

The Hello World of Deep Learning with Neural Networks

```
In [1]: import tensorflow as tf
import numpy as np
from tensorflow import keras
```

Define and Compile the Neural Network

In the next few lines i will create the simplest possible neural network. It has 1 layer composed by 1 neuron.

```
In [2]: model = tf.keras.Sequential([keras.layers.Dense(units=1, input_shape=[1])])
```

```
In [6]: model.compile(optimizer='sgd', loss='mean_squared_error')
```

Now i will provide the data to train the model

```
In [4]: xs = np.array([-1.0, 0.0, 1.0, 2.0, 3.0, 4.0], dtype=float)
ys = np.array([-3.0, -1.0, 1.0, 3.0, 5.0, 7.0], dtype=float)
```

Now we fit the model to our data

```
In [7]: model.fit(xs, ys, epochs=500)
```

```
Epoch 1/500
1/1 [=====] - 0s 105ms/step - loss: 7.2197
Epoch 2/500
1/1 [=====] - 0s 12ms/step - loss: 5.8721
Epoch 3/500
1/1 [=====] - 0s 997us/step - loss: 4.8079
Epoch 4/500
1/1 [=====] - 0s 998us/step - loss: 3.9668
Epoch 5/500
1/1 [=====] - 0s 996us/step - loss: 3.3013
Epoch 6/500
1/1 [=====] - 0s 997us/step - loss: 2.7740
Epoch 7/500
1/1 [=====] - 0s 0s/step - loss: 2.3555
Epoch 8/500
1/1 [=====] - 0s 998us/step - loss: 2.0227
Epoch 9/500
1/1 [=====] - 0s 997us/step - loss: 1.7574
Epoch 10/500
1/1 [=====] - 0s 997us/step - loss: 1.5452
Epoch 11/500
1/1 [=====] - 0s 0s/step - loss: 1.3750
Epoch 12/500
1/1 [=====] - 0s 997us/step - loss: 1.2378
Epoch 13/500
1/1 [=====] - 0s 997us/step - loss: 1.1266
Epoch 14/500
1/1 [=====] - 0s 0s/step - loss: 1.0360
```

Epoch 15/500
1/1 [=====] - 0s 997us/step - loss: 0.9617
Epoch 16/500
1/1 [=====] - 0s 997us/step - loss: 0.9002
Epoch 17/500
1/1 [=====] - 0s 997us/step - loss: 0.8488
Epoch 18/500
1/1 [=====] - 0s 997us/step - loss: 0.8055
Epoch 19/500
1/1 [=====] - 0s 997us/step - loss: 0.7687
Epoch 20/500
1/1 [=====] - 0s 997us/step - loss: 0.7369
Epoch 21/500
1/1 [=====] - 0s 997us/step - loss: 0.7092
Epoch 22/500
1/1 [=====] - 0s 997us/step - loss: 0.6847
Epoch 23/500
1/1 [=====] - 0s 998us/step - loss: 0.6628
Epoch 24/500
1/1 [=====] - 0s 0s/step - loss: 0.6431
Epoch 25/500
1/1 [=====] - 0s 997us/step - loss: 0.6251
Epoch 26/500
1/1 [=====] - 0s 997us/step - loss: 0.6084
Epoch 27/500
1/1 [=====] - 0s 998us/step - loss: 0.5930
Epoch 28/500
1/1 [=====] - 0s 997us/step - loss: 0.5784
Epoch 29/500
1/1 [=====] - 0s 997us/step - loss: 0.5647
Epoch 30/500
1/1 [=====] - 0s 997us/step - loss: 0.5516
Epoch 31/500
1/1 [=====] - 0s 997us/step - loss: 0.5392
Epoch 32/500
1/1 [=====] - 0s 0s/step - loss: 0.5272
Epoch 33/500
1/1 [=====] - 0s 997us/step - loss: 0.5157
Epoch 34/500
1/1 [=====] - 0s 997us/step - loss: 0.5045
Epoch 35/500
1/1 [=====] - 0s 997us/step - loss: 0.4937
Epoch 36/500
1/1 [=====] - 0s 997us/step - loss: 0.4832
Epoch 37/500
1/1 [=====] - 0s 0s/step - loss: 0.4730
Epoch 38/500
1/1 [=====] - 0s 997us/step - loss: 0.4631
Epoch 39/500
1/1 [=====] - 0s 998us/step - loss: 0.4534
Epoch 40/500
1/1 [=====] - 0s 997us/step - loss: 0.4440
Epoch 41/500
1/1 [=====] - 0s 997us/step - loss: 0.4347
Epoch 42/500
1/1 [=====] - 0s 998us/step - loss: 0.4257
Epoch 43/500
1/1 [=====] - 0s 998us/step - loss: 0.4169
Epoch 44/500
1/1 [=====] - 0s 997us/step - loss: 0.4083
Epoch 45/500
1/1 [=====] - 0s 0s/step - loss: 0.3999
Epoch 46/500
1/1 [=====] - 0s 996us/step - loss: 0.3916
Epoch 47/500

