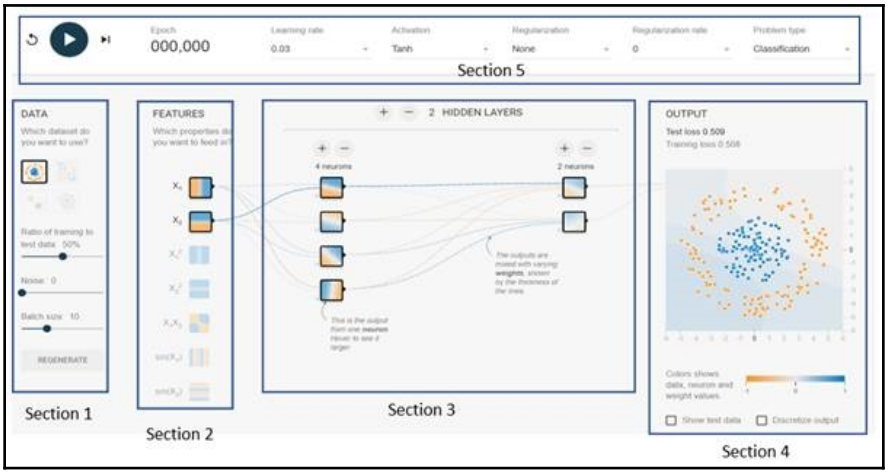
$$Softmax = e^M i / \sum (e^M j)$$

$$Softmax(numerator) = e^M i$$

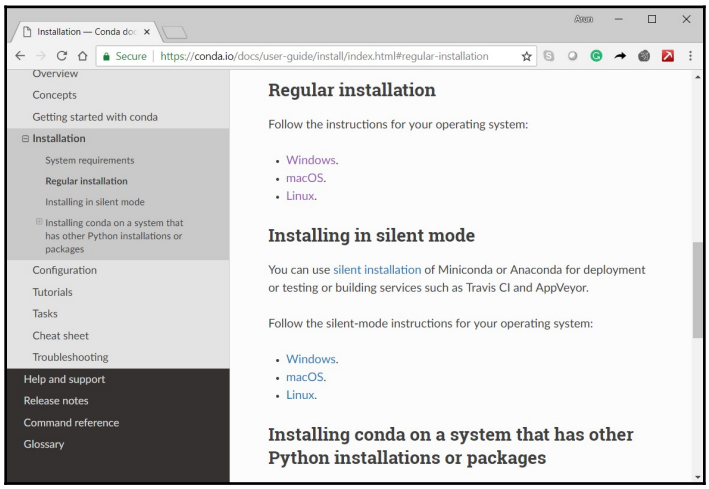
$$Softmax(numerator) = e^M i$$

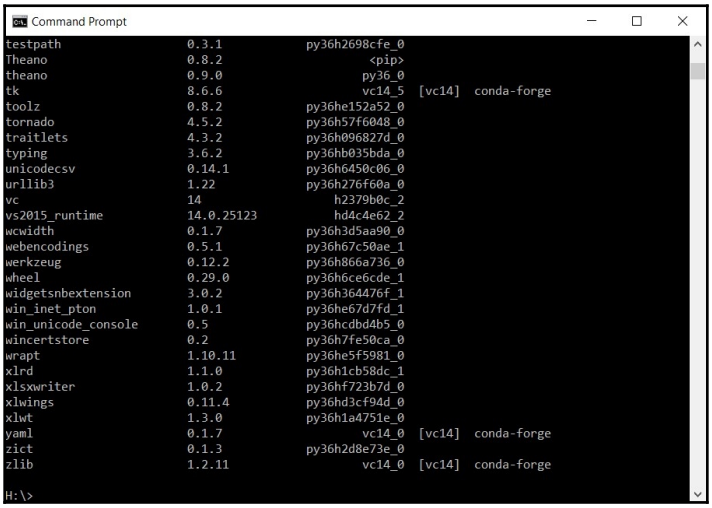
$$Softmax(numerator) = e^{M} i$$

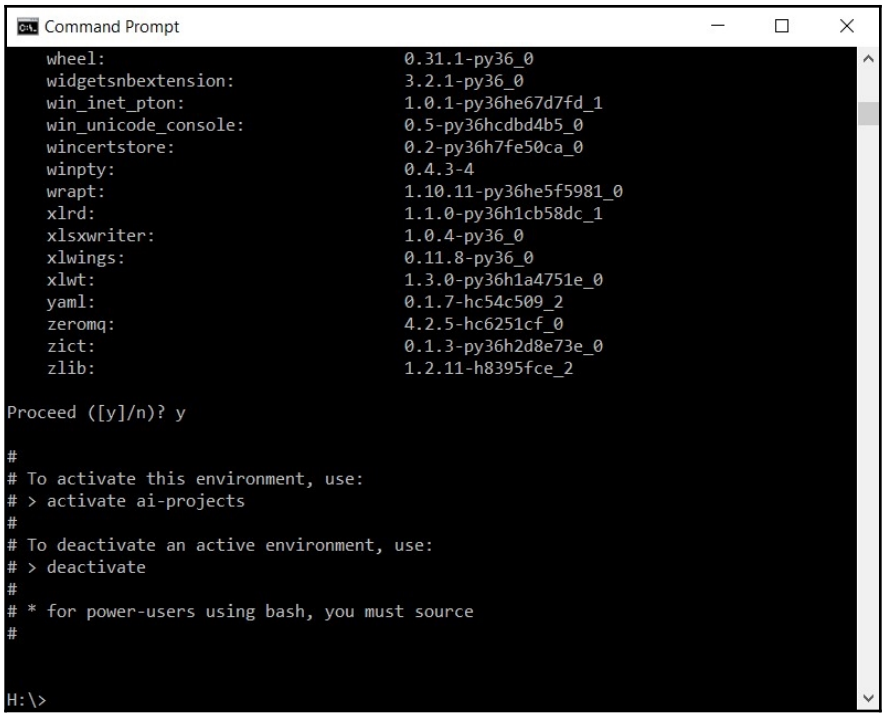
$$Softmax(denominator) = \sum (e^{M} j)$$

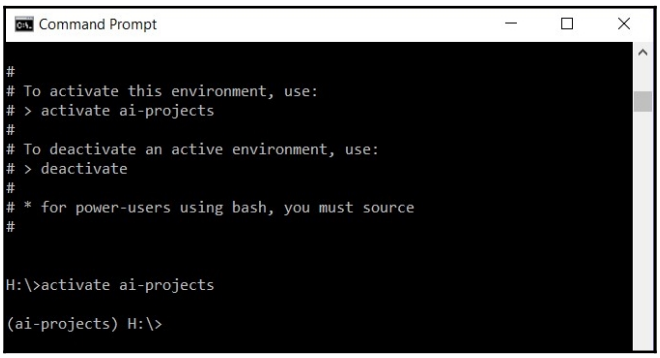


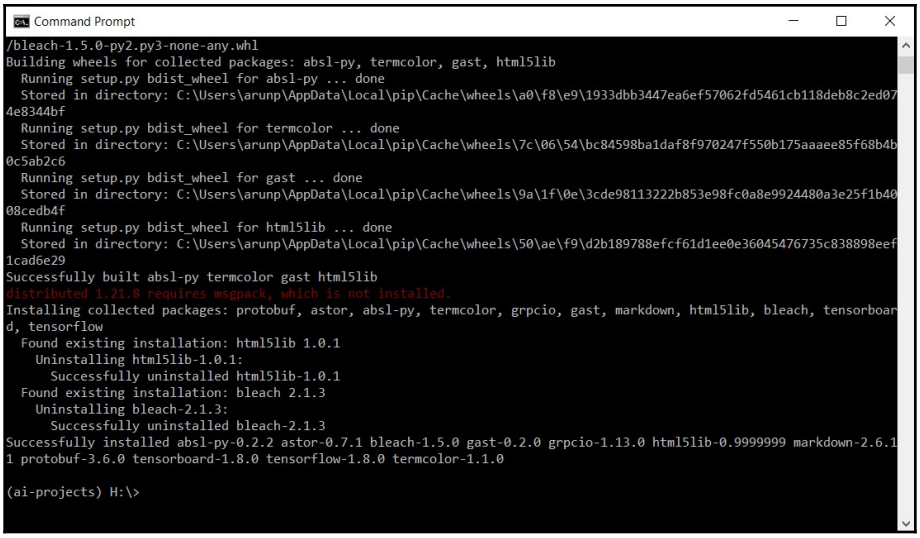
Chapter 02: Creating a Real-Estate Price Prediction Mobile App

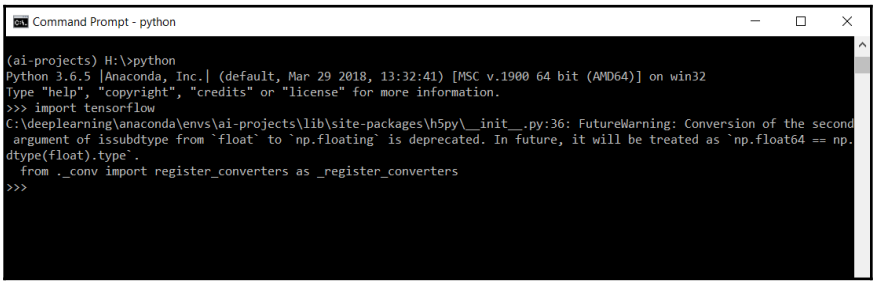


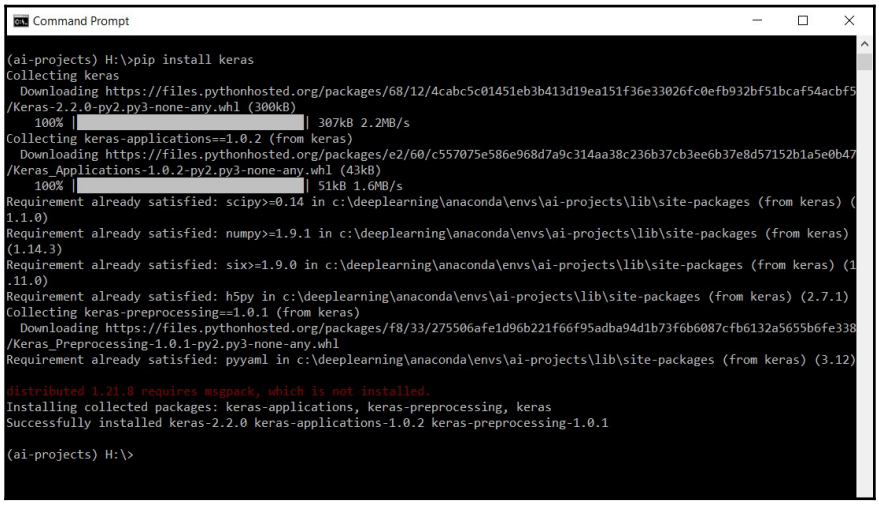


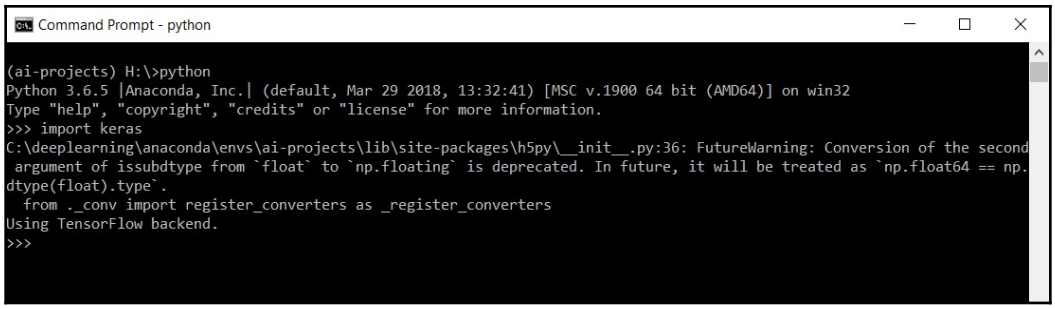

Command Prompt
wheel: 0.31.1-py36_0
widgetsnbextension: 3.2.1-py36_0
win_inet_pton: 1.0.1-py36he67d7fd_1
win_unicode_console: 0.5-py36hcdbd4b5_0
wincertstore: 0.2-py36h7fe50ca_0
winpty: 0.4.3-4
wrapt: 1.10.11-py36he5f5981_0
xlrd: 1.1.0-py36h1cb58dc_1
xlsxwriter: 1.0.4-py36_0
xlwings: 0.11.8-py36_0
xlwt: 1.3.0-py36h1a4751e_0
yaml: 0.1.7-hc54c509_2
zeromq: 4.2.5-hc6251cf_0
zict: 0.1.3-py36h2d8e73e_0
zlib: 1.2.11-h8395fce_2
Proceed ([y]/n)? y
#
To activate this environment, use:
> activate ai-projects
#
To deactivate an active environment, use:
> deactivate
#
* for power-users using bash, you must source
#
H:\>

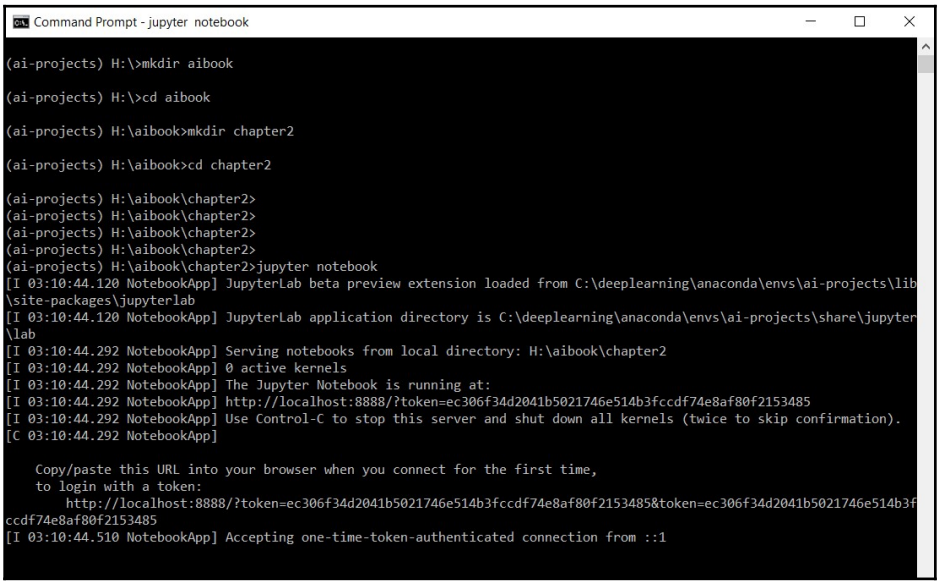

Command Prompt
#
To activate this environment, use:
> activate ai-projects
#
To deactivate an active environment, use:
> deactivate
#
* for power-users using bash, you must source
#
H:\>activate ai-projects
(ai-projects) H:\>

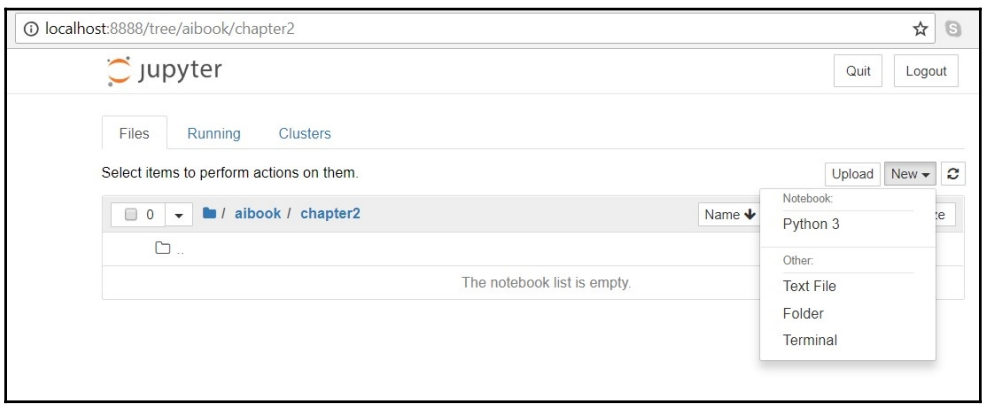

Command Prompt
/bleach-1.5.0-py2.py3-none-any.whl
Building wheels for collected packages: absl-py, termcolor, gast, html5lib
Running setup.py bdist_wheel for absl-py ... done
Stored in directory: C:\Users\arunp\AppData\Local\pip\Cache\wheels\a0\f8\e9\1933dbb3447ea6ef57062fd5461cb118deb8c2ed074e8344bf
Running setup.py bdist_wheel for termcolor ... done
Stored in directory: C:\Users\arunp\AppData\Local\pip\Cache\wheels\7c\06\54\bc84598ba1daf8f970247f550b175aaaee85f68b4b0c5ab2c6
Running setup.py bdist_wheel for gast ... done
Stored in directory: C:\Users\arunp\AppData\Local\pip\Cache\wheels\9a\1f\0e\3cde98113222b853e98fc0a8e9924480a3e25f1b4008cedb4f
Running setup.py bdist_wheel for html5lib ... done
Stored in directory: C:\Users\arunp\AppData\Local\pip\Cache\wheels\50\ae\f9\d2b189788efcf61d1ee0e36045476735c838898eef1cad6e29
Successfully built absl-py termcolor gast html5lib
distributed 1.21.8 requires msgpack, which is not installed.
Installing collected packages: protobuf, astor, absl-py, termcolor, grpcio, gast, markdown, html5lib, bleach, tensorboard, tensorflow
Found existing installation: html5lib 1.0.1
Uninstalling html5lib-1.0.1:
Successfully uninstalled html5lib-1.0.1
Found existing installation: bleach 2.1.3
Uninstalling bleach-2.1.3:
Successfully uninstalled bleach-2.1.3
Successfully installed absl-py-0.2.2 astor-0.7.1 bleach-1.5.0 gast-0.2.0 grpcio-1.13.0 html5lib-0.9999999 markdown-2.6.11 protobuf-3.6.0 tensorboard-1.8.0 tensorflow-1.8.0 termcolor-1.1.0
(ai-projects) H:\>


Command Prompt - python
(ai-projects) H:\>python
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import tensorflow
C:\deeplearning\anaconda\envs\ai-projects\lib\site-packages\h5py__init__.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
from ._conv import register_converters as _register_converters
>>>

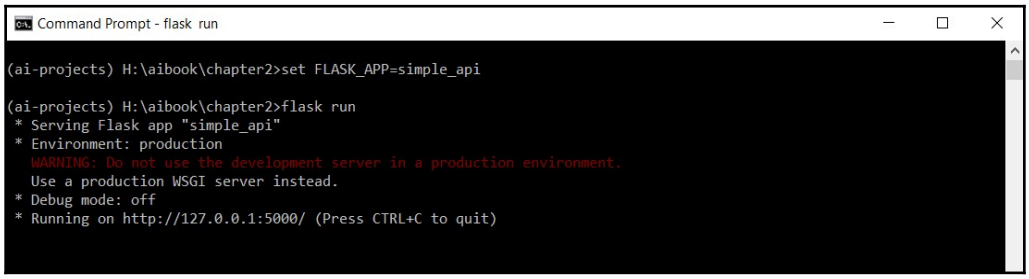

Command Prompt
(ai-projects) H:\>pip install keras
Collecting keras
Downloading https://files.pythonhosted.org/packages/68/12/4cabc5c01451eb3b413d19ea151f36e33026fc0efb932bf51bcaf54acbf5/Keras-2.2.0-py2.py3-none-any.whl (300kB)
100% | 307kB 2.2MB/s
Collecting keras-applications==1.0.2 (from keras)
Downloading https://files.pythonhosted.org/packages/e2/60/c557075e586e968d7a9c314aa38c236b37cb3ee6b37e8d57152b1a5e0b47/Keras_Applications-1.0.2-py2.py3-none-any.whl (43kB)
100% | 51kB 1.6MB/s
Requirement already satisfied: scipy>=0.14 in c:\deeplearning\anaconda\envs\ai-projects\lib\site-packages (from keras) (1.1.0)
Requirement already satisfied: numpy>=1.9.1 in c:\deeplearning\anaconda\envs\ai-projects\lib\site-packages (from keras) (1.14.3)
Requirement already satisfied: six>=1.9.0 in c:\deeplearning\anaconda\envs\ai-projects\lib\site-packages (from keras) (1.11.0)
Requirement already satisfied: h5py in c:\deeplearning\anaconda\envs\ai-projects\lib\site-packages (from keras) (2.7.1)
Collecting keras-preprocessing==1.0.1 (from keras)
Downloading https://files.pythonhosted.org/packages/f8/33/275506afe1d96b221f66f95adba94d1b73f6b6087cfb6132a5655b6fe338/Keras_Preprocessing-1.0.1-py2.py3-none-any.whl
Requirement already satisfied: pyyaml in c:\deeplearning\anaconda\envs\ai-projects\lib\site-packages (from keras) (3.12)
distributed 1.21.8 requires msgpack, which is not installed.
Installing collected packages: keras-applications, keras-preprocessing, keras
Successfully installed keras-2.2.0 keras-applications-1.0.2 keras-preprocessing-1.0.1
(ai-projects) H:\>