1/1 [=====] - 0s 997us/step - loss: 0.3836
Epoch 48/500
1/1 [=====] - 0s 998us/step - loss: 0.3757
Epoch 49/500
1/1 [=====] - 0s 0s/step - loss: 0.3679
Epoch 50/500
1/1 [=====] - 0s 998us/step - loss: 0.3604
Epoch 51/500
1/1 [=====] - 0s 997us/step - loss: 0.3530
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1/1 [=====] - 0s 998us/step - loss: 0.3316
Epoch 55/500
1/1 [=====] - 0s 997us/step - loss: 0.3248
Epoch 56/500
1/1 [=====] - 0s 998us/step - loss: 0.3181
Epoch 57/500
1/1 [=====] - 0s 997us/step - loss: 0.3116
Epoch 58/500
1/1 [=====] - 0s 997us/step - loss: 0.3052
Epoch 59/500
1/1 [=====] - 0s 997us/step - loss: 0.2989
Epoch 60/500
1/1 [=====] - 0s 0s/step - loss: 0.2928
Epoch 61/500
1/1 [=====] - 0s 1ms/step - loss: 0.2868
Epoch 62/500
1/1 [=====] - 0s 971us/step - loss: 0.2809
Epoch 63/500
1/1 [=====] - 0s 997us/step - loss: 0.2751
Epoch 64/500
1/1 [=====] - 0s 998us/step - loss: 0.2695
Epoch 65/500
1/1 [=====] - 0s 997us/step - loss: 0.2639
Epoch 66/500
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1/1 [=====] - 0s 997us/step - loss: 0.2532
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1/1 [=====] - 0s 0s/step - loss: 0.2480
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Epoch 74/500
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Epoch 75/500
1/1 [=====] - 0s 997us/step - loss: 0.2145
Epoch 76/500
1/1 [=====] - 0s 998us/step - loss: 0.2101
Epoch 77/500
1/1 [=====] - 0s 997us/step - loss: 0.2057
Epoch 78/500
1/1 [=====] - 0s 997us/step - loss: 0.2015
Epoch 79/500
1/1 [=====] - 0s 998us/step - loss: 0.1974

Epoch 80/500
1/1 [=====] - 0s 997us/step - loss: 0.1933
Epoch 81/500
1/1 [=====] - 0s 0s/step - loss: 0.1894
Epoch 82/500
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Epoch 86/500
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Epoch 87/500
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Epoch 112/500

1/1 [=====] - 0s 998us/step - loss: 0.0995
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Epoch 145/500
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Epoch 166/500
1/1 [=====] - 0s 1ms/step - loss: 0.0324
Epoch 167/500
1/1 [=====] - 0s 997us/step - loss: 0.0318
Epoch 168/500
1/1 [=====] - 0s 997us/step - loss: 0.0311
Epoch 169/500
1/1 [=====] - 0s 0s/step - loss: 0.0305
Epoch 170/500
1/1 [=====] - 0s 0s/step - loss: 0.0299
Epoch 171/500
1/1 [=====] - 0s 998us/step - loss: 0.0292
Epoch 172/500
1/1 [=====] - 0s 997us/step - loss: 0.0286
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Epoch 176/500
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Epoch 177/500