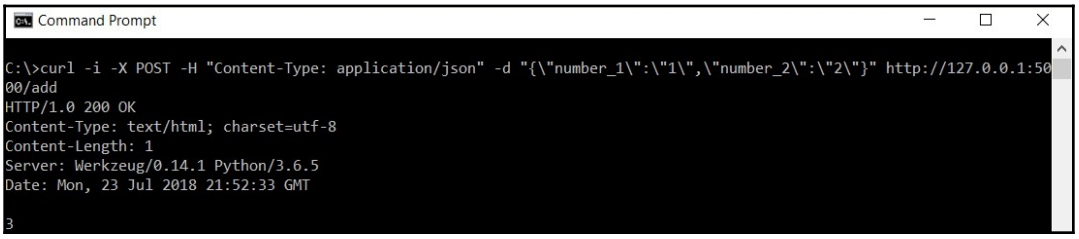

Command Prompt - python
(ai-projects) H:\>python
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import keras
C:\deeplearning\anaconda\envs\ai-projects\lib\site-packages\h5py__init__.py:36: FutureWarning: Conversion of the second
argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.
dtype(float).type`.
from ._conv import register_converters as _register_converters
Using TensorFlow backend.
>>>

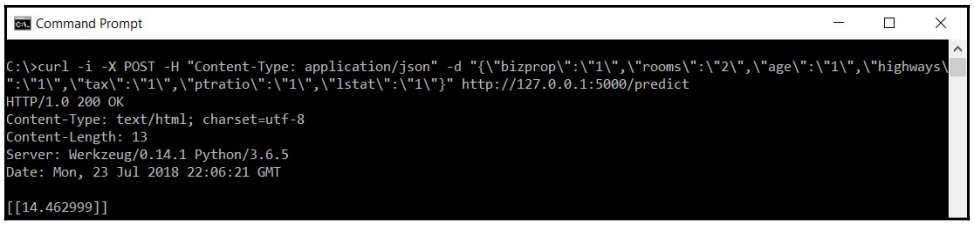

Command Prompt - jupyter notebook
(ai-projects) H:\>mkdir aibook
(ai-projects) H:\>cd aibook
(ai-projects) H:\aibook>mkdir chapter2
(ai-projects) H:\aibook>cd chapter2
(ai-projects) H:\aibook\chapter2>
(ai-projects) H:\aibook\chapter2>
(ai-projects) H:\aibook\chapter2>
(ai-projects) H:\aibook\chapter2>
(ai-projects) H:\aibook\chapter2>jupyter notebook
[I 03:10:44.120 NotebookApp] JupyterLab beta preview extension loaded from C:\deeplearning\anaconda\envs\ai-projects\lib
\site-packages\jupyterlab
[I 03:10:44.120 NotebookApp] JupyterLab application directory is C:\deeplearning\anaconda\envs\ai-projects\share\jupyter
\lab
[I 03:10:44.292 NotebookApp] Serving notebooks from local directory: H:\aibook\chapter2
[I 03:10:44.292 NotebookApp] 0 active kernels
[I 03:10:44.292 NotebookApp] The Jupyter Notebook is running at:
[I 03:10:44.292 NotebookApp] http://localhost:8888/?token=ec306f34d2041b5021746e514b3fccdf74e8af80f2153485
[I 03:10:44.292 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 03:10:44.292 NotebookApp]
Copy/paste this URL into your browser when you connect for the first time,
to login with a token:
http://localhost:8888/?token=ec306f34d2041b5021746e514b3fccdf74e8af80f2153485&token=ec306f34d2041b5021746e514b3f
ccdf74e8af80f2153485
[I 03:10:44.510 NotebookApp] Accepting one-time-token-authenticated connection from ::1

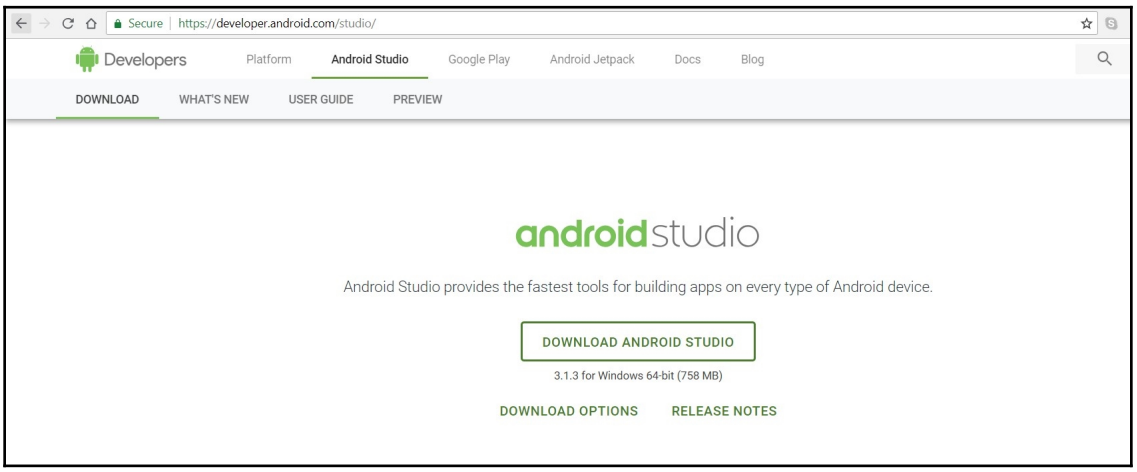

localhost:8888/tree/aibook/chapter2
jupyter
Quit
Logout
Files
Running
Clusters
Select items to perform actions on them.
Upload
New
0
/ aibook / chapter2
Name
..
The notebook list is empty.
Notebook:
Python 3
Other:
Text File
Folder
Terminal

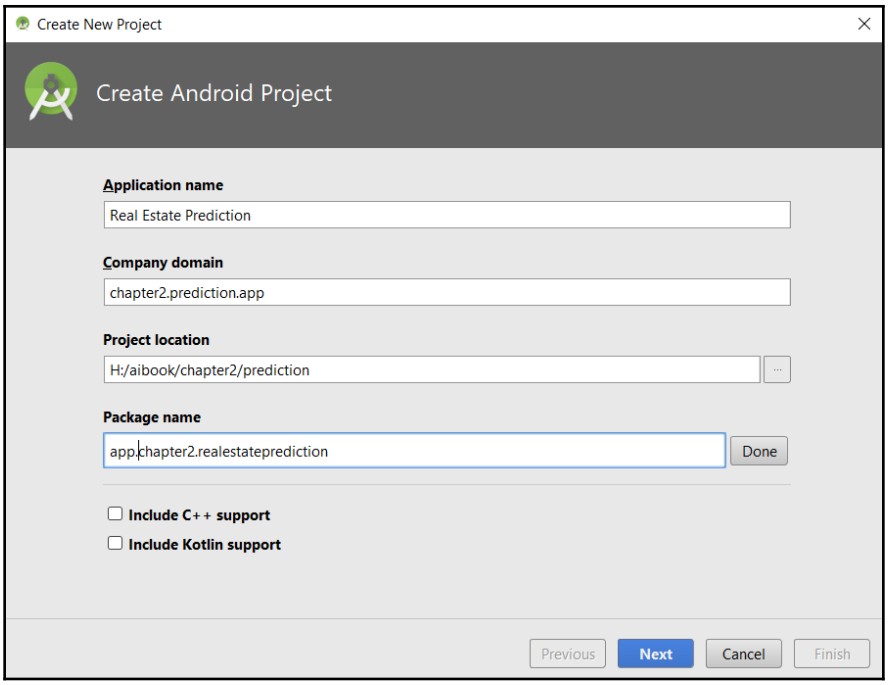
	BIZPROP	ROOMS	AGE	HIGHWAYS	TAX	PTRATIO	LSTAT	VALUE
0	19.58	7.489	90.8	5	403	14.7	1.73	50.0
1	19.58	7.802	98.2	5	403	14.7	1.92	50.0
2	19.58	8.375	93.9	5	403	14.7	3.32	50.0
3	19.58	7.929	96.2	5	403	14.7	3.70	50.0
4	2.46	7.831	53.6	3	193	17.8	4.45	50.0

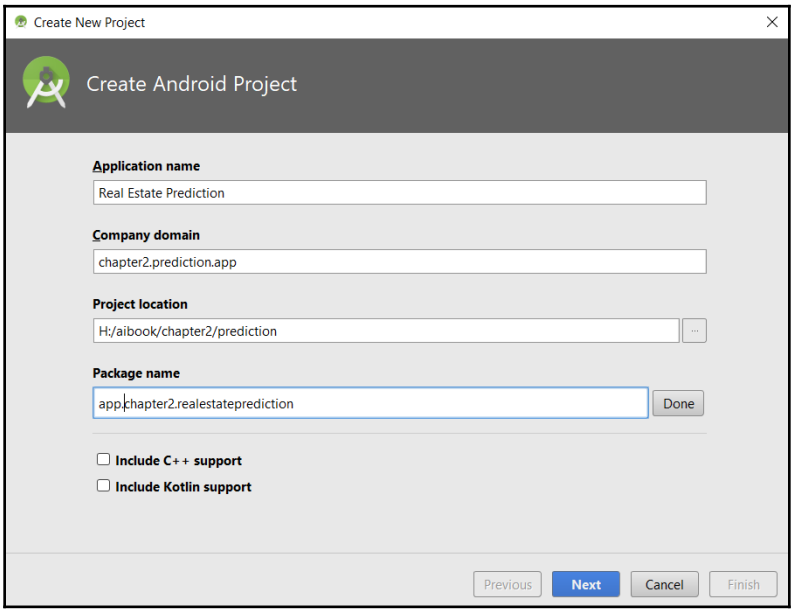


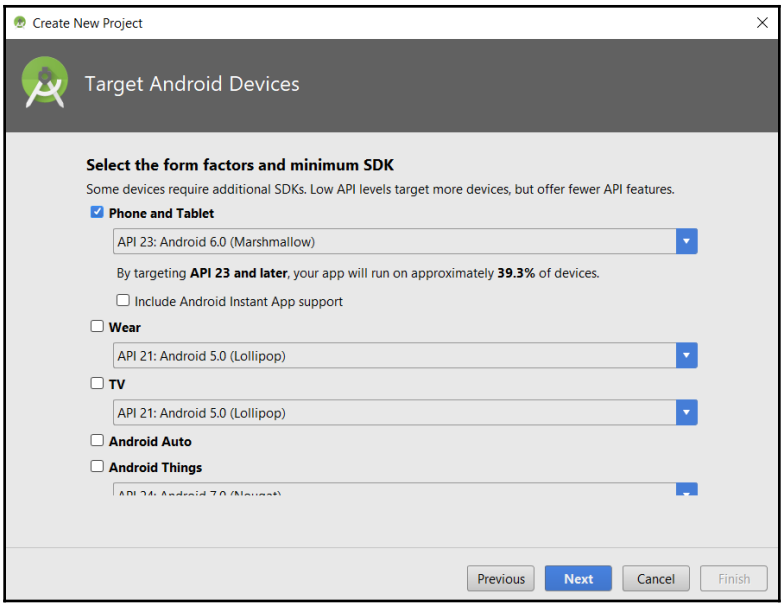


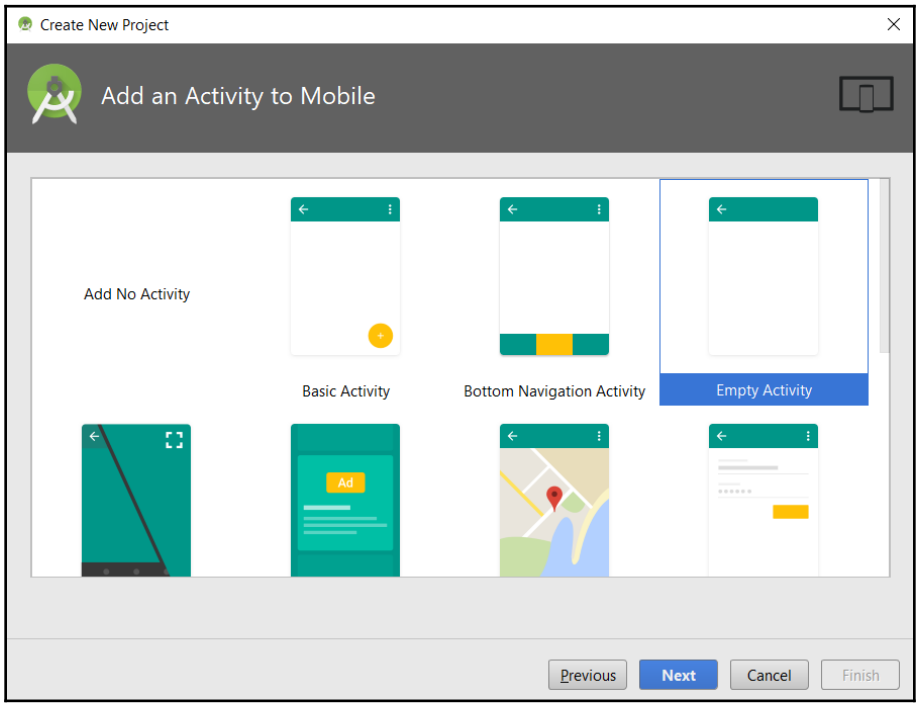

Command Prompt
C:\>curl -i -X POST -H "Content-Type: application/json" -d "{\"bizprop\":\"1\",\"rooms\":\"2\",\"age\":\"1\",\"highways\
":\"1\",\"tax\":\"1\",\"ptratio\":\"1\",\"lstat\":\"1\"}" http://127.0.0.1:5000/predict
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 13
Server: Werkzeug/0.14.1 Python/3.6.5
Date: Mon, 23 Jul 2018 22:06:21 GMT
[[14.462999]]

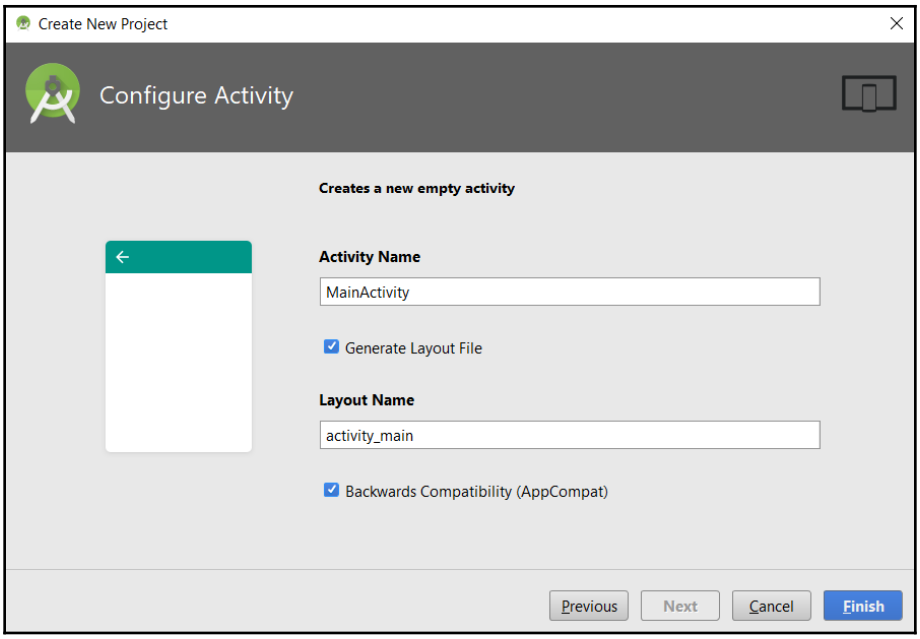

Secure
https://developer.android.com/studio/
Developers
Platform
Android Studio
Google Play
Android Jetpack
Docs
Blog
DOWNLOAD
WHAT'S NEW
USER GUIDE
PREVIEW
android studio
Android Studio provides the fastest tools for building apps on every type of Android device.
DOWNLOAD ANDROID STUDIO
3.1.3 for Windows 64-bit (758 MB)
DOWNLOAD OPTIONS
RELEASE NOTES

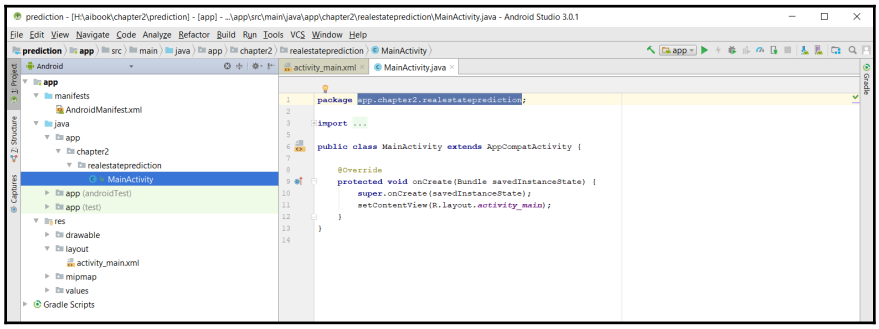

Create New Project
Create Android Project
Application name
Real Estate Prediction
Company domain
chapter2.prediction.app
Project location
H:/aibook/chapter2/prediction
Package name
app.chapter2.realestateprediction
Done
Include C++ support
Include Kotlin support
Previous
Next
Cancel
Finish

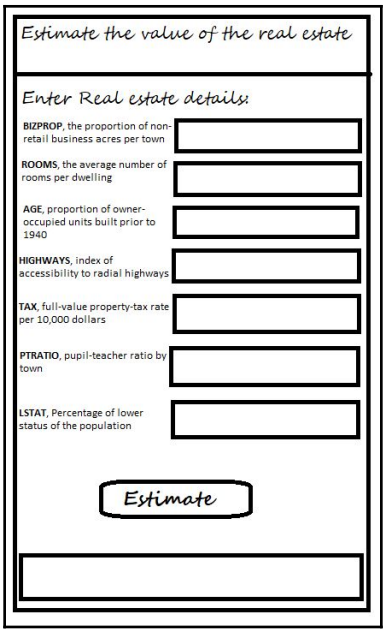

Create New Project
Create Android Project
Application name
Real Estate Prediction
Company domain
chapter2.prediction.app
Project location
H:/aibook/chapter2/prediction
Package name
app.chapter2.realestateprediction
Done
Include C++ support
Include Kotlin support
Previous
Next
Cancel
Finish


Create New Project
Target Android Devices
Select the form factors and minimum SDK
Some devices require additional SDKs. Low API levels target more devices, but offer fewer API features.
Phone and Tablet
API 23: Android 6.0 (Marshmallow)
By targeting API 23 and later, your app will run on approximately 39.3% of devices.
Include Android Instant App support
Wear
API 21: Android 5.0 (Lollipop)
TV
API 21: Android 5.0 (Lollipop)
Android Auto
Android Things
Previous
Next
Cancel
Finish


Create New Project
Add an Activity to Mobile
Add No Activity
Basic Activity
Bottom Navigation Activity
Empty Activity
Ad
Previous
Next
Cancel
Finish


Create New Project
Configure Activity
Creates a new empty activity
Activity Name
MainActivity
Generate Layout File
Layout Name
activity_main
Backwards Compatibility (AppCompat)
Previous
Next
Cancel
Finish

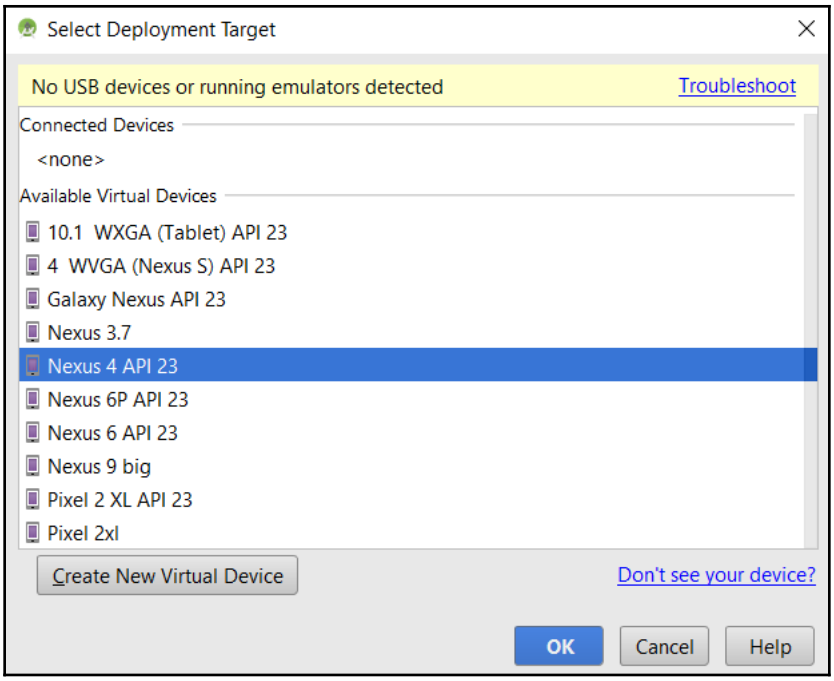

prediction - [H:\aibook\chapter2\prediction] - [app] - ...\app\src\main\java\app\chapter2\realestateprediction\MainActivity.java - Android Studio 3.0.1
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
activity_main.xml
MainActivity.java
package app.chapter2.realestateprediction;
import ...
public class MainActivity extends AppCompatActivity {
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
}
}

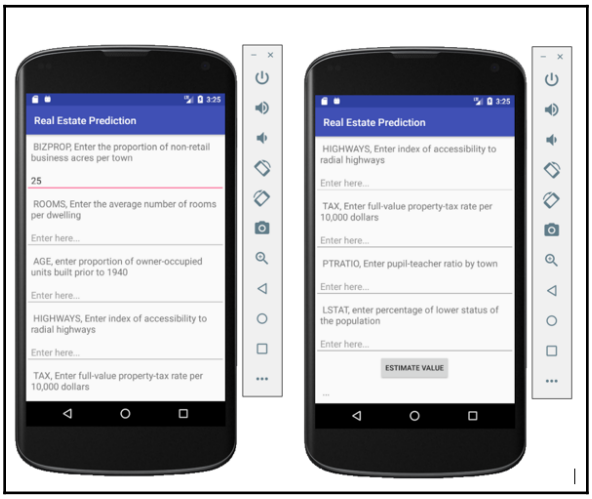


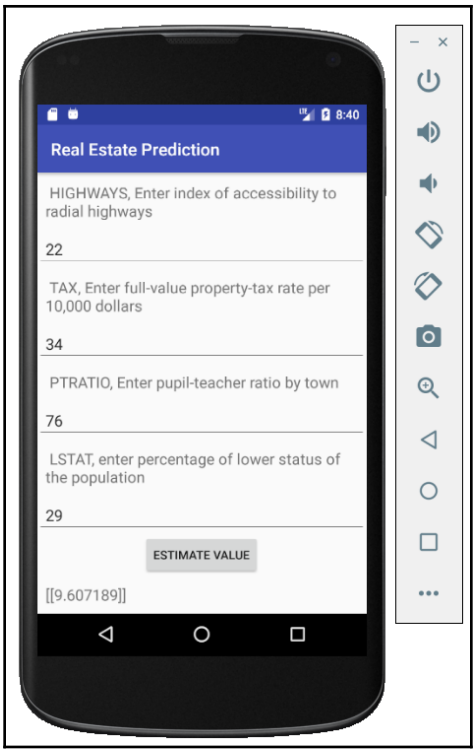
activity_main.xml | MainActivity.java

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="app.chapter2.realestateprediction.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
```

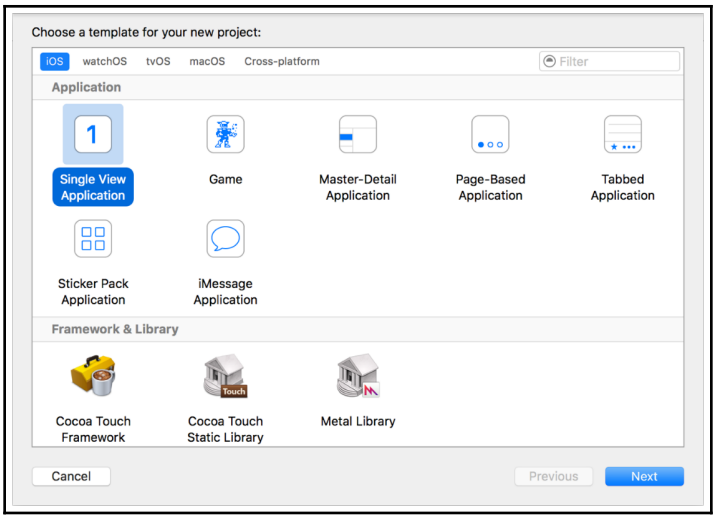
Design | Text

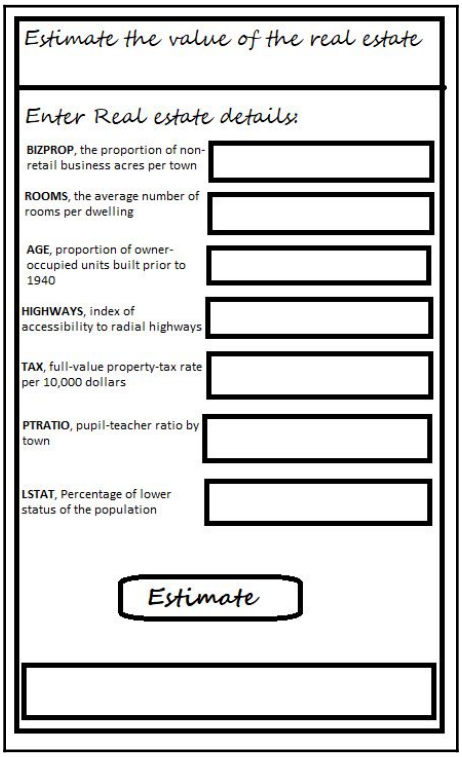

Select Deployment Target
No USB devices or running emulators detected
Troubleshoot
Connected Devices
<none>
Available Virtual Devices
10.1 WXGA (Tablet) API 23
4 WVGA (Nexus S) API 23
Galaxy Nexus API 23
Nexus 3.7
Nexus 4 API 23
Nexus 6P API 23
Nexus 6 API 23
Nexus 9 big
Pixel 2 XL API 23
Pixel 2xl
Create New Virtual Device
Don't see your device?
OK
Cancel
Help

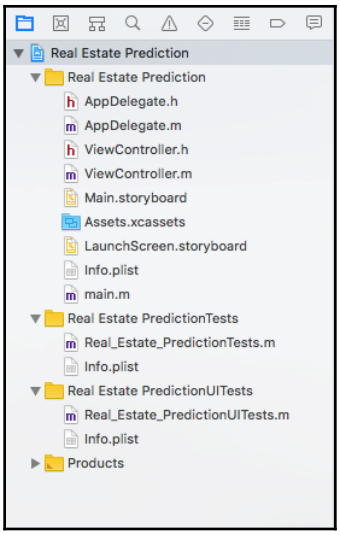

Real Estate Prediction
BIZPROP, Enter the proportion of non-retail business acres per town
25
ROOMS, Enter the average number of rooms per dwelling
Enter here...
AGE, enter proportion of owner-occupied units built prior to 1940
Enter here...
HIGHWAYS, Enter index of accessibility to radial highways
Enter here...
TAX, Enter full-value property-tax rate per 10,000 dollars
Real Estate Prediction
HIGHWAYS, Enter index of accessibility to radial highways
Enter here...
TAX, Enter full-value property-tax rate per 10,000 dollars
Enter here...
PTRATIO, Enter pupil-teacher ratio by town
Enter here...
LSTAT, enter percentage of lower status of the population
Enter here...
ESTIMATE VALUE


8:40
Real Estate Prediction
HIGHWAYS, Enter index of accessibility to radial highways
22
TAX, Enter full-value property-tax rate per 10,000 dollars
34
PTRATIO, Enter pupil-teacher ratio by town
76
LSTAT, enter percentage of lower status of the population
29
ESTIMATE VALUE
[[9.607189]]

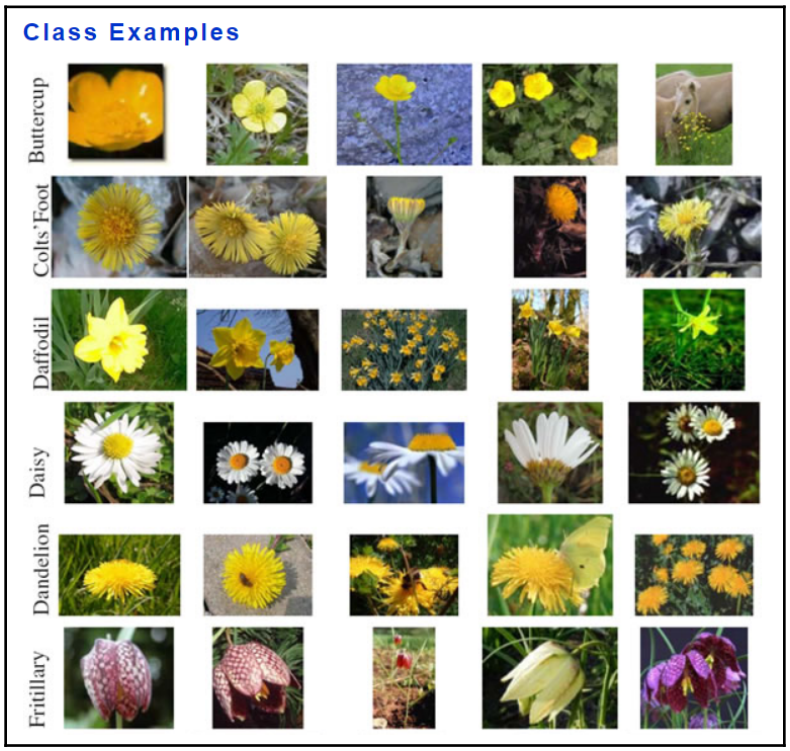
Welcome to Xcode
Get started with a playground
Explore new ideas quickly and easily.
Create a new Xcode project
Create an app for iPhone, iPad, Mac, Apple Watch or Apple TV.
Check out an existing project
Start working on something from an SCM repository.
Show this window when Xcode launches
No Recent Projects
Open another project...

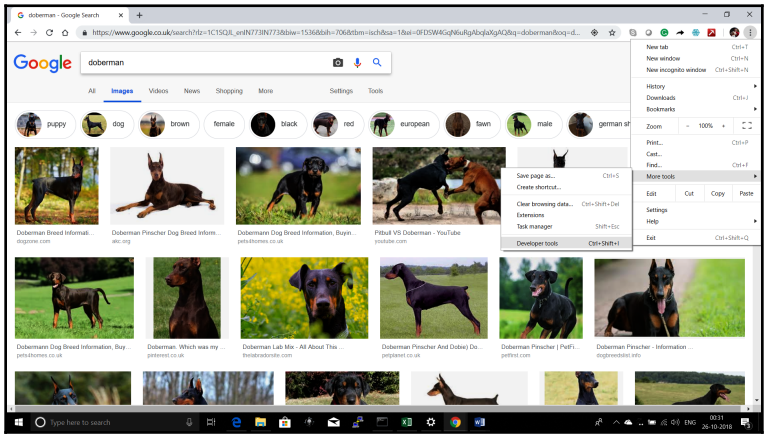

Choose a template for your new project:
iOS
watchOS
tvOS
macOS
Cross-platform
Filter
Application
Single View Application
Game
Master-Detail Application
Page-Based Application
Tabbed Application
Sticker Pack Application
iMessage Application
Framework & Library
Cocoa Touch Framework
Cocoa Touch Static Library
Metal Library
Cancel
Previous
Next

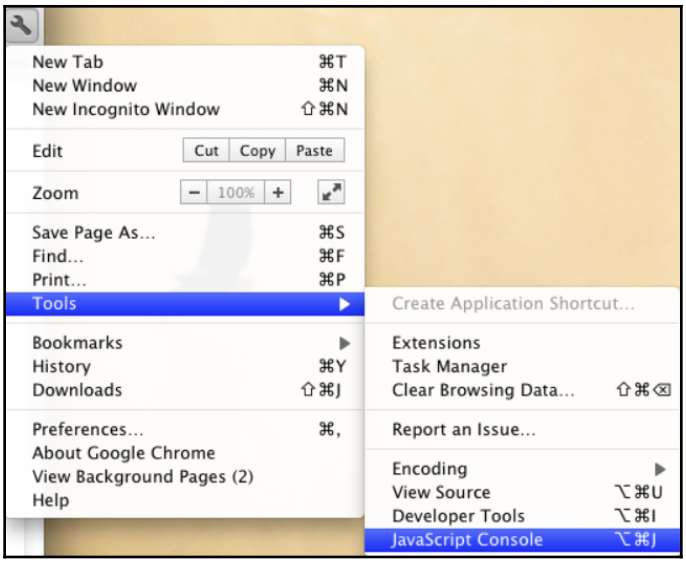

Estimate the value of the real estate
Enter Real estate details:
BIZPROP, the proportion of non-retail business acres per town
ROOMS, the average number of rooms per dwelling
AGE, proportion of owner-occupied units built prior to 1940
HIGHWAYS, index of accessibility to radial highways
TAX, full-value property-tax rate per 10,000 dollars
PTRATIO, pupil-teacher ratio by town
LSTAT, Percentage of lower status of the population
Estimate

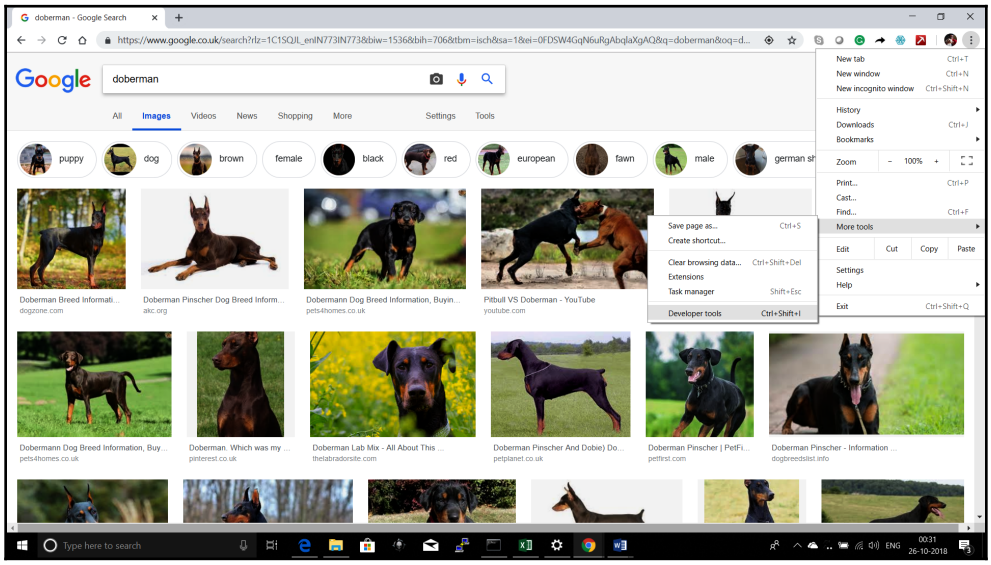

Real Estate Prediction
Real Estate Prediction
AppDelegate.h
AppDelegate.m
ViewController.h
ViewController.m
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
main.m
Real Estate PredictionTests
Real_Estate_PredictionTests.m
Info.plist
Real Estate PredictionUITests
Real_Estate_PredictionUITests.m
Info.plist
Products

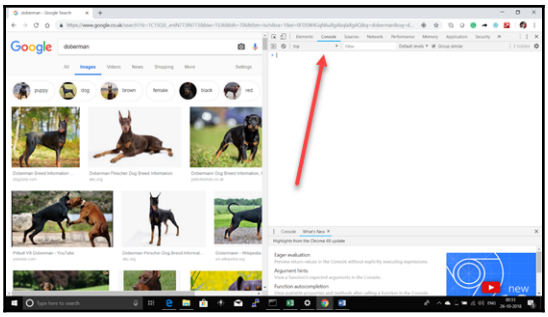
Chapter 04: Building a Machine Vision Mobile App to Classify Flower Species

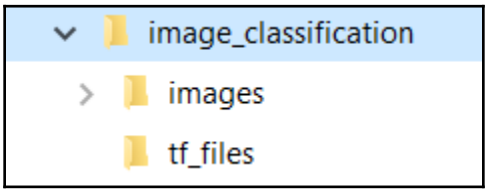


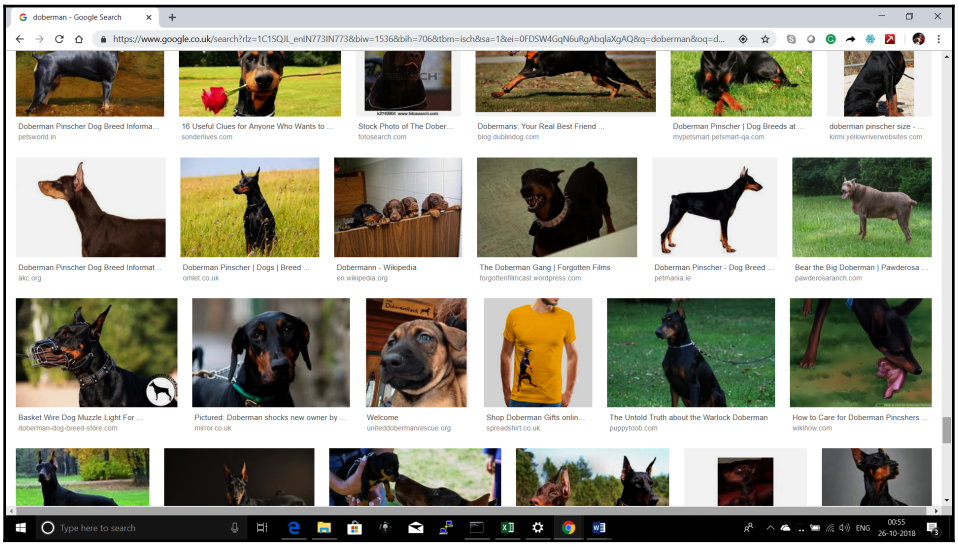


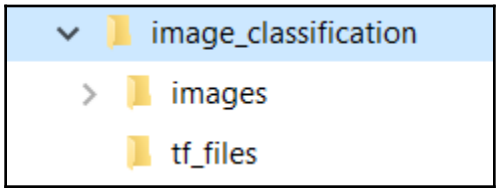

New Tab ⌘T
New Window ⌘N
New Incognito Window ⇧⌘N
Edit Cut Copy Paste
Zoom − 100% +
Save Page As... ⌘S
Find... ⌘F
Print... ⌘P
Tools
Bookmarks
History ⌘Y
Downloads ⇧⌘J
Preferences... ⌘,
About Google Chrome
View Background Pages (2)
Help
Create Application Shortcut...
Extensions
Task Manager
Clear Browsing Data... ⇧⌘⌫
Report an Issue...
Encoding
View Source ⌥⌘U
Developer Tools ⌥⌘I
JavaScript Console ⌥⌘J

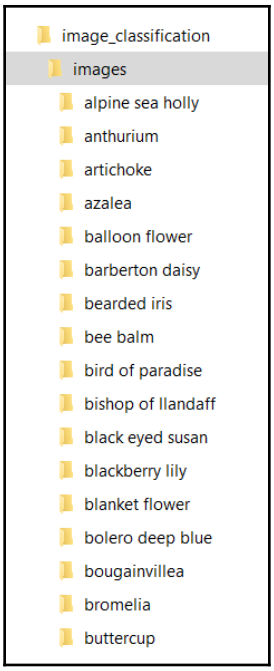

doberman - Google Search
Google
doberman
All Images Videos News Shopping More Settings Tools
puppy dog brown female black red european fawn male
Doberman Breed Informati...
Doberman Pinscher Dog Breed Inform...
Doberman Dog Breed Information, Buyin...
Pitbull VS Doberman - YouTube
Doberman Pinscher | PetFi...
Doberman Pinscher - Information ...
Save page as... Ctrl+S
Create shortcut...
Clear browsing data... Ctrl+Shift+Del
Extensions
Task manager Shift+Esc
Developer tools Ctrl+Shift+I
New tab Ctrl+T
New window Ctrl+N
New incognito window Ctrl+Shift+N
History
Downloads Ctrl+J
Bookmarks
Zoom − 100% +
Print... Ctrl+P
Cast...
Find... Ctrl+F
More tools
Edit Cut Copy Paste
Settings
Help
Exit Ctrl+Shift+Q
Type here to search

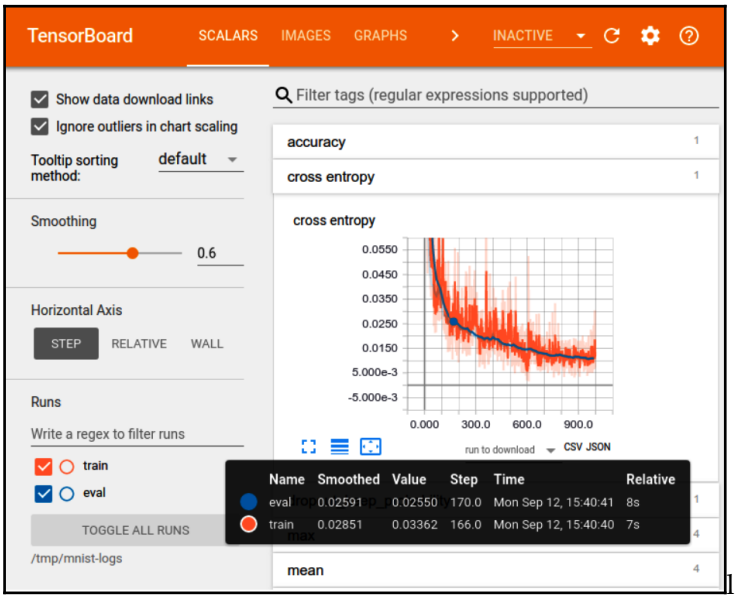



image_classification
images
tf_files

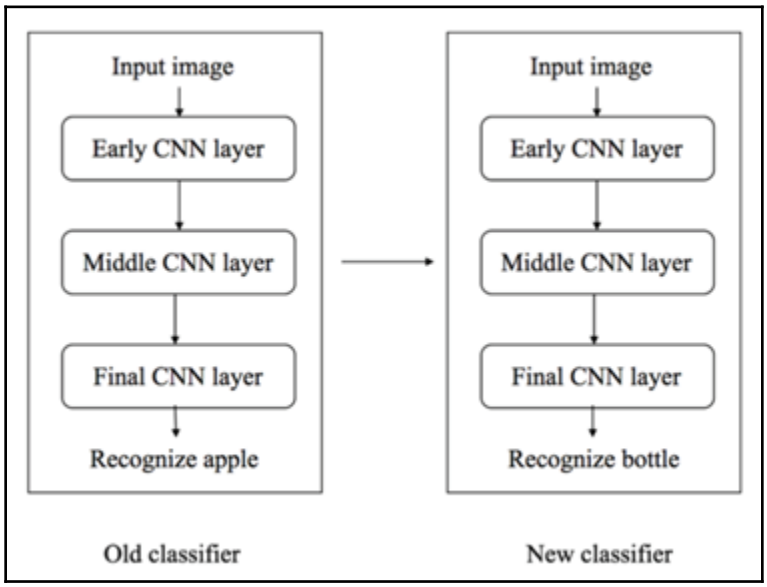

doberman - Google Search
https://www.google.co.uk/search?rlz=1C1SQJL_enIN773IN773&biw=1536&bih=706&tbm=isch&sa=1&ei=0FDSW4GqN6uRgAbqlaXgAQ&q=doberman&oq=d...
Doberman Pinscher Dog Breed Informa...
petsworld.in
16 Useful Clues for Anyone Who Wants to ...
sondenlives.com
Stock Photo of The Dober...
fotosearch.com
Dobermans: Your Real Best Friend ...
blog.dublindog.com
Doberman Pinscher | Dog Breeds at ...
mypetsmart.petsmart-qa.com
doberman pinscher size - ...
kirmi.yellowriverwebsites.com
Doberman Pinscher Dog Breed Informat...
akc.org
Doberman Pinscher | Dogs | Breed ...
omlet.co.uk
Dobermann - Wikipedia
en.wikipedia.org
The Doberman Gang | Forgotten Films
forgottenfilmcast.wordpress.com
Doberman Pinscher - Dog Breed ...
petmania.ie
Bear the Big Doberman | Pawderosa ...
pawderosaranch.com
Basket Wire Dog Muzzle Light For ...
doberman-dog-breed-store.com
Pictured: Doberman shocks new owner by ...
mirror.co.uk
Welcome
untiedobermanrescue.org
Shop Doberman Gifts onlin...
spreadshirt.co.uk
The Untold Truth about the Warlock Doberman
puppytoob.com
How to Care for Doberman Pinschers ...
wikihow.com
Type here to search
ENG
00:55
26-10-2018


image_classification
images
tf_files


image_classification
images
alpine sea holly
anthurium
artichoke
azalea
balloon flower
barberton daisy
bearded iris
bee balm
bird of paradise
bishop of llandaff
black eyed susan
blackberry lily
blanket flower
bolero deep blue
bougainvillea
bromelia
buttercup


TensorBoard
SCALARS
IMAGES
GRAPHS
INACTIVE
Show data download links
Ignore outliers in chart scaling
Tooltip sorting method:
default
Smoothing
0.6
Horizontal Axis
STEP
RELATIVE
WALL
Runs
Write a regex to filter runs
train
eval
TOGGLE ALL RUNS
/tmp/mnist-logs
Filter tags (regular expressions supported)
accuracy
cross entropy
cross entropy
0.0550
0.0450
0.0350
0.0250
0.0150
5.000e-3
-5.000e-3
0.000
300.0
600.0
900.0
run to download
CSV JSON
Name Smoothed Value Step Time Relative
eval 0.02591 0.02550 170.0 Mon Sep 12, 15:40:41 8s
train 0.02851 0.03362 166.0 Mon Sep 12, 15:40:40 7s
mean

Chapter 5: Building an ML Model to Predict Car Damage Using TensorFlow



Classification Checkpoint	MACs (M)	Parameters (M)	Top 1 Accuracy	Top 5 Accuracy	Mobile CPU (ms) Pixel 1
mobilenet_v2_1.4_224	582	6.06	75.0	92.5	138.0
mobilenet_v2_1.3_224	509	5.34	74.4	92.1	123.0
mobilenet_v2_1.0_224	300	3.47	71.8	91.0	73.8
mobilenet_v2_1.0_192	221	3.47	70.7	90.1	55.1
mobilenet_v2_1.0_160	154	3.47	68.8	89.0	40.2
mobilenet_v2_1.0_128	99	3.47	65.3	86.9	27.6
mobilenet_v2_1.0_96	56	3.47	60.3	83.2	17.6
mobilenet_v2_0.75_224	209	2.61	69.8	89.6	55.8
mobilenet_v2_0.75_192	153	2.61	68.7	88.9	41.6
mobilenet_v2_0.75_160	107	2.61	66.4	87.3	30.4
mobilenet_v2_0.75_128	69	2.61	63.2	85.3	21.9
mobilenet_v2_0.75_96	39	2.61	58.8	81.6	14.2
mobilenet_v2_0.5_224	97	1.95	65.4	86.4	28.7
mobilenet_v2_0.5_192	71	1.95	63.9	85.4	21.1
mobilenet_v2_0.5_160	50	1.95	61.0	83.2	14.9
mobilenet_v2_0.5_128	32	1.95	57.7	80.8	9.9
mobilenet_v2_0.5_96	18	1.95	51.2	75.8	6.4
mobilenet_v2_0.35_224	59	1.66	60.3	82.9	19.7
mobilenet_v2_0.35_192	43	1.66	58.2	81.2	14.6
mobilenet_v2_0.35_160	30	1.66	55.7	79.1	10.5
mobilenet_v2_0.35_128	20	1.66	50.8	75.0	6.9
mobilenet_v2_0.35_96	11	1.66	45.5	70.4	4.5