1/1 [=====] - 0s 997us/step - loss: 0.0258
Epoch 178/500
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Epoch 179/500
1/1 [=====] - 0s 997us/step - loss: 0.0248
Epoch 180/500
1/1 [=====] - 0s 0s/step - loss: 0.0243
Epoch 181/500
1/1 [=====] - 0s 11ms/step - loss: 0.0238
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1/1 [=====] - 0s 997us/step - loss: 0.0233
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Epoch 188/500
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Epoch 189/500
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Epoch 190/500
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Epoch 191/500
1/1 [=====] - 0s 997us/step - loss: 0.0193
Epoch 192/500
1/1 [=====] - 0s 2ms/step - loss: 0.0189
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1/1 [=====] - 0s 997us/step - loss: 0.0170
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Epoch 220/500
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Epoch 221/500
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Epoch 222/500
1/1 [=====] - 0s 998us/step - loss: 0.0101
Epoch 223/500
1/1 [=====] - 0s 997us/step - loss: 0.0099
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1/1 [=====] - 0s 997us/step - loss: 0.0097
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1/1 [=====] - 0s 998us/step - loss: 0.0090
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Epoch 234/500
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Epoch 245/500
1/1 [=====] - 0s 0s/step - loss: 0.0063
Epoch 246/500
1/1 [=====] - 0s 997us/step - loss: 0.0062
Epoch 247/500
1/1 [=====] - 0s 997us/step - loss: 0.0060
Epoch 248/500
1/1 [=====] - 0s 0s/step - loss: 0.0059
Epoch 249/500
1/1 [=====] - 0s 997us/step - loss: 0.0058
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Epoch 251/500
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Epoch 252/500
1/1 [=====] - 0s 997us/step - loss: 0.0054
Epoch 253/500
1/1 [=====] - 0s 0s/step - loss: 0.0053
Epoch 254/500
1/1 [=====] - 0s 997us/step - loss: 0.0052
Epoch 255/500
1/1 [=====] - 0s 0s/step - loss: 0.0051
Epoch 256/500
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Epoch 257/500
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Epoch 258/500
1/1 [=====] - 0s 997us/step - loss: 0.0048
Epoch 259/500
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Epoch 260/500
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Epoch 261/500
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Epoch 262/500
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1/1 [=====] - 0s 997us/step - loss: 0.0042
Epoch 266/500
1/1 [=====] - 0s 998us/step - loss: 0.0041
Epoch 267/500
1/1 [=====] - 0s 998us/step - loss: 0.0040
Epoch 268/500
1/1 [=====] - 0s 997us/step - loss: 0.0039
Epoch 269/500
1/1 [=====] - 0s 998us/step - loss: 0.0038
Epoch 270/500
1/1 [=====] - 0s 997us/step - loss: 0.0037
Epoch 271/500
1/1 [=====] - 0s 997us/step - loss: 0.0037
Epoch 272/500
1/1 [=====] - 0s 997us/step - loss: 0.0036
Epoch 273/500
1/1 [=====] - 0s 997us/step - loss: 0.0035
Epoch 274/500
1/1 [=====] - 0s 0s/step - loss: 0.0034

Epoch 275/500
1/1 [=====] - 0s 998us/step - loss: 0.0034
Epoch 276/500
1/1 [=====] - 0s 998us/step - loss: 0.0033
Epoch 277/500
1/1 [=====] - 0s 997us/step - loss: 0.0032
Epoch 278/500
1/1 [=====] - 0s 997us/step - loss: 0.0032
Epoch 279/500
1/1 [=====] - 0s 997us/step - loss: 0.0031
Epoch 280/500
1/1 [=====] - 0s 998us/step - loss: 0.0030
Epoch 281/500
1/1 [=====] - 0s 997us/step - loss: 0.0030
Epoch 282/500
1/1 [=====] - 0s 997us/step - loss: 0.0029
Epoch 283/500
1/1 [=====] - 0s 998us/step - loss: 0.0029
Epoch 284/500
1/1 [=====] - 0s 998us/step - loss: 0.0028
Epoch 285/500
1/1 [=====] - 0s 998us/step - loss: 0.0027
Epoch 286/500
1/1 [=====] - 0s 0s/step - loss: 0.0027
Epoch 287/500
1/1 [=====] - 0s 998us/step - loss: 0.0026
Epoch 288/500
1/1 [=====] - 0s 998us/step - loss: 0.0026
Epoch 289/500
1/1 [=====] - 0s 997us/step - loss: 0.0025
Epoch 290/500
1/1 [=====] - 0s 997us/step - loss: 0.0025
Epoch 291/500
1/1 [=====] - 0s 0s/step - loss: 0.0024
Epoch 292/500
1/1 [=====] - 0s 997us/step - loss: 0.0024
Epoch 293/500
1/1 [=====] - 0s 997us/step - loss: 0.0023
Epoch 294/500
1/1 [=====] - 0s 997us/step - loss: 0.0023
Epoch 295/500
1/1 [=====] - 0s 0s/step - loss: 0.0022
Epoch 296/500
1/1 [=====] - 0s 997us/step - loss: 0.0022
Epoch 297/500
1/1 [=====] - 0s 997us/step - loss: 0.0021
Epoch 298/500
1/1 [=====] - 0s 998us/step - loss: 0.0021
Epoch 299/500
1/1 [=====] - 0s 998us/step - loss: 0.0021
Epoch 300/500
1/1 [=====] - 0s 998us/step - loss: 0.0020
Epoch 301/500
1/1 [=====] - 0s 997us/step - loss: 0.0020
Epoch 302/500
1/1 [=====] - 0s 998us/step - loss: 0.0019
Epoch 303/500
1/1 [=====] - 0s 973us/step - loss: 0.0019
Epoch 304/500
1/1 [=====] - 0s 997us/step - loss: 0.0019
Epoch 305/500
1/1 [=====] - 0s 998us/step - loss: 0.0018
Epoch 306/500
1/1 [=====] - 0s 997us/step - loss: 0.0018
Epoch 307/500