```
[Karthikeyans-MacBook-Pro:google-images-download karthikeyan$ googleimagesdownload -k "car" -sk 'red,blue' -l 50

Item no.: 1 --> Item name = car red
Evaluating...
Starting Download...
Completed Image ====> 1. 71jrcuoujbl._sl1500_.jpg
Completed Image ====> 2. lamborghini_huracan_slideshow_lead.jpg
Completed Image ====> 3. item_xl_22318852_30176327.jpg
Completed Image ====> 4. car4-1196370.jpg
Completed Image ====> 5. 598cc71515000084208b6139.jpg
Completed Image ====> 6. image_3568d179-cb57-4232-9572-034f3c302dcd_1024x1024.jpg
Completed Image ====> 7. maxresdefault.jpg
Completed Image ====> 8. 20170309-red-cars-at-geneva-vlad-savov11.0.jpg
Completed Image ====> 9. 61rmtid79wl._sx425_.jpg
Completed Image ====> 10. 51pja9m4xdl.jpg
Completed Image ====> 11. ferrari+f12+berlinetta.jpg
Completed Image ====> 12. ferrari-laferrari-12v-ride-on-car-red-a4d.jpg
Completed Image ====> 13. p_red_car.jpg
Completed Image ====> 14. big-new-bobby-car-red-800056200_00.jpeg
Completed Image ====> 15. 71ok%2bxwygfl._sx425_.jpg
Completed Image ====> 16. dsc_0001__80292.1536633226.1280.1280.jpg
Completed Image ====> 17. ferrari-458-super-car-big-remote-control-car-red-sunshine-original-imaeuz56fcauwjzk.jpeg
Completed Image ====> 18. 919ec5a_1433856.jpg
Completed Image ====> 19. gqvhhhx.jpg
Completed Image ====> 20. gla_classic.jpeg
Completed Image ====> 21. aston-martin-vanquish-s-raf-red-arrows-829649.jpg
Completed Image ====> 22. maxresdefault.jpg
Completed Image ====> 23. 995-panda-original-imaee4za5fwpfa4k.jpeg
Completed Image ====> 24. car-30984_960_720.png
Completed Image ====> 25. 524c28b2-d349-495f-81e0-eec7442ac28f_1.6bd30cb6b69ad4327d9102a4f07ded51.jpeg
```

1. 14642130-heavily-...ound.jpg
2. car-accident-generic-...182.jpg
3. damaged-red-car-sho...5112.jpg
4. singapore-car-crash-ann-wb.jpg
5. 7332-car-damage...cked.jpg
10. 201507...1c0d.jpg
11. 920x920.jpg
12. sam_4140.jpg
13. 150251...1-org.jpg
14. cerda_c...h2-2.jpg
20. fireman-using-ja...829.jpg
21. 920x920.jpg
22. 38798884-img-car...-train.jpg
23. 79380_1...umb.jpg
24. crash-stgnews...x191.jpg

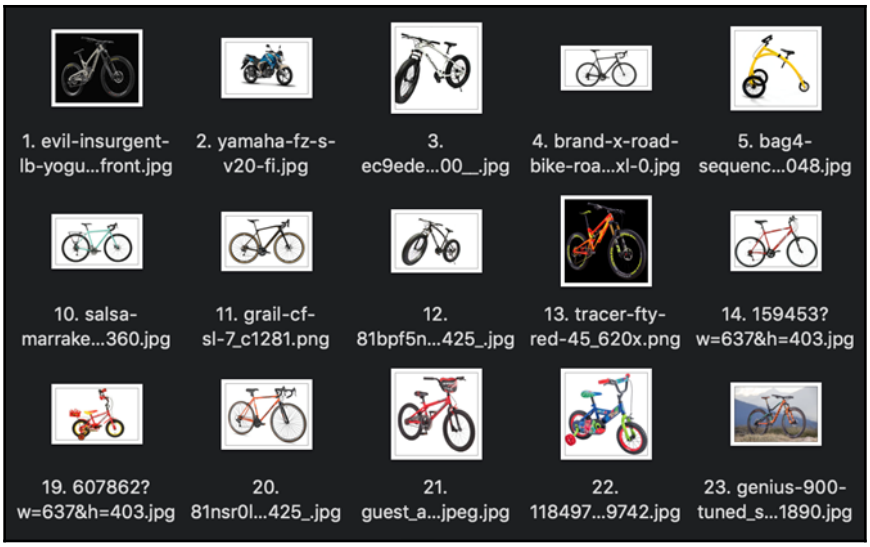
1. videoblocks-officer-...ull01.png
2. maxresdefault.jpg
4. heavily-damage...8616.jpg
5. 3fb7241...c8fe.jpg
6. r0_140_..._fmax.jpg
11. heavily-damage...84r4.jpg
12. hqdefault.jpg
13. dtm-hocken...d-car.jpg
14. damaged-car-1-19-16.jpg
15. 3f2e34...df94.jpg
20. da11cdf...upv_.jpg
21. ims-scan-tt-0064...1000.jpg
22. adac-employe...xyb.jpg
23. r0_180_..._fmax.jpg
24. 500_o3464.jpg

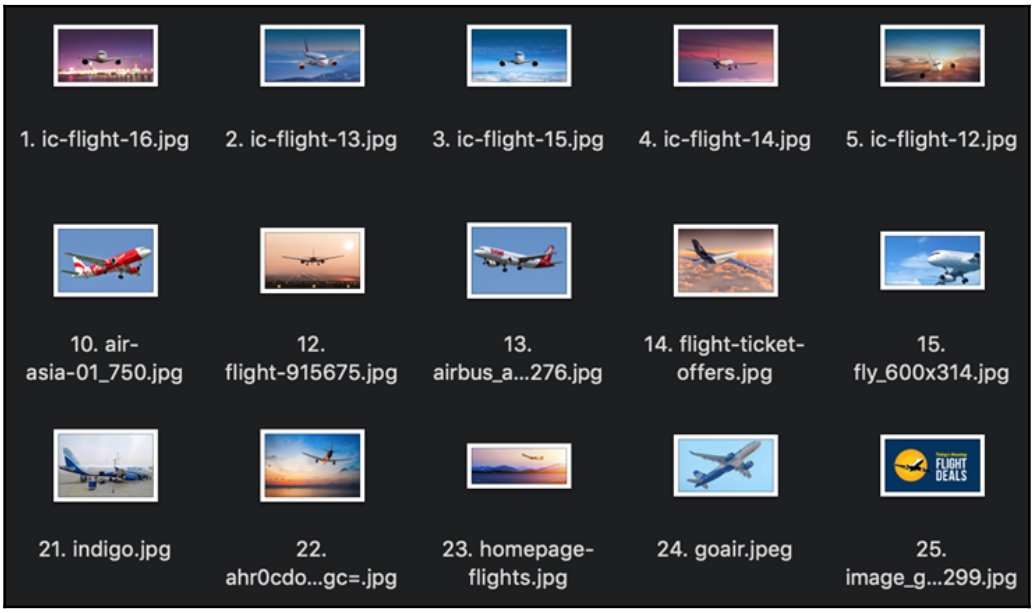
1. crash-damage-scratch-...xh61.jpg
2. dscn0370.jpg
3. 13342541.jpg
4. redtoyot...ef_1a.jpg
5. car_dent.jpg
10. before-after-5.jpg
11. paintles...epair.jpg
12. n5b.jpg
13. i-red-before.jpg
14. red-car-dent-door-str...6457.jpg
19. paintless-dent-re...p-wa.jpg
20. scamhole.jpg
21. crash-damage...xh66.jpg
22. 717169a...bfbx.jpg
23. 97123225-wine-re...-side.jpg

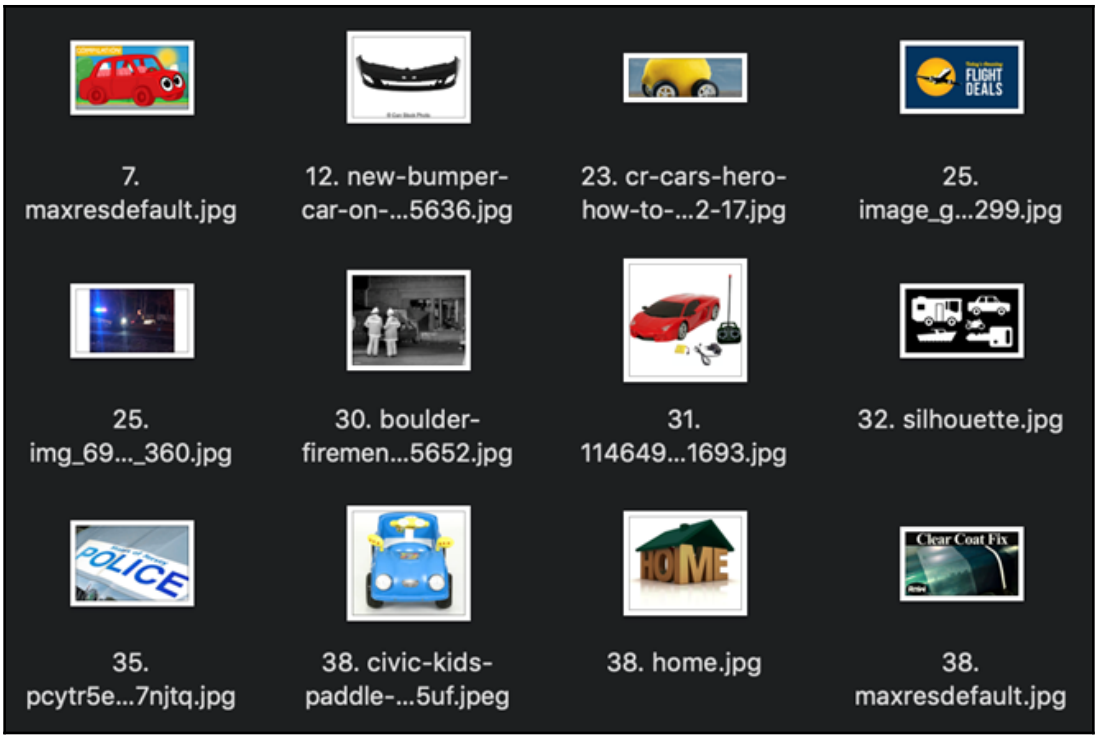
1. c7c92ea..._827.jpg
2. car-front-dent.jpg
3. dented-car.jpg
4. 2.jpg
5. blue-car-before.jpg
10. dent2.jpg
11. blue-car-dent-before-...-333.jpg
12. 150814...eme2.jpg
13. sample-1-before.jpg
14. 691484...x627.jpg
19. dentdoorblue.jpg
20. dent-on-blue-car-pict...2269.jpg
21. hail-dent-repair-n...x620.jpg
22. blue-door-car-dam...770.jpg
23. 150825...0036.jpg

1.
71jrcuou...00_.jpg
2.
lamborg...lead.jpg
3.
item_xl_...6327.jpg
4.
car4-1196370.jpg
5.
598cc7...6139.jpg
10.
51pja9m4xdl.jpg
11.
ferrari+f...etta.jpg
12. ferrari-
laferrari...-a4d.jpg
13. p_red_car.jpg
15.
71ok%2...425_.jpg
20.
gla_classic.jpeg
21. aston-martin-
vanquis...9649.jpg
24.
car-309...720.png
25. 524c28b2-
d349-4...d51.jpeg
26. lamborghini-
huracan...9.0.png

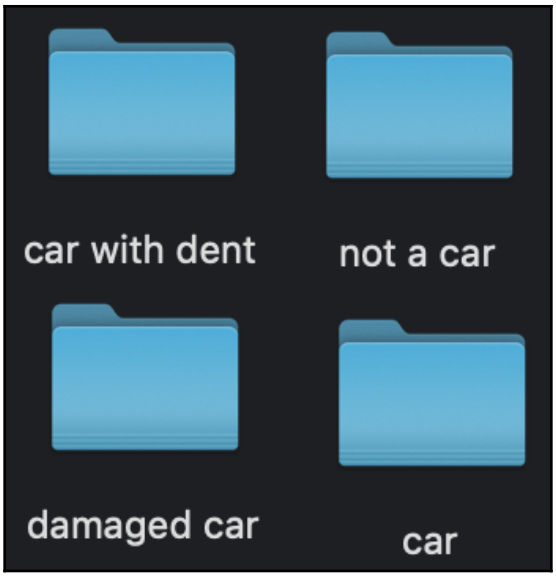
1.
czlw7rrr...mzfl.jpg
2.
71yomg...355_.jpg
3. 2015-honda-
civic-co...-001.jpg
4.
maxresdefault.jpg
5.
ford_fie...300.png
12. 43064.jpg
13. 11.jpg
14.
kidvehr...ebl_2.jpg
15. blue-
car_23-...3966.jpg
16.
cars_3_c...rs-4.jpg
23.
cars_3_c...s-15.jpg
24. pexels-
photo-170811.jpeg
25. rsz_toyota-
proace-...300.png
26.
x77fpra_...225.jpg
27. speedy-
mav%c...-17-1.jpg

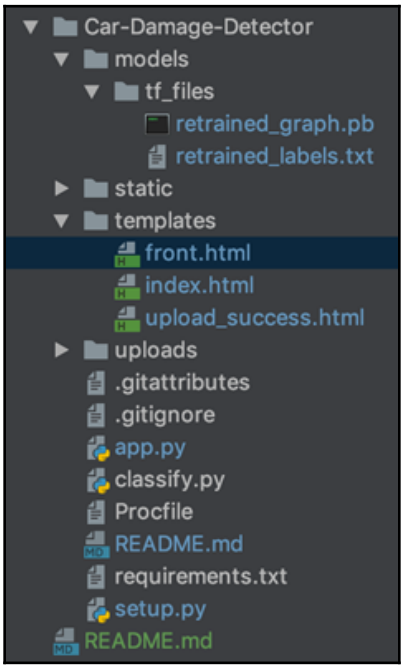

1. evil-insurgent-lb-yogu...front.jpg
2. yamaha-fz-s-v20-fi.jpg
3. ec9ede...00__.jpg
4. brand-x-road-bike-roa...xl-0.jpg
5. bag4-sequenc...048.jpg
10. salsa-marrake...360.jpg
11. grail-cf-sl-7_c1281.png
12. 81bpf5n...425_.jpg
13. tracer-fty-red-45_620x.png
14. 159453?w=637&h=403.jpg
19. 607862?w=637&h=403.jpg
20. 81nsr0l...425_.jpg
21. guest_a...jpeg.jpg
22. 118497...9742.jpg
23. genius-900-tuned_s...1890.jpg


1. ic-flight-16.jpg
2. ic-flight-13.jpg
3. ic-flight-15.jpg
4. ic-flight-14.jpg
5. ic-flight-12.jpg
10. air-asia-01_750.jpg
12. flight-915675.jpg
13. airbus_a...276.jpg
14. flight-ticket-offers.jpg
15. fly_600x314.jpg
21. indigo.jpg
22. ahr0cdo...gc=.jpg
23. homepage-flights.jpg
24. goair.jpeg
25. image_g...299.jpg

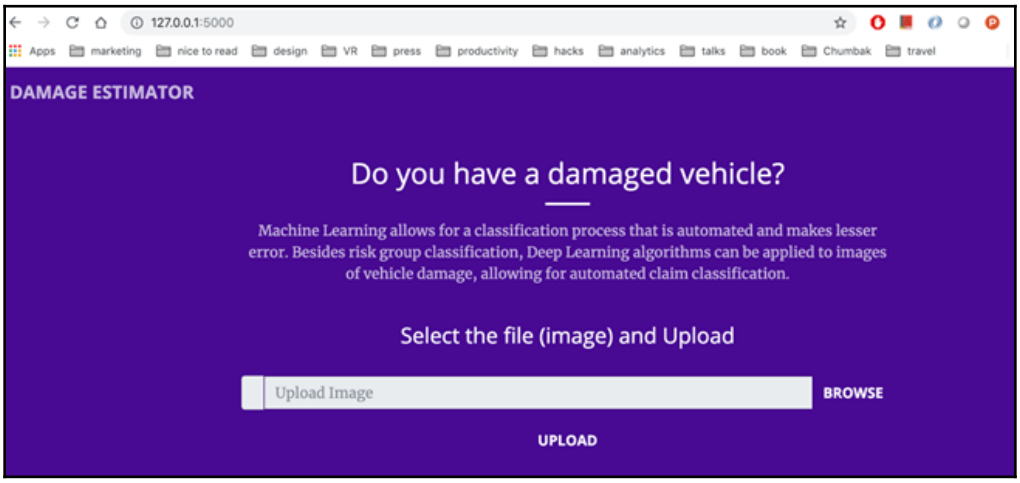

7. maxresdefault.jpg
12. new-bumper-car-on-...5636.jpg
23. cr-cars-hero-how-to-...2-17.jpg
25. image_g...299.jpg
25. img_69..._360.jpg
30. boulder-firemen...5652.jpg
31. 114649...1693.jpg
32. silhouette.jpg
35. pcytr5e...7njtq.jpg
38. civic-kids-paddle-...5uf.jpeg
38. home.jpg
38. maxresdefault.jpg

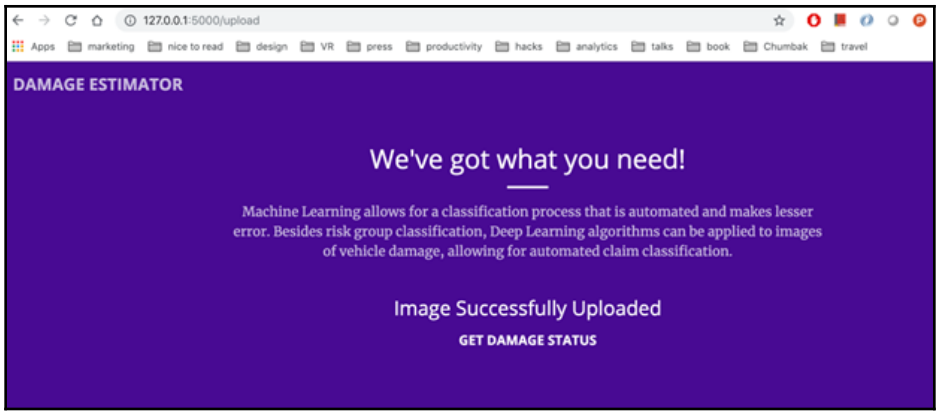
heavily damaged car red
heavily damaged car blue
bike
car dent red
flight
home
road
tv
car red
noise
car blue
car dent blue

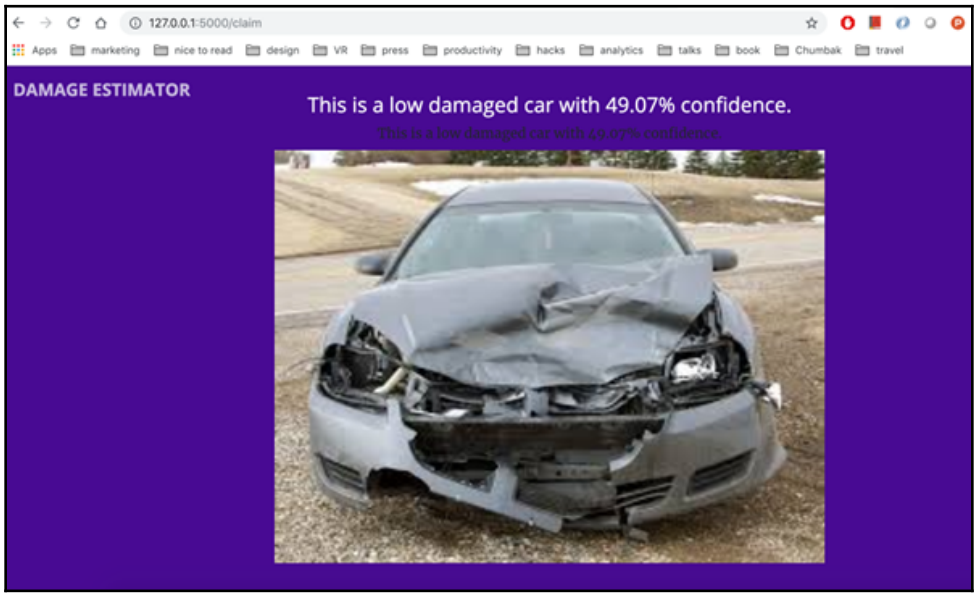

car with dent
not a car
damaged car
car

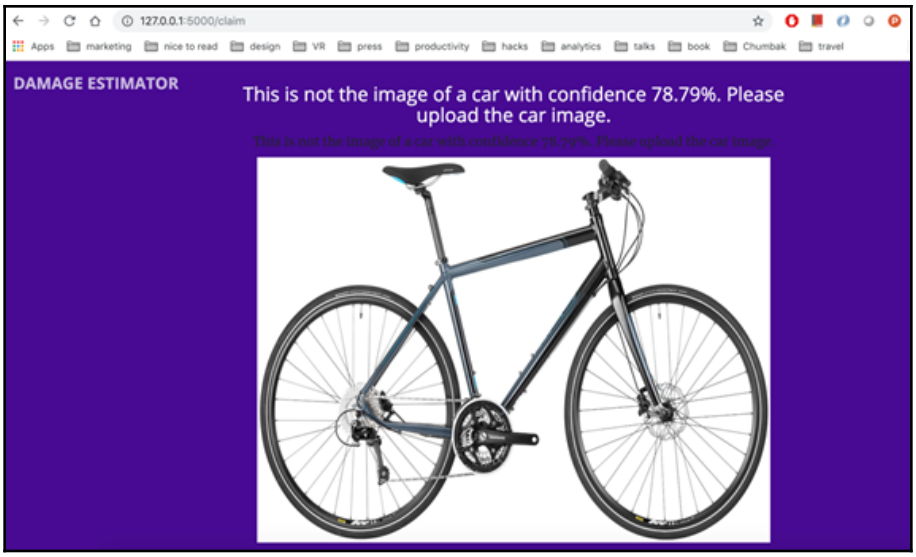

Car-Damage-Detector
models
tf_files
retrained_graph.pb
retrained_labels.txt
static
templates
front.html
index.html
upload_success.html
uploads
.gitattributes
.gitignore
app.py
classify.py
Procfile
README.md
requirements.txt
setup.py
README.md

```
Karthikeyans-MacBook-Pro:Car-Damage-Detector karthikeyan$ python app.py
Error: unable to start thread
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/bootstrap/css/bootstrap.min.css HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/font-awesome/css/font-awesome.min.css HTTP/1.1"
 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/magnific-popup/magnific-popup.css HTTP/1.1" 200
 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/css/creative.min.css HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/jquery/jquery.min.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/popper/popper.min.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/bootstrap/js/bootstrap.min.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/jquery-easing/jquery.easing.min.js HTTP/1.1" 20
0 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/scrollreveal/scrollreveal.min.js HTTP/1.1" 200
-
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/vendor/magnific-popup/jquery.magnific-popup.min.js HTT
P/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:35] "GET /static/js/creative.min.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:28:36] "GET /favicon.ico HTTP/1.1" 404 -
127.0.0.1 - - [19/Feb/2019 23:30:08] "POST /upload HTTP/1.1" 200 -
/Users/karthikeyan/Documents/code/play/acko/cardamage/Car-Damage-Detector/uploads/19.jpg
/Users/karthikeyan/Documents/code/play/acko/cardamage/Car-Damage-Detector/uploads/19.jpg
1
low (score = 0.49069)
model one valuelow
model one value49.07
/Users/karthikeyan/Documents/code/play/acko/cardamage/Car-Damage-Detector/uploads/19.jpg
127.0.0.1 - - [19/Feb/2019 23:30:26] "POST /claim HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2019 23:30:54] "GET /uploads/19.jpg HTTP/1.1" 200 -
```

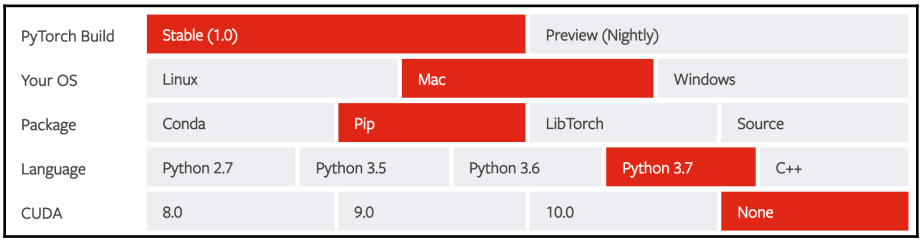



127.0.0.1:5000/upload
Apps marketing nice to read design VR press productivity hacks analytics talks book Chumbak travel
DAMAGE ESTIMATOR
We've got what you need!
Machine Learning allows for a classification process that is automated and makes lesser error. Besides risk group classification, Deep Learning algorithms can be applied to images of vehicle damage, allowing for automated claim classification.
Image Successfully Uploaded
GET DAMAGE STATUS

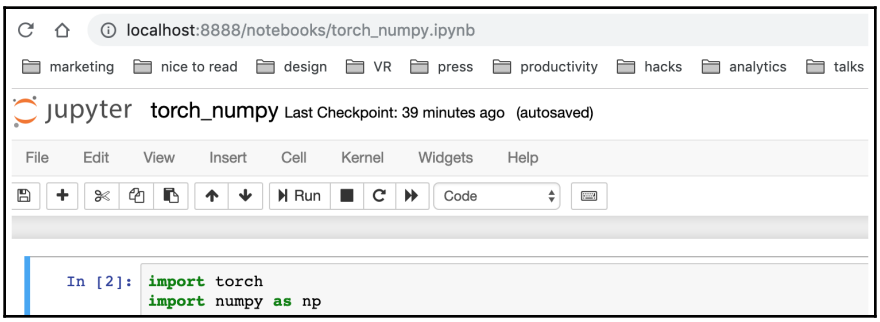

127.0.0.1:5000/claim
Apps marketing nice to read design VR press productivity hacks analytics talks book Chumbak travel
DAMAGE ESTIMATOR
This is a low damaged car with 49.07% confidence.

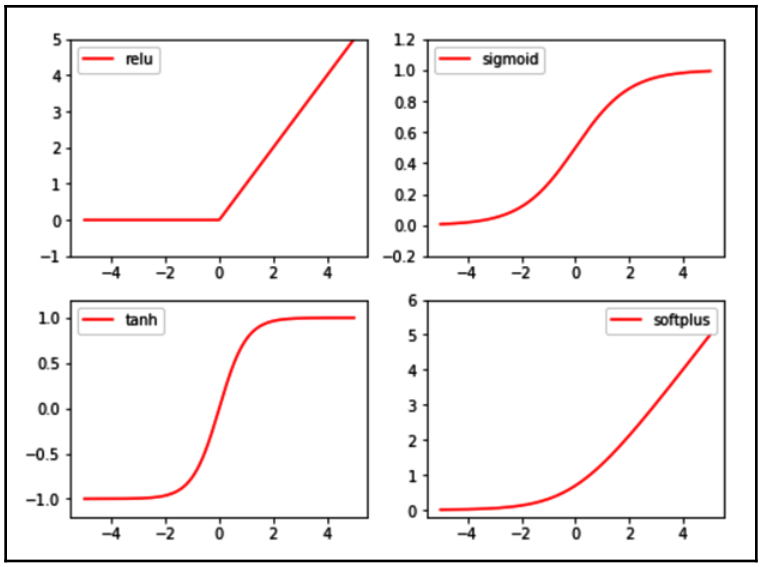

127.0.0.1:5000/claim
Apps
marketing
nice to read
design
VR
press
productivity
hacks
analytics
talks
book
Chumbak
travel
DAMAGE ESTIMATOR
This is not the image of a car with confidence 78.79%. Please upload the car image.

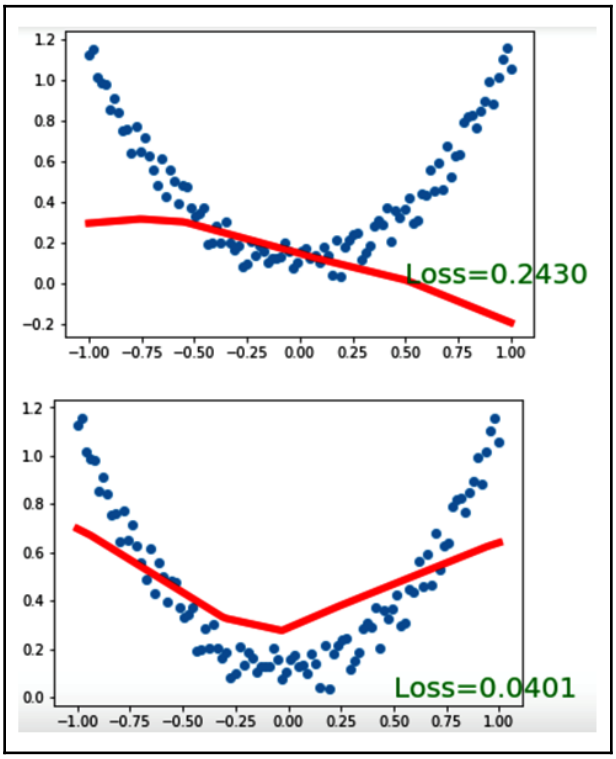
Chapter 06: PyTorch Experiments on NLP and RNN