1/1 [=====] - 0s 0s/step - loss: 0.0017
Epoch 308/500
1/1 [=====] - 0s 997us/step - loss: 0.0017
Epoch 309/500
1/1 [=====] - 0s 997us/step - loss: 0.0017
Epoch 310/500
1/1 [=====] - 0s 998us/step - loss: 0.0016
Epoch 311/500
1/1 [=====] - 0s 0s/step - loss: 0.0016
Epoch 312/500
1/1 [=====] - 0s 997us/step - loss: 0.0016
Epoch 313/500
1/1 [=====] - 0s 998us/step - loss: 0.0015
Epoch 314/500
1/1 [=====] - 0s 997us/step - loss: 0.0015
Epoch 315/500
1/1 [=====] - 0s 0s/step - loss: 0.0015
Epoch 316/500
1/1 [=====] - 0s 997us/step - loss: 0.0014
Epoch 317/500
1/1 [=====] - 0s 997us/step - loss: 0.0014
Epoch 318/500
1/1 [=====] - 0s 997us/step - loss: 0.0014
Epoch 319/500
1/1 [=====] - 0s 0s/step - loss: 0.0014
Epoch 320/500
1/1 [=====] - 0s 997us/step - loss: 0.0013
Epoch 321/500
1/1 [=====] - 0s 997us/step - loss: 0.0013
Epoch 322/500
1/1 [=====] - 0s 997us/step - loss: 0.0013
Epoch 323/500
1/1 [=====] - 0s 0s/step - loss: 0.0012
Epoch 324/500
1/1 [=====] - 0s 0s/step - loss: 0.0012
Epoch 325/500
1/1 [=====] - 0s 997us/step - loss: 0.0012
Epoch 326/500
1/1 [=====] - 0s 997us/step - loss: 0.0012
Epoch 327/500
1/1 [=====] - 0s 0s/step - loss: 0.0011
Epoch 328/500
1/1 [=====] - 0s 997us/step - loss: 0.0011
Epoch 329/500
1/1 [=====] - 0s 997us/step - loss: 0.0011
Epoch 330/500
1/1 [=====] - 0s 0s/step - loss: 0.0011
Epoch 331/500
1/1 [=====] - 0s 0s/step - loss: 0.0011
Epoch 332/500
1/1 [=====] - 0s 997us/step - loss: 0.0010
Epoch 333/500
1/1 [=====] - 0s 998us/step - loss: 0.0010
Epoch 334/500
1/1 [=====] - 0s 0s/step - loss: 9.9274e-04
Epoch 335/500
1/1 [=====] - 0s 998us/step - loss: 9.7235e-04
Epoch 336/500
1/1 [=====] - 0s 997us/step - loss: 9.5237e-04
Epoch 337/500
1/1 [=====] - 0s 0s/step - loss: 9.3281e-04
Epoch 338/500
1/1 [=====] - 0s 998us/step - loss: 9.1365e-04
Epoch 339/500
1/1 [=====] - 0s 997us/step - loss: 8.9489e-04