```
Karthikeyans-MacBook-Pro:code karthikeyan$ pip3 install jupyter
Collecting jupyter
  Using cached https://files.pythonhosted.org/packages/83/df/0f5dd132200728a86190397e1ea87cd76244e42d39ec5e88efd25b2abd7e/jupyter-1.0.0-py2.py3-none-any.whl
Collecting ipywidgets (from jupyter)
  Using cached https://files.pythonhosted.org/packages/30/9a/a008c7b1183fac9e52066d80a379b3c64eab535bd9d86cdc29a0b766fd82/ipywidgets-7.4.2-py2.py3-none-any.whl
Collecting jupyter-console (from jupyter)
  Downloading https://files.pythonhosted.org/packages/cb/ee/6374ae8c21b7d0847f9c3722dcdfac986b8e54fa9ad9ea66e1eb6320d2b8/jupyter_console-6.0.0-py2.py3-none-any.whl
Collecting nbconvert (from jupyter)
  Using cached https://files.pythonhosted.org/packages/b8/39/1e67fea74dc9577cc49f9863fe3ec824e525d1304ab6027d95a94cd586f5/nbconvert-5.4.1-py2.py3-none-any.whl
Collecting ipykernel (from jupyter)
  Downloading https://files.pythonhosted.org/packages/d8/b0/f0be5c5ab335196f5cce96e5b889a4fcf5bfe462eb0acc05cd7e2caf65eb/ipykernel-5.1.0-py3-none-any.whl (113kB)
    100% |████████████████████████████████| 122kB 1.7MB/s
Collecting qtconsole (from jupyter)
  Using cached https://files.pythonhosted.org/packages/e0/7a/8aefbc0ed078dec7951ac9a06dcd1869243ecd7bcbce26fa47bf5e469a8f/qtconsole-4.4.3-py2.py3-none-any.whl
Collecting notebook (from jupyter)
  Using cached https://files.pythonhosted.org/packages/0a/d8/4e9521354ed3d730ba6d8a5af440b66c73245ef46be706e51bead71afc21/notebook-5.7.6-py2.py3-none-any.whl
Collecting widgetsnbextension~=3.4.0 (from ipywidgets->jupyter)
  Using cached https://files.pythonhosted.org/packages/8a/81/35789a3952afb48238289171728072d26d6e76649ddc8b3588657a2d78c1/widgetsnbextension-3.4.2-py2.py3-none-any.whl
Collecting nbformat>=4.2.0 (from ipywidgets->jupyter)
  Using cached https://files.pythonhosted.org/packages/da/27/9a654d2b6cc1eaa517d1c5a4405166c7f6d72f04f6e7eea41855fe808a46/nbformat-4.4.0-py2.py3-none-any.whl
Collecting ipython>=4.0.0; python_version >= "3.3" (from ipywidgets->jupyter)
  Downloading https://files.pythonhosted.org/packages/14/3b/3fcf422a99a04ee493e6a4fc3014e3c8ff484a7feed238fef68bdc285085/ipython-7.3.0-py3-none-any.whl (768kB)
    100% |████████████████████████████████| 778kB 8.0MB/s
Collecting traitlets>=4.3.1 (from ipywidgets->jupyter)
```




relu
sigmoid
tanh
softplus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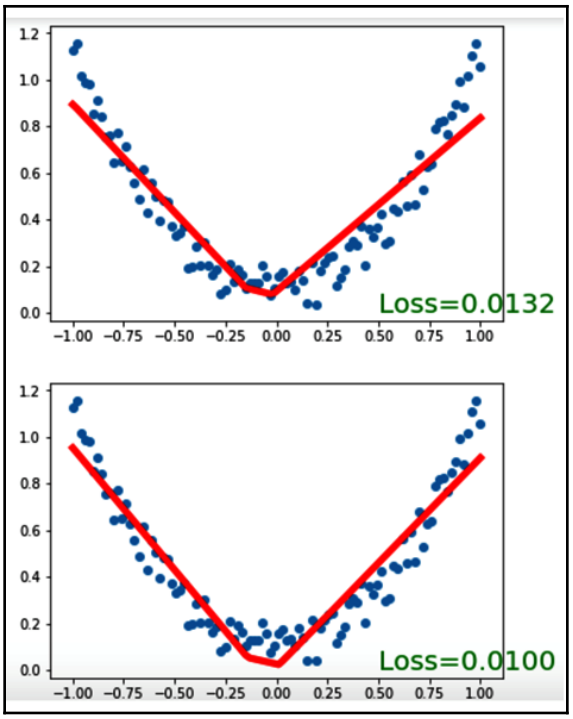
Loss=0.0401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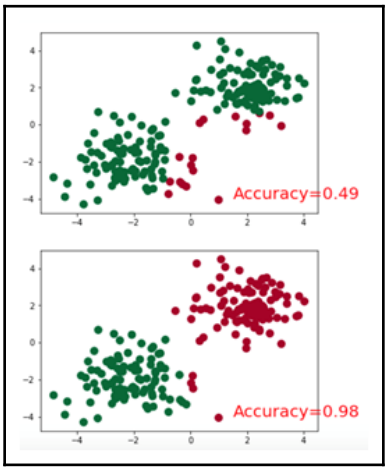
Loss=0.0100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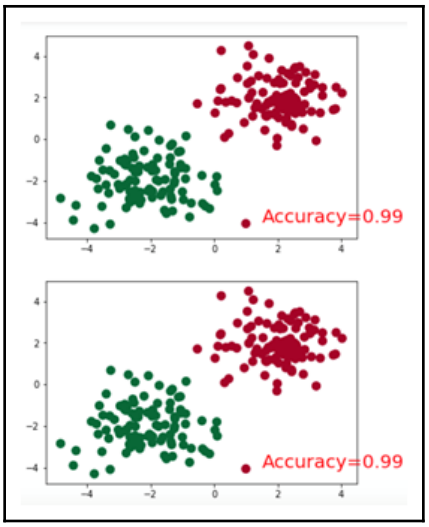
Accuracy=0.98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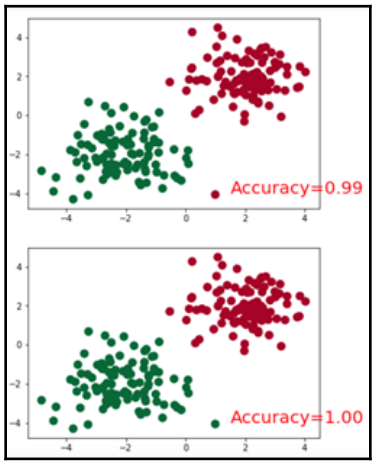
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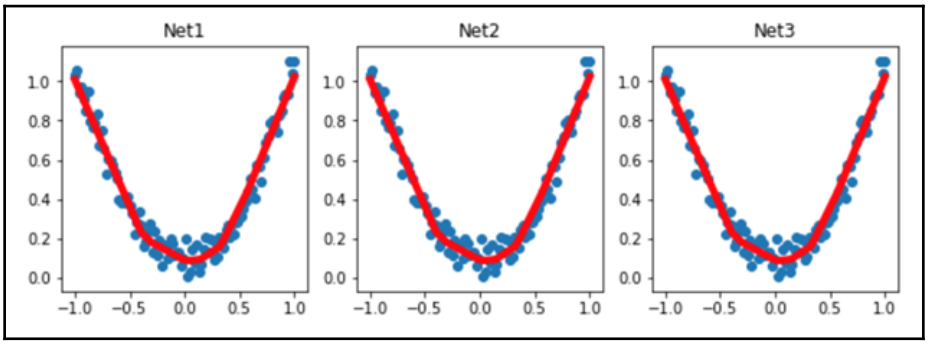
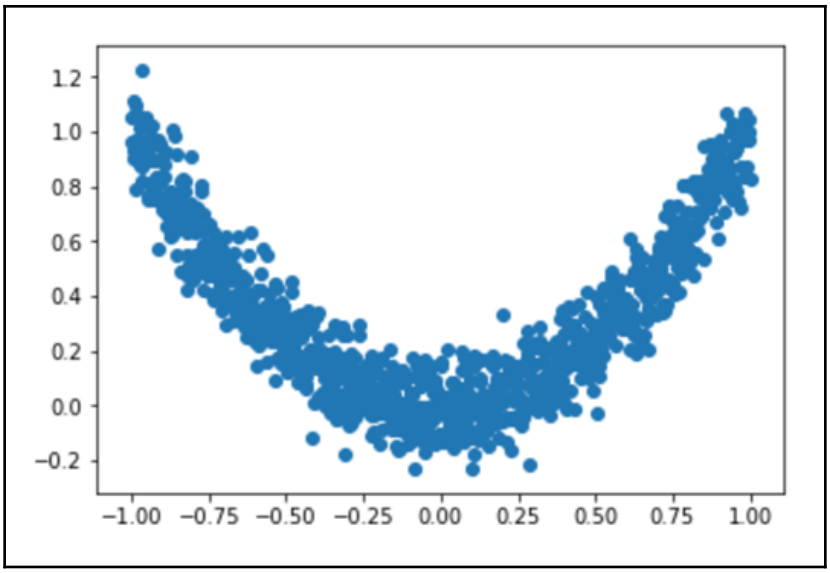

Net1
Net2
Net3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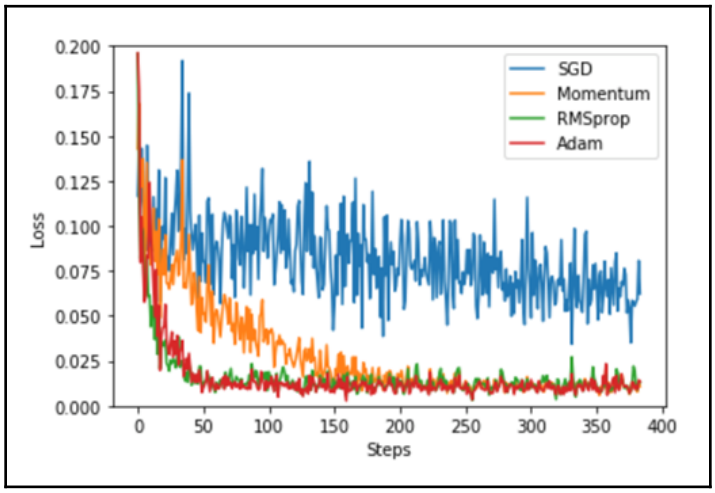
0.6
0.4
0.2
0.0
−0.2
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00


SGD
Momentum
RMSprop
Adam
Loss
Steps
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0.150
0.125
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0.025
0.000
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100
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250
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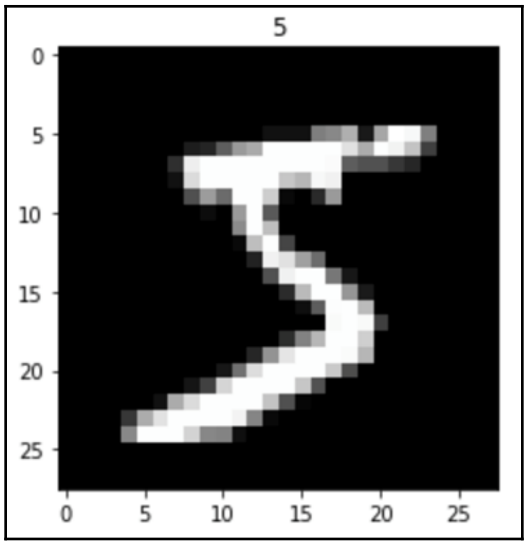
350
400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0
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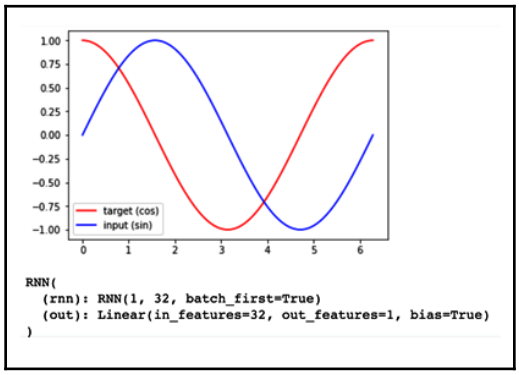
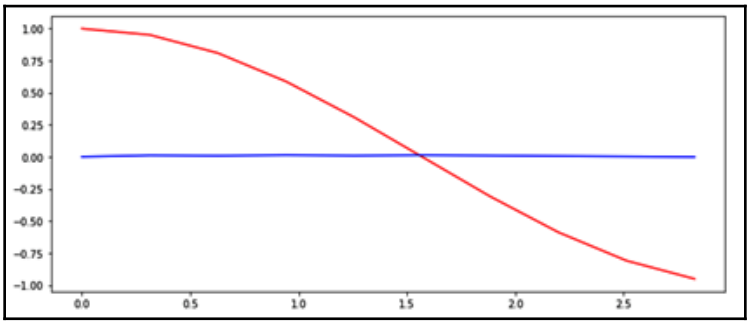
20
25


1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
target (cos)
input (sin)
0
1
2
3
4
5
6
RNN(
(rnn): RNN(1, 32, batch_first=True)
(out): Linear(in_features=32, out_features=1, bias=True)
)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0.75
0.50
0.25
0.00
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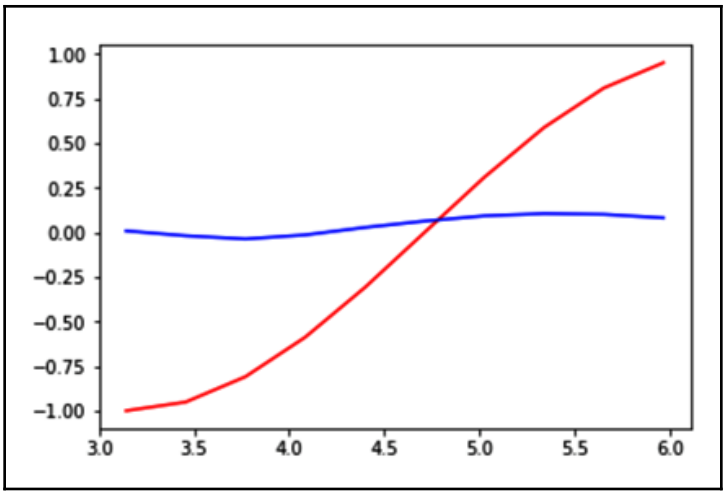
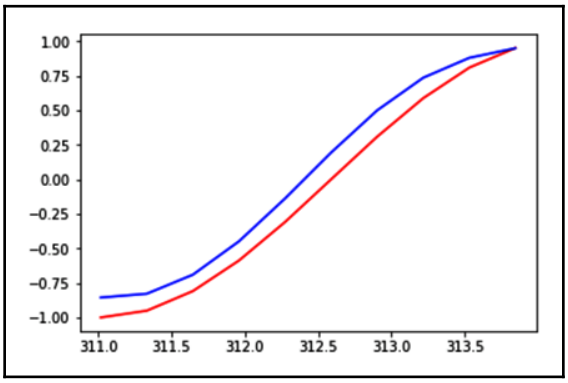
−0.50
−0.75
−1.00
0.0
0.5
1.0
1.5
2.0
2.5



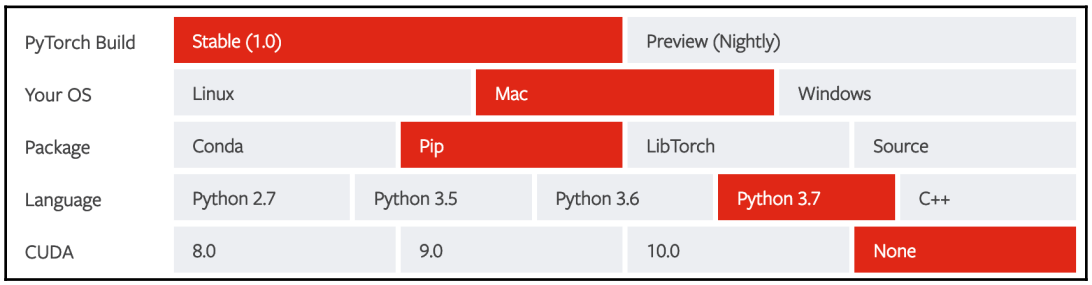


$$f(x) = Ax + b$$

$$f(g(x)) = A(Cx + d) + b = ACx + (Ad + b)$$

$$logSoftmax(Ax + b)$$

Chapter 07: TensorFlow on Mobile with Speech-to-Text with the WaveNet Model