Epoch 340/500
1/1 [=====] - 0s 997us/step - loss: 8.7650e-04
Epoch 341/500
1/1 [=====] - 0s 0s/step - loss: 8.5850e-04
Epoch 342/500
1/1 [=====] - 0s 997us/step - loss: 8.4087e-04
Epoch 343/500
1/1 [=====] - 0s 998us/step - loss: 8.2359e-04
Epoch 344/500
1/1 [=====] - 0s 0s/step - loss: 8.0668e-04
Epoch 345/500
1/1 [=====] - 0s 997us/step - loss: 7.9011e-04
Epoch 346/500
1/1 [=====] - 0s 997us/step - loss: 7.7388e-04
Epoch 347/500
1/1 [=====] - 0s 0s/step - loss: 7.5798e-04
Epoch 348/500
1/1 [=====] - 0s 0s/step - loss: 7.4241e-04
Epoch 349/500
1/1 [=====] - 0s 998us/step - loss: 7.2716e-04
Epoch 350/500
1/1 [=====] - 0s 998us/step - loss: 7.1223e-04
Epoch 351/500
1/1 [=====] - 0s 0s/step - loss: 6.9760e-04
Epoch 352/500
1/1 [=====] - 0s 998us/step - loss: 6.8327e-04
Epoch 353/500
1/1 [=====] - 0s 998us/step - loss: 6.6923e-04
Epoch 354/500
1/1 [=====] - 0s 0s/step - loss: 6.5549e-04
Epoch 355/500
1/1 [=====] - 0s 998us/step - loss: 6.4203e-04
Epoch 356/500
1/1 [=====] - 0s 997us/step - loss: 6.2884e-04
Epoch 357/500
1/1 [=====] - 0s 0s/step - loss: 6.1593e-04
Epoch 358/500
1/1 [=====] - 0s 997us/step - loss: 6.0327e-04
Epoch 359/500
1/1 [=====] - 0s 997us/step - loss: 5.9088e-04
Epoch 360/500
1/1 [=====] - 0s 0s/step - loss: 5.7874e-04
Epoch 361/500
1/1 [=====] - 0s 997us/step - loss: 5.6686e-04
Epoch 362/500
1/1 [=====] - 0s 998us/step - loss: 5.5521e-04
Epoch 363/500
1/1 [=====] - 0s 998us/step - loss: 5.4381e-04
Epoch 364/500
1/1 [=====] - 0s 0s/step - loss: 5.3264e-04
Epoch 365/500
1/1 [=====] - 0s 998us/step - loss: 5.2170e-04
Epoch 366/500
1/1 [=====] - 0s 997us/step - loss: 5.1098e-04
Epoch 367/500
1/1 [=====] - 0s 0s/step - loss: 5.0049e-04
Epoch 368/500
1/1 [=====] - 0s 997us/step - loss: 4.9021e-04
Epoch 369/500
1/1 [=====] - 0s 997us/step - loss: 4.8014e-04
Epoch 370/500
1/1 [=====] - 0s 998us/step - loss: 4.7028e-04
Epoch 371/500
1/1 [=====] - 0s 997us/step - loss: 4.6062e-04
Epoch 372/500