```
Karthikeyans-MacBook-Pro:code karthikeyan$ pip3 install jupyter
Collecting jupyter
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Collecting ipywidgets (from jupyter)
  Using cached https://files.pythonhosted.org/packages/30/9a/a008c7b1183fac9e52066d80a379b3c64eab535bd9d86cdc29a0b766fd82/ipywidgets-7.4.2-py2.py3-none-any.whl
Collecting jupyter-console (from jupyter)
  Downloading https://files.pythonhosted.org/packages/cb/ee/6374ae8c21b7d0847f9c3722dcdfac986b8e54fa9ad9ea66e1eb6320d2b8/jupyter_console-6.0.0-py2.py3-none-any.whl
Collecting nbconvert (from jupyter)
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Collecting ipykernel (from jupyter)
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    100% |████████████████████████████████| 122kB 1.7MB/s
Collecting qtconsole (from jupyter)
  Using cached https://files.pythonhosted.org/packages/e0/7a/8aefbc0ed078dec7951ac9a06dcd1869243ecd7bcbce26fa47bf5e469a8f/qtconsole-4.4.3-py2.py3-none-any.whl
Collecting notebook (from jupyter)
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  Using cached https://files.pythonhosted.org/packages/da/27/9a654d2b6cc1eaa517d1c5a4405166c7f6d72f04f6e7eea41855fe808a46/nbformat-4.4.0-py2.py3-none-any.whl
Collecting ipython>=4.0.0; python_version >= "3.3" (from ipywidgets->jupyter)
  Downloading https://files.pythonhosted.org/packages/14/3b/3fcf422a99a04ee493e6a4fc3014e3c8ff484a7feed238fef68bdc285085/ipython-7.3.0-py3-none-any.whl (768kB)
    100% |████████████████████████████████| 778kB 8.0MB/s
Collecting traitlets>=4.3.1 (from ipywidgets->jupyter)
```
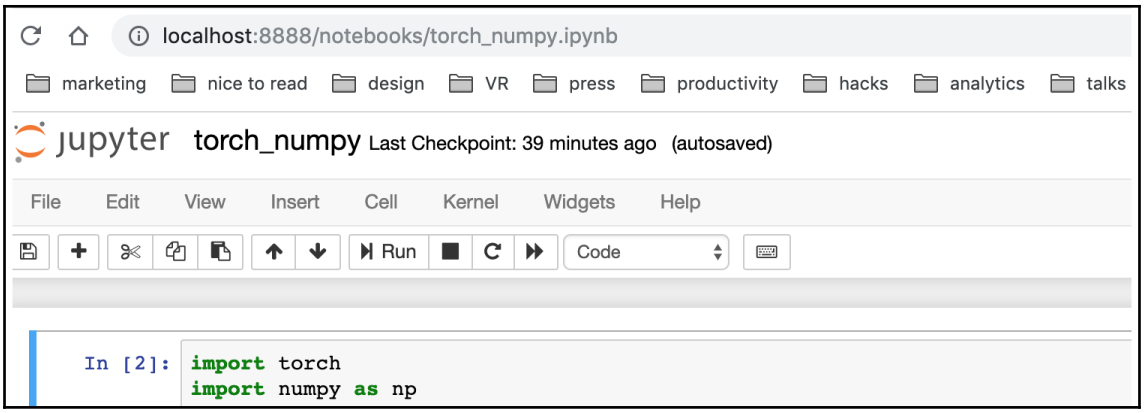
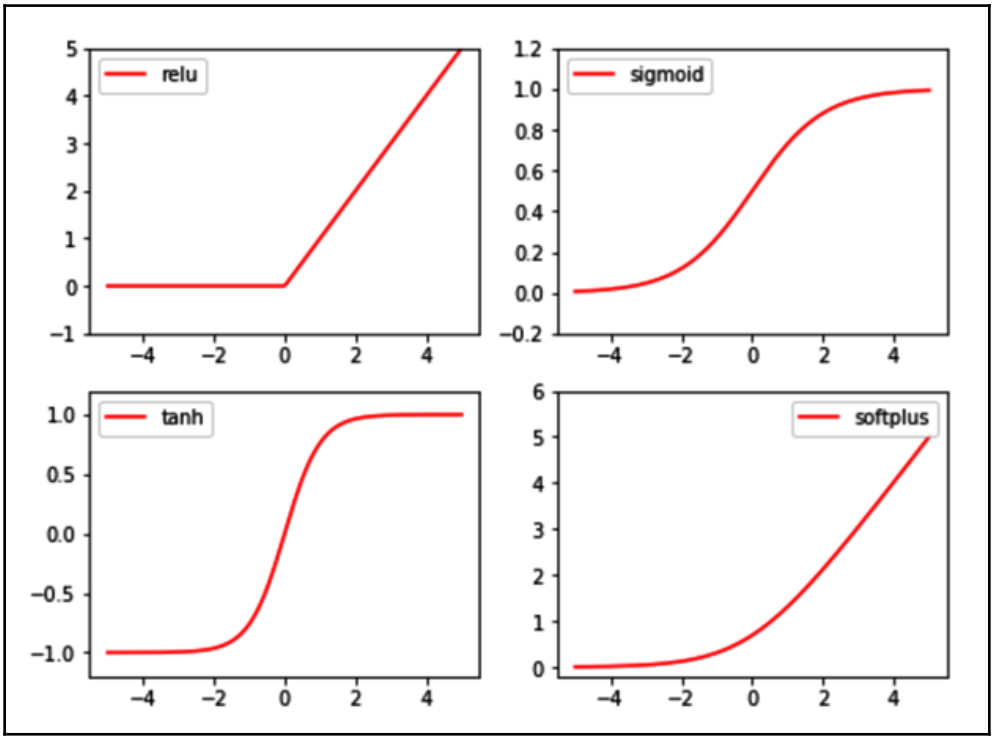
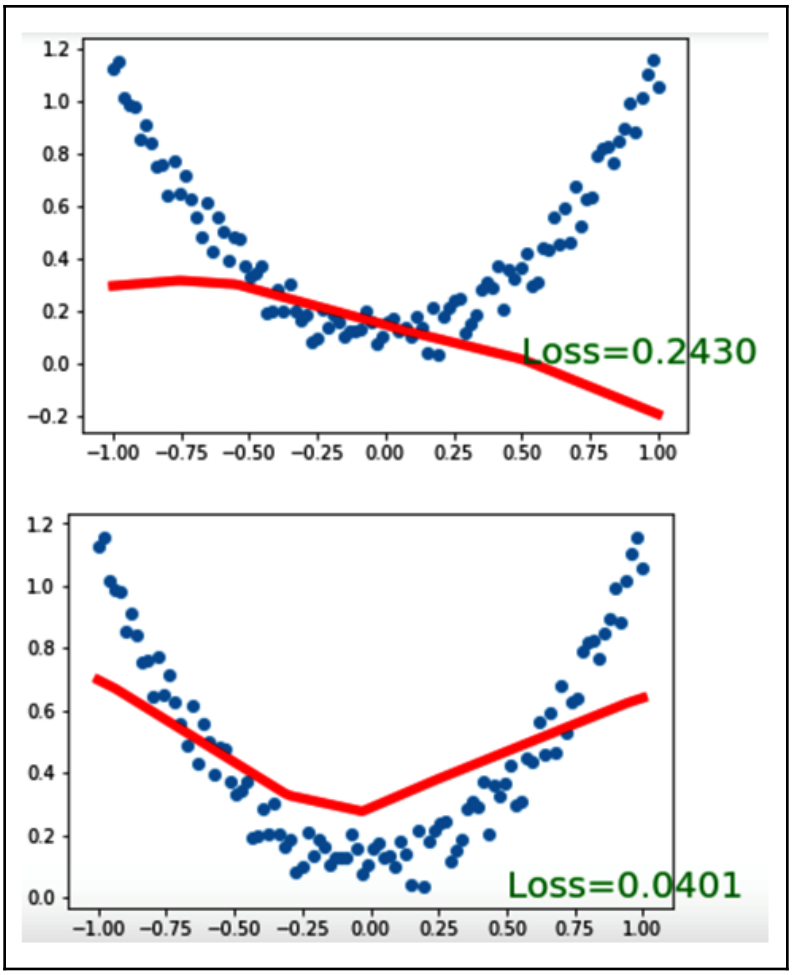
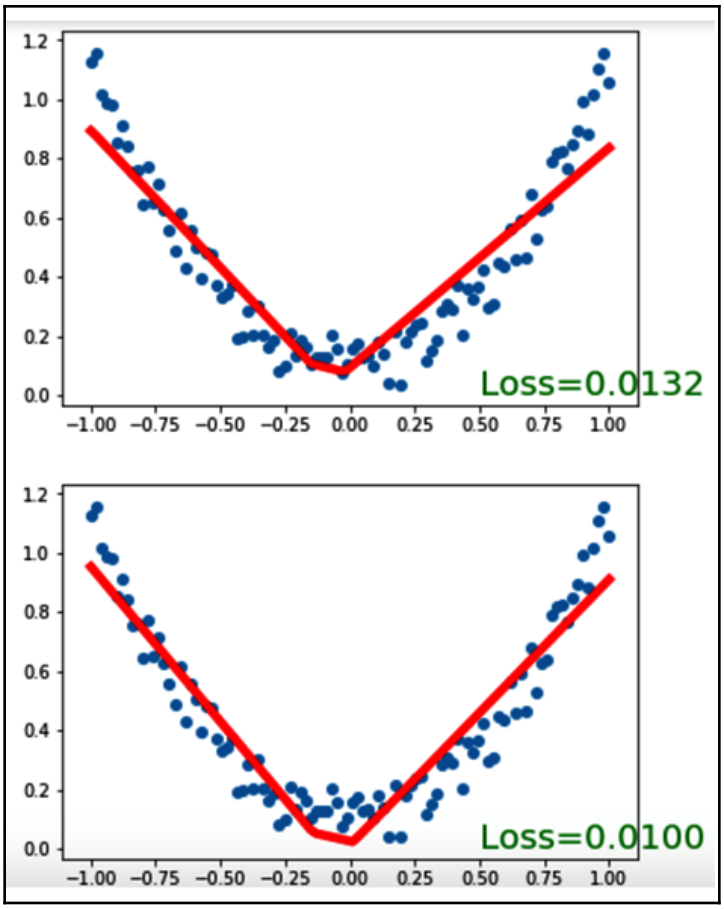
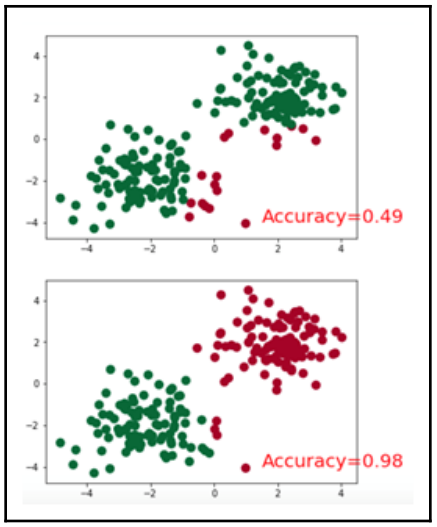
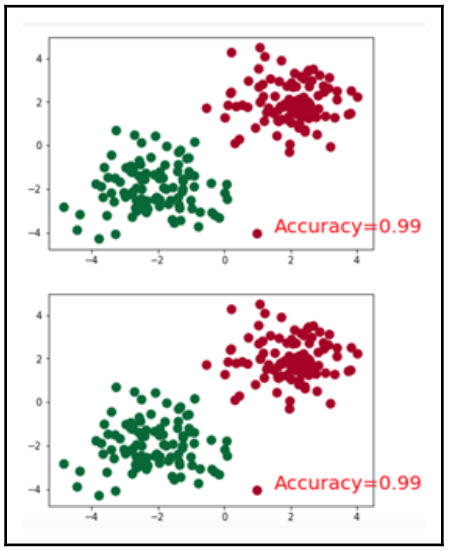


localhost:8888/notebooks/torch_numpy.ipynb
marketing
nice to read
design
VR
press
productivity
hacks
analytics
talks
jupyter
torch_numpy
Last Checkpoint: 39 minutes ago
(autosaved)
File
Edit
View
Insert
Cell
Kernel
Widgets
Help
Run
Code
In [2]:
import torch
import numpy as np

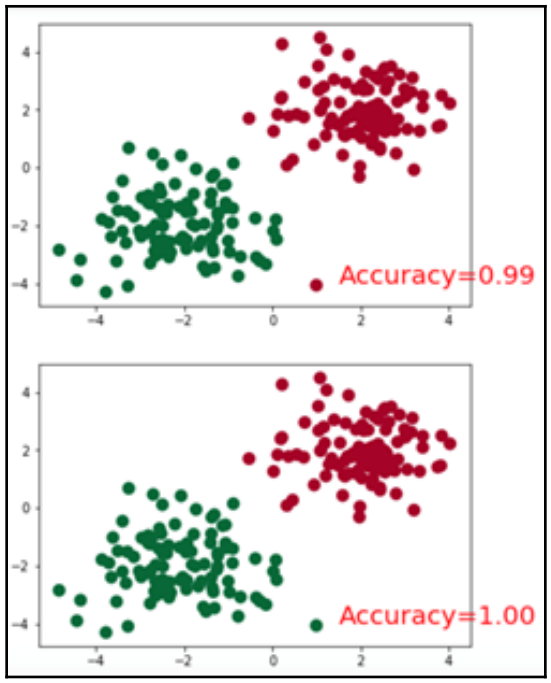

relu
sigmoid
tanh
softplus

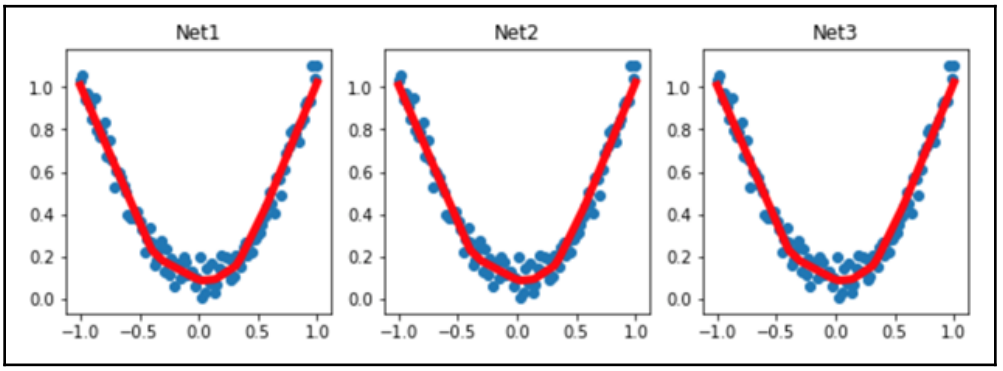

Loss=0.2430
Loss=0.0401

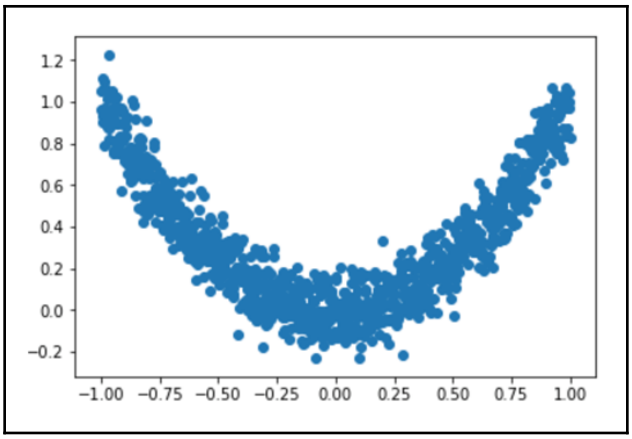

1.2
1.0
0.8
0.6
0.4
0.2
0.0
−1.00 −0.75 −0.50 −0.25 0.00 0.25 0.50 0.75 1.00
Loss=0.0132
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−1.00 −0.75 −0.50 −0.25 0.00 0.25 0.50 0.75 1.00
Loss=0.0100

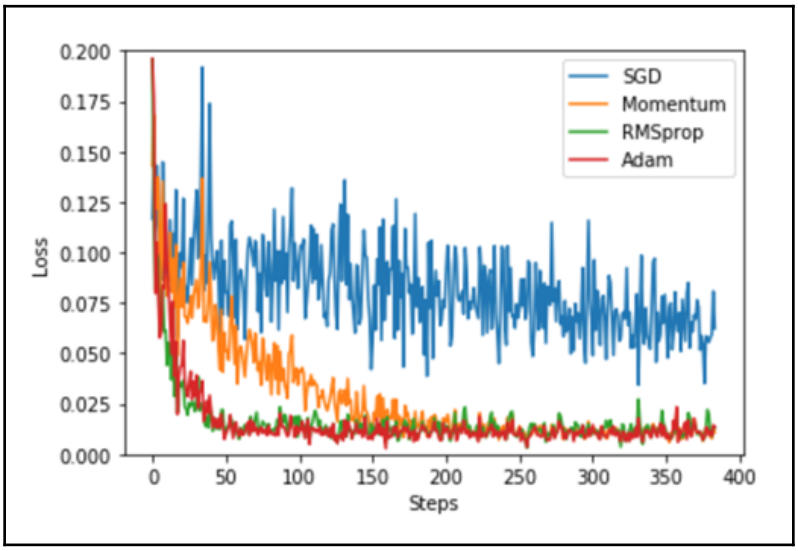

Accuracy=0.49
Accuracy=0.98


Accuracy=0.99
Accuracy=0.99


Accuracy=0.99
Accuracy=1.00


Net1
Net2
Net3


1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00


SGD
Momentum
RMSprop
Adam
Loss
Steps
0.200
0.175
0.150
0.125
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0.075
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0.025
0.000
0
50
100
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200
250
300
350
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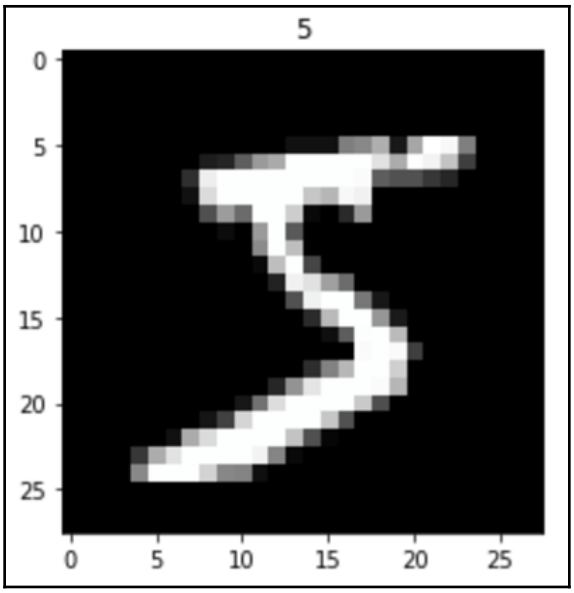
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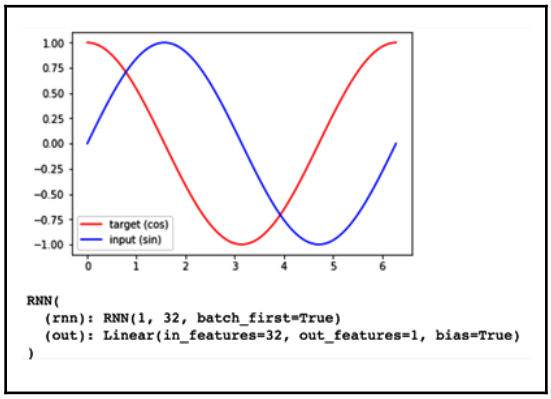
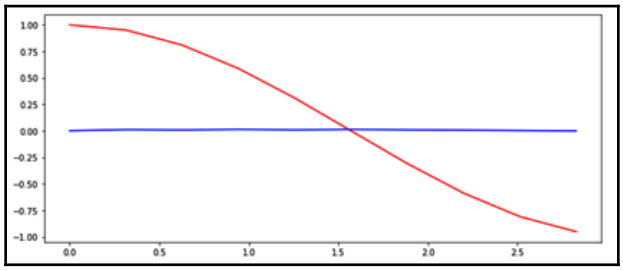
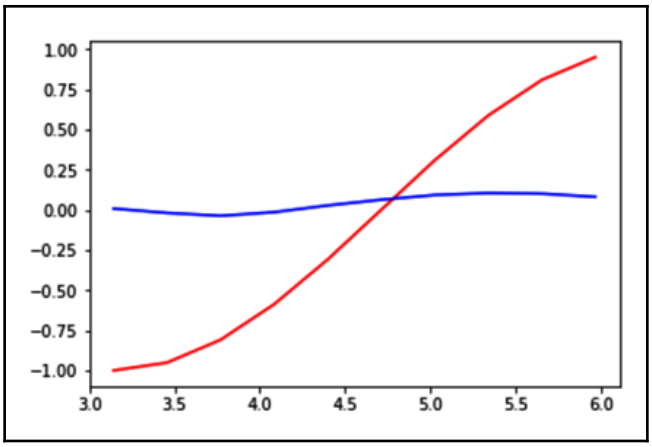
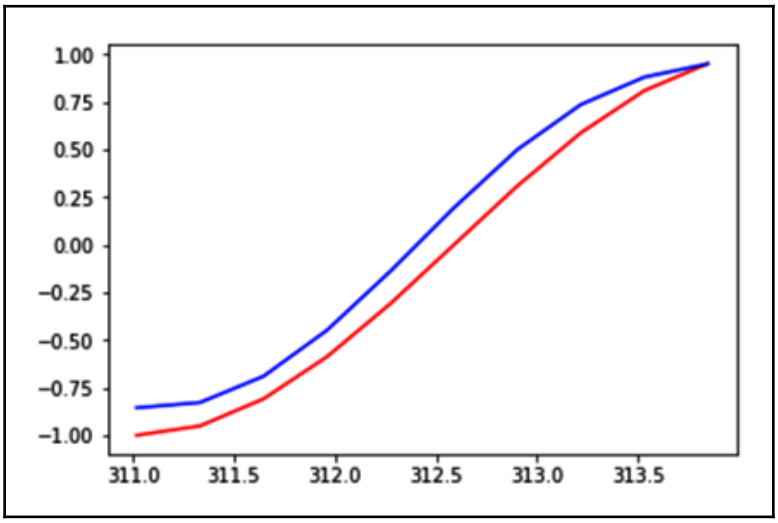
0
5
10
15
20
25


1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
target (cos)
input (sin)
0
1
2
3
4
5
6
RNN(
(rnn): RNN(1, 32, batch_first=True)
(out): Linear(in_features=32, out_features=1, bias=True)
)


1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
0.0
0.5
1.0
1.5
2.0
2.5



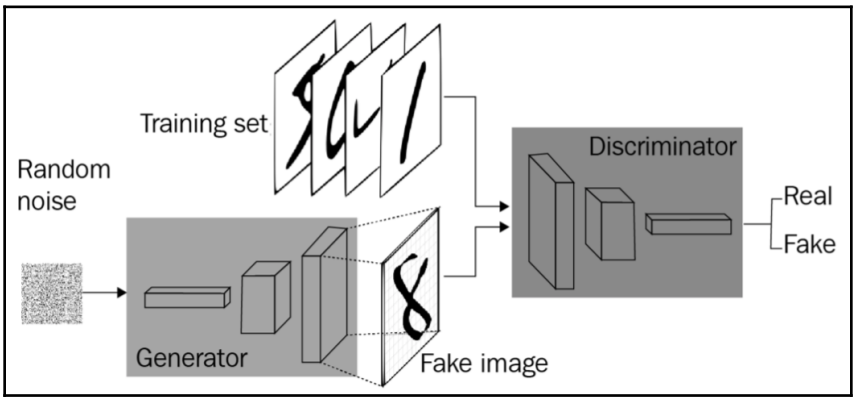


$$f(x) = Ax + b$$

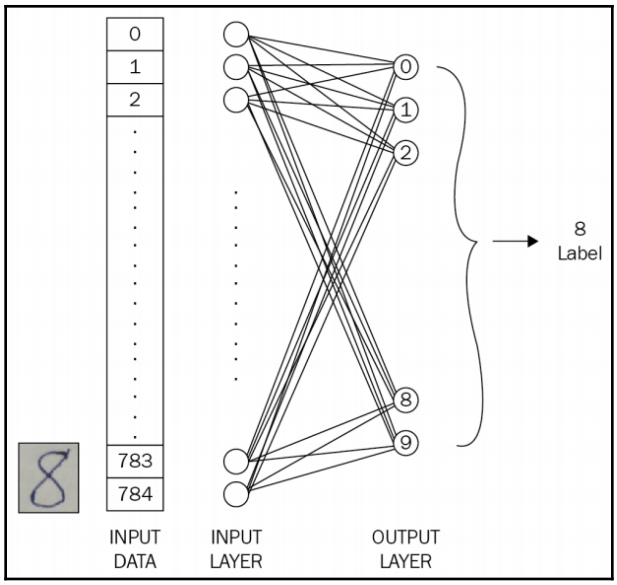
$$f(g(x)) = A(Cx + d) + b = ACx + (Ad + b)$$

$$logSoftmax(Ax + b)$$

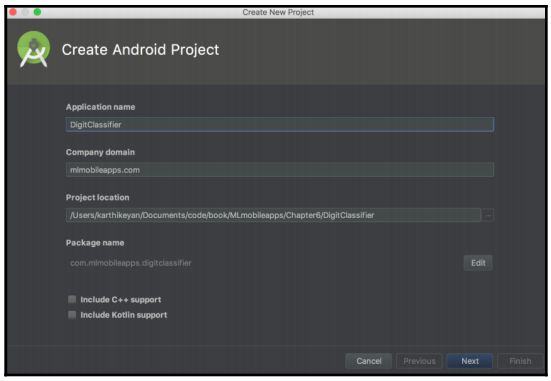
Chapter 08: Implementing GANs to Recognize Handwritten Digits

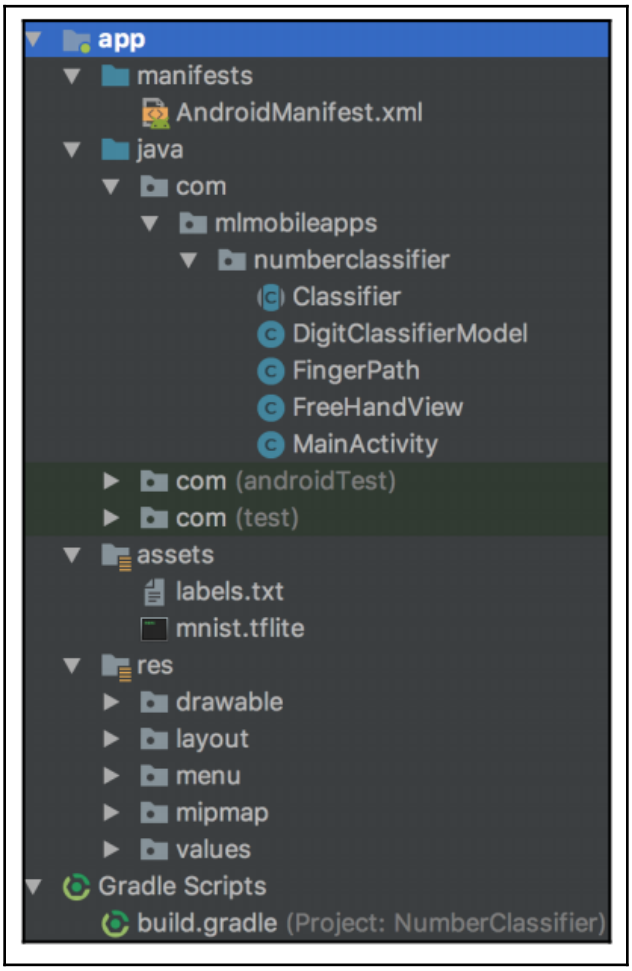


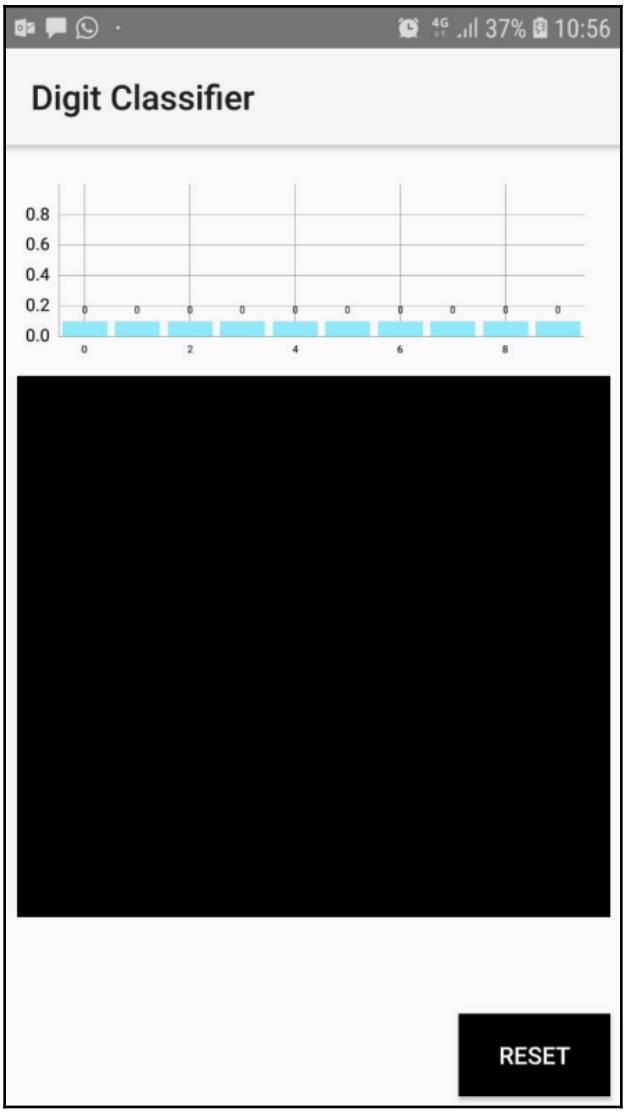
$$p(y|x)$$

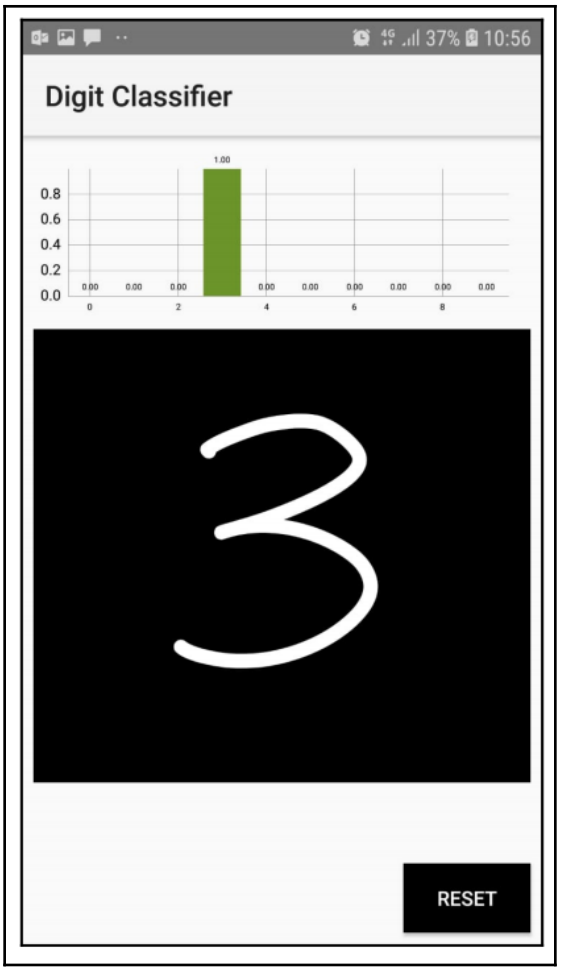


Object	Probability
Apple	0.05
Car	0.80
Sunflower	0.01
Cup	0.14


Create New Project
Create Android Project
Application name
DigitClassifier
Company domain
mlmobileapps.com
Project location
/Users/karthikeyan/Documents/code/book/MLmobileapps/Chapter6/DigitClassifier
Package name
com.mlmobileapps.digitclassifier
Edit
Include C++ support
Include Kotlin support
Cancel
Previous
Next
Finish


app
manifests
AndroidManifest.xml
java
com
mlmobileapps
numberclassifier
Classifier
DigitClassifierModel
FingerPath
FreeHandView
MainActivity
com (androidTest)
com (test)
assets
labels.txt
mnist.tflite
res
drawable
layout
menu
mipmap
values
Gradle Scripts
build.gradle (Project: NumberClassifier)


37% 10:56
Digit Classifier
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
RESET


37% 10:56
Digit Classifier
1.00
0.8
0.6
0.4
0.2
0.0
0.00
0
2
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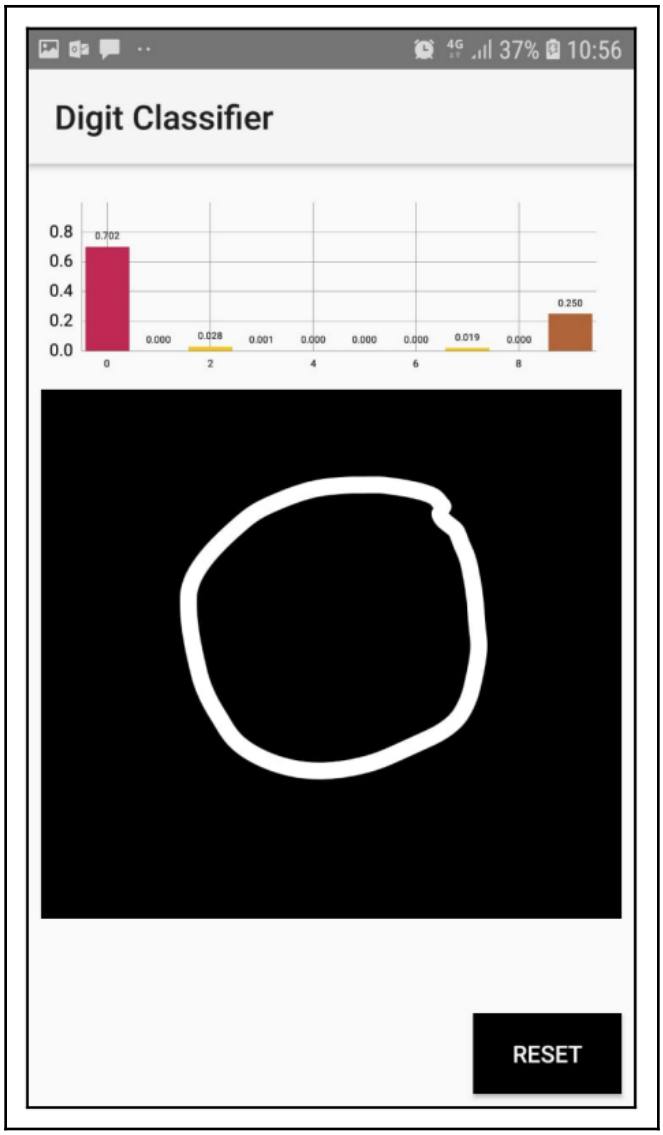
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0.4
0.2
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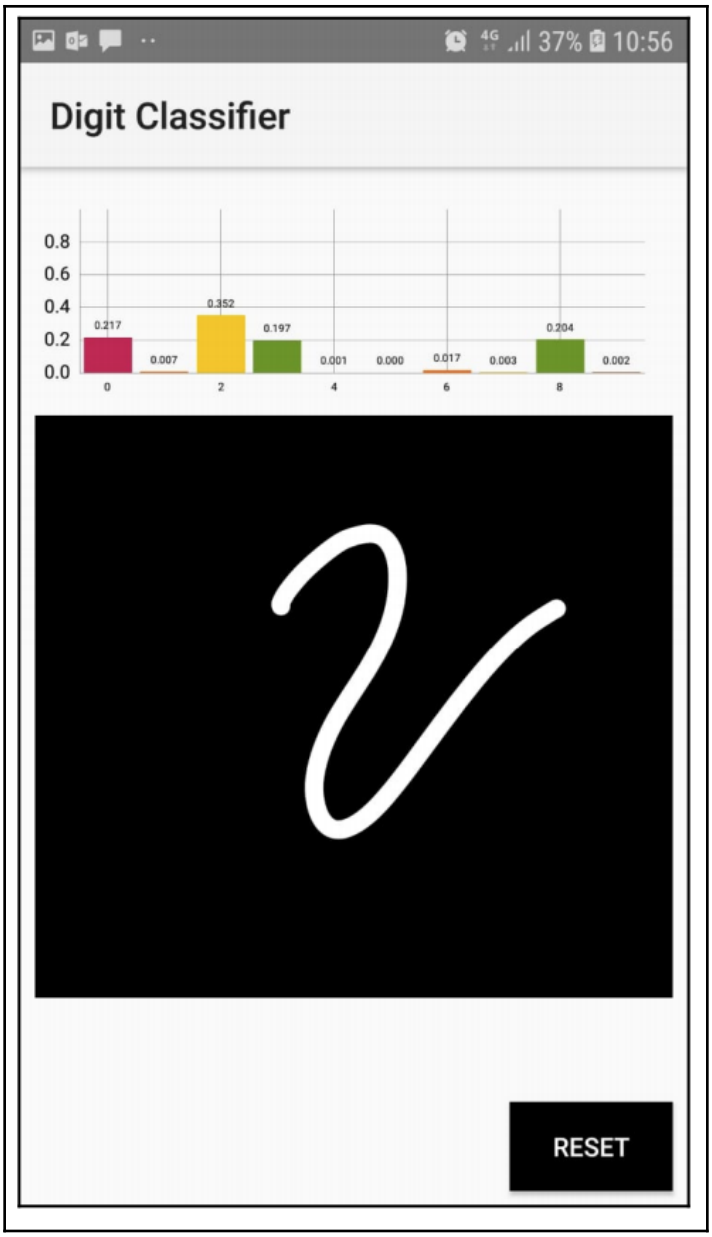
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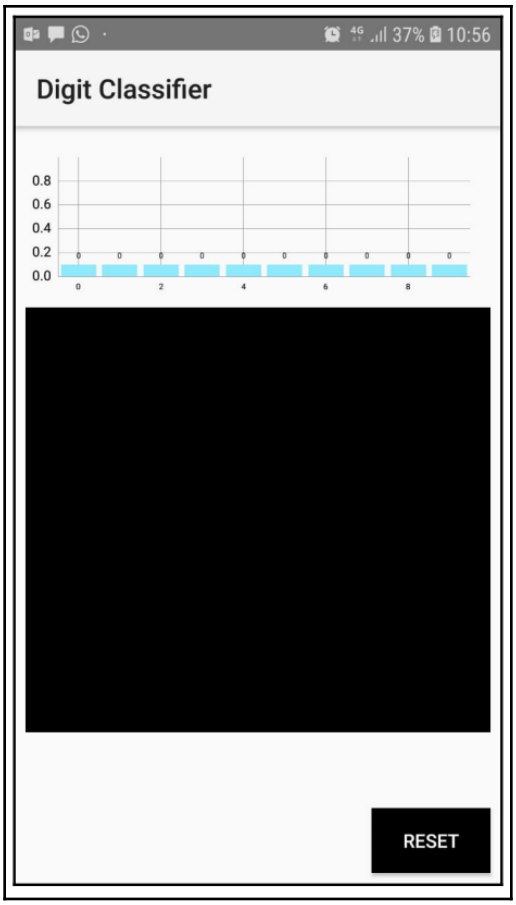
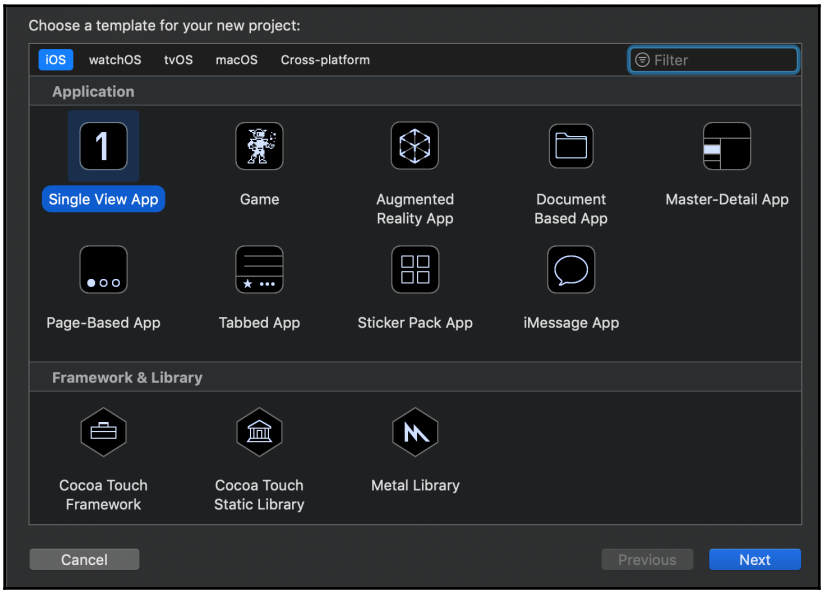
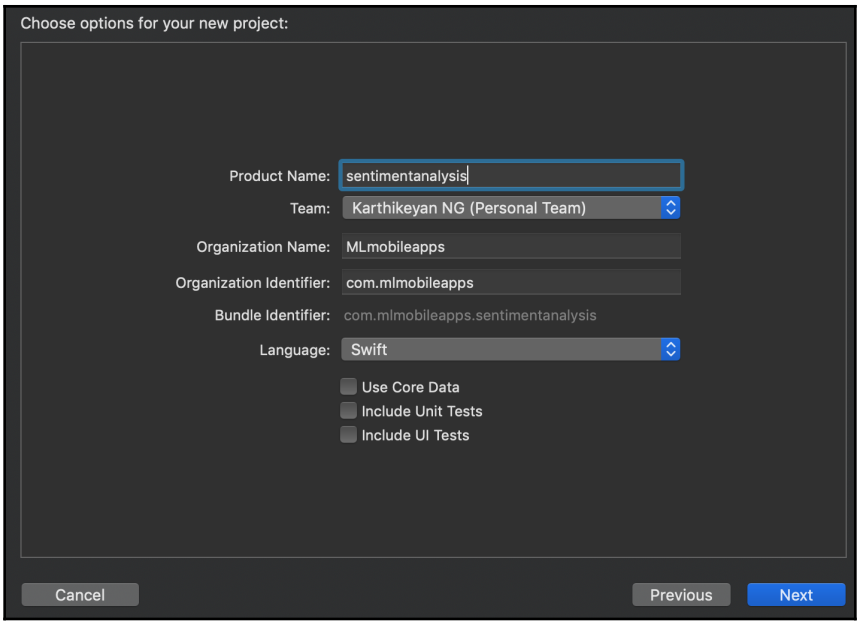
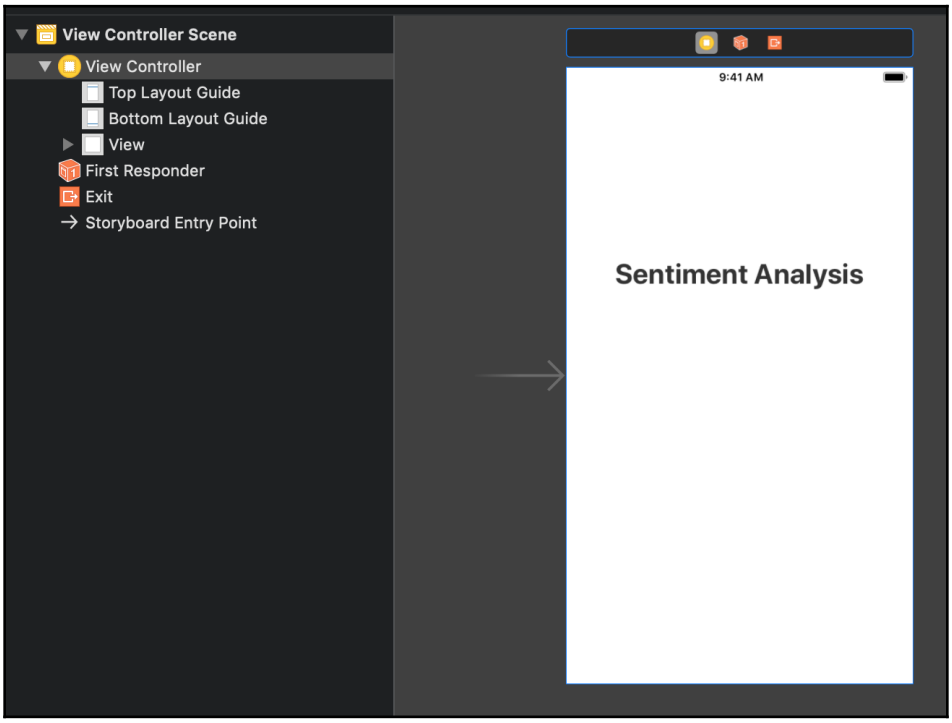

37% 10:56
Digit Classifier
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
RESET

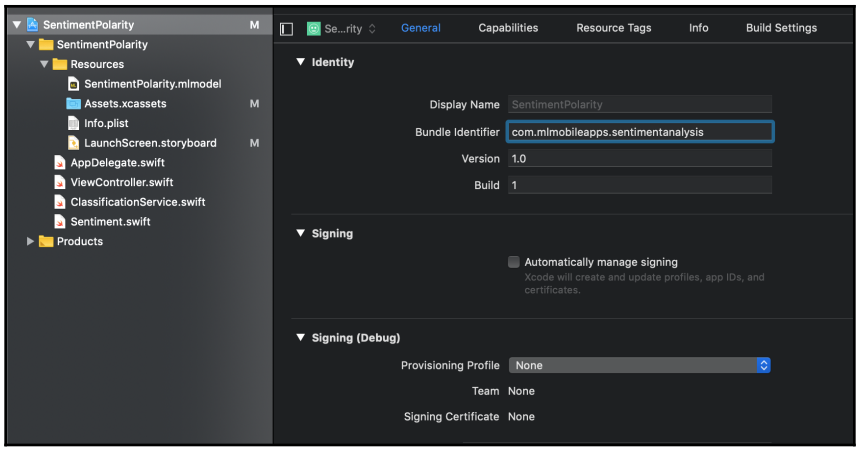
Chapter 09: Sentiment Analysis over Text Using LinearSVC

Neg	Our families have always bought Ford cars and trucks We have always been treated good until now My husband and I love
Neg	I am the victim of a 2001 Ford Focus ZTS It s tragic that it is such a pleasant car to drive How could a nice car to drive be
Neg	I purchased a 1994 Ford Probe SE in April 1999 with 67 000 miles on the odometer for 5 300 It now has about 87 000 mile
Neg	I bought a 1994 Probe GT with only 400 miles on it for 22 000 I took very good care of my car servicing it often Therefore
Pos	Some of you might have read my previous post on the Ford Taurus Some might not have Right now I m at my wit s end I t
Pos	I bought my new 1999 Ford Taurus just two months ago but I m in love My former car a 91 Mercury Sable had given me
Pos	My first car was a Ford One of those old clunky ugly suckers It ran like it looked My second new car also was a Ford OK
Pos	Last spring we got a new car a 1999 ford taurus We are very happy with it Why wouldn t we be We got a great deal from
Pos	Recently I bought a used 99 Ford Taurus The model came with a V6 engine power lumbar seat cruise control a nice pack




Choose options for your new project:
Product Name: sentimentanalysis
Team: Karthikeyan NG (Personal Team)
Organization Name: MLmobileapps
Organization Identifier: com.mlmobileapps
Bundle Identifier: com.mlmobileapps.sentimentanalysis
Language: Swift
Use Core Data
Include Unit Tests
Include UI Tests
Cancel
Previous
Next


View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
First Responder
Exit
Storyboard Entry Point
9:41 AM
Sentiment Analysis


SentimentPolarity
SentimentPolarity
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SentimentPolarity.mlmodel
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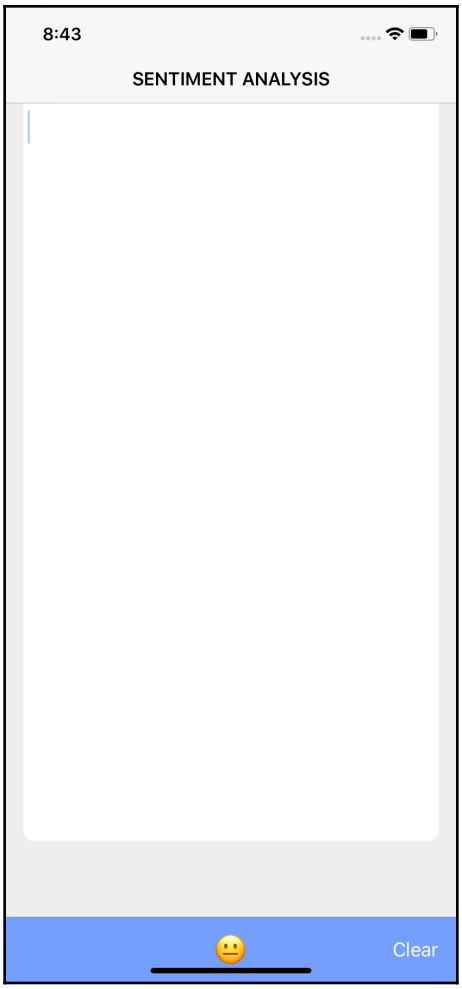
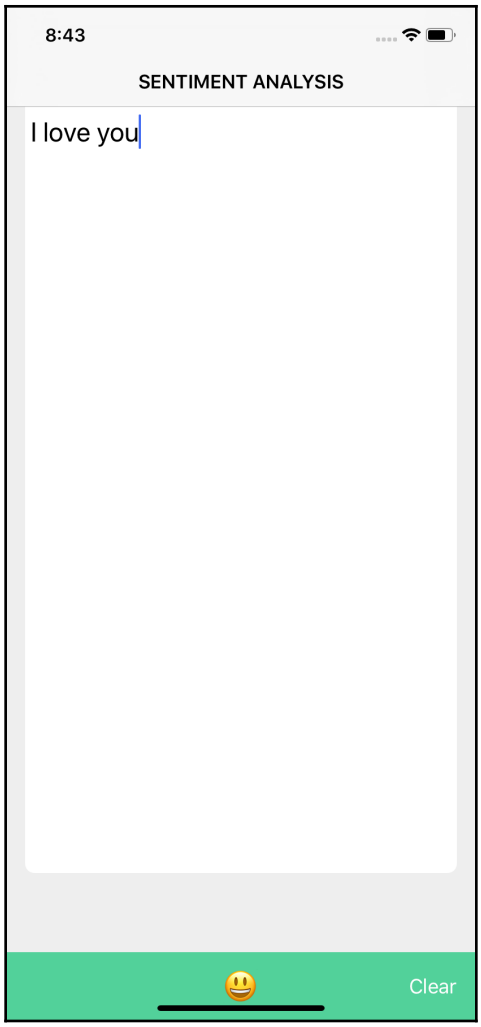
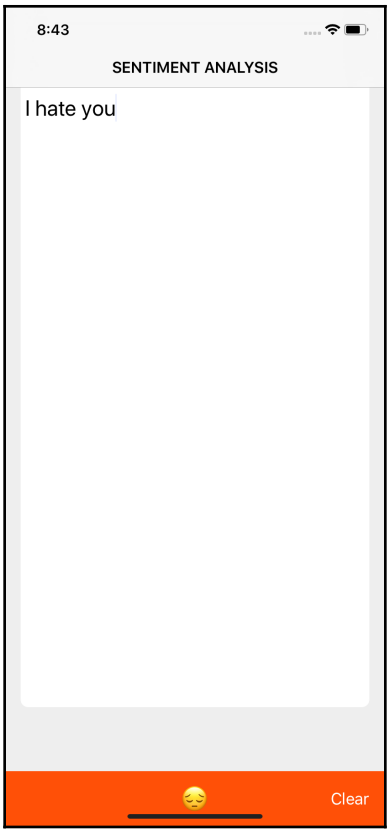
Info.plist
LaunchScreen.storyboard
AppDelegate.swift
ViewController.swift
ClassificationService.swift
Sentiment.swift
Products
General
Capabilities
Resource Tags
Info
Build Settings
Identity
Display Name SentimentPolarity
Bundle Identifier com.mlmobileapps.sentimentanalysis
Version 1.0
Build 1
Signing
Automatically manage signing
Xcode will create and update profiles, app IDs, and certificates.
Signing (Debug)
Provisioning Profile None
Team None
Signing Certificate None


8:43
SENTIMENT ANALYSIS
Clear


8:43
SENTIMENT ANALYSIS
I love you
Clear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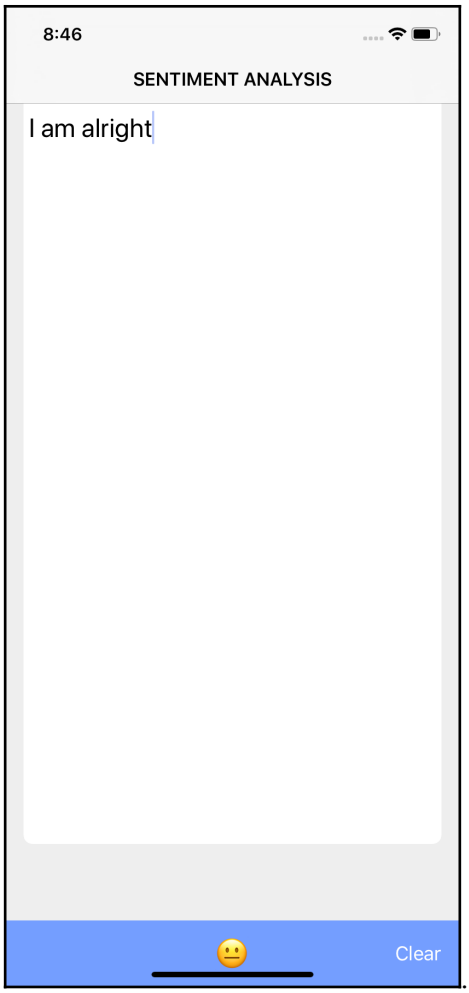
SENTIMENT ANALYSIS
I hate you
Clear


8:46
SENTIMENT ANALYSIS
I am alright
Clear

Index