1/1 [=====] - 0s 997us/step - loss: 4.5116e-04
Epoch 373/500
1/1 [=====] - 0s 0s/step - loss: 4.4189e-04
Epoch 374/500
1/1 [=====] - 0s 998us/step - loss: 4.3281e-04
Epoch 375/500
1/1 [=====] - 0s 997us/step - loss: 4.2392e-04
Epoch 376/500
1/1 [=====] - 0s 0s/step - loss: 4.1521e-04
Epoch 377/500
1/1 [=====] - 0s 998us/step - loss: 4.0669e-04
Epoch 378/500
1/1 [=====] - 0s 996us/step - loss: 3.9833e-04
Epoch 379/500
1/1 [=====] - 0s 998us/step - loss: 3.9015e-04
Epoch 380/500
1/1 [=====] - 0s 997us/step - loss: 3.8214e-04
Epoch 381/500
1/1 [=====] - 0s 997us/step - loss: 3.7429e-04
Epoch 382/500
1/1 [=====] - 0s 0s/step - loss: 3.6660e-04
Epoch 383/500
1/1 [=====] - 0s 998us/step - loss: 3.5907e-04
Epoch 384/500
1/1 [=====] - 0s 997us/step - loss: 3.5169e-04
Epoch 385/500
1/1 [=====] - 0s 0s/step - loss: 3.4447e-04
Epoch 386/500
1/1 [=====] - 0s 998us/step - loss: 3.3739e-04
Epoch 387/500
1/1 [=====] - 0s 997us/step - loss: 3.3046e-04
Epoch 388/500
1/1 [=====] - 0s 997us/step - loss: 3.2367e-04
Epoch 389/500
1/1 [=====] - 0s 0s/step - loss: 3.1702e-04
Epoch 390/500
1/1 [=====] - 0s 997us/step - loss: 3.1051e-04
Epoch 391/500
1/1 [=====] - 0s 997us/step - loss: 3.0414e-04
Epoch 392/500
1/1 [=====] - 0s 997us/step - loss: 2.9789e-04
Epoch 393/500
1/1 [=====] - ETA: 0s - loss: 2.9177e-04 - 0s 997us/step - 1
oss: 2.9177e-04
Epoch 394/500
1/1 [=====] - 0s 0s/step - loss: 2.8578e-04
Epoch 395/500
1/1 [=====] - 0s 997us/step - loss: 2.7991e-04
Epoch 396/500
1/1 [=====] - 0s 997us/step - loss: 2.7416e-04
Epoch 397/500
1/1 [=====] - 0s 0s/step - loss: 2.6852e-04
Epoch 398/500
1/1 [=====] - 0s 997us/step - loss: 2.6301e-04
Epoch 399/500
1/1 [=====] - 0s 998us/step - loss: 2.5761e-04
Epoch 400/500
1/1 [=====] - 0s 997us/step - loss: 2.5232e-04
Epoch 401/500
1/1 [=====] - 0s 997us/step - loss: 2.4713e-04
Epoch 402/500
1/1 [=====] - 0s 998us/step - loss: 2.4206e-04
Epoch 403/500
1/1 [=====] - 0s 997us/step - loss: 2.3709e-04
Epoch 404/500

1/1 [=====] - 0s 997us/step - loss: 2.3221e-04
Epoch 405/500
1/1 [=====] - 0s 998us/step - loss: 2.2744e-04
Epoch 406/500
1/1 [=====] - 0s 0s/step - loss: 2.2277e-04
Epoch 407/500
1/1 [=====] - 0s 998us/step - loss: 2.1820e-04
Epoch 408/500
1/1 [=====] - 0s 997us/step - loss: 2.1372e-04
Epoch 409/500
1/1 [=====] - 0s 0s/step - loss: 2.0933e-04
Epoch 410/500
1/1 [=====] - 0s 998us/step - loss: 2.0502e-04
Epoch 411/500
1/1 [=====] - 0s 997us/step - loss: 2.0081e-04
Epoch 412/500
1/1 [=====] - 0s 998us/step - loss: 1.9669e-04
Epoch 413/500
1/1 [=====] - 0s 997us/step - loss: 1.9265e-04
Epoch 414/500
1/1 [=====] - 0s 0s/step - loss: 1.8869e-04
Epoch 415/500
1/1 [=====] - 0s 997us/step - loss: 1.8482e-04
Epoch 416/500
1/1 [=====] - 0s 998us/step - loss: 1.8102e-04
Epoch 417/500
1/1 [=====] - 0s 997us/step - loss: 1.7730e-04
Epoch 418/500
1/1 [=====] - 0s 997us/step - loss: 1.7366e-04
Epoch 419/500
1/1 [=====] - 0s 0s/step - loss: 1.7009e-04
Epoch 420/500
1/1 [=====] - 0s 998us/step - loss: 1.6660e-04
Epoch 421/500
1/1 [=====] - 0s 997us/step - loss: 1.6318e-04
Epoch 422/500
1/1 [=====] - 0s 0s/step - loss: 1.5982e-04
Epoch 423/500
1/1 [=====] - 0s 997us/step - loss: 1.5654e-04
Epoch 424/500
1/1 [=====] - 0s 998us/step - loss: 1.5333e-04
Epoch 425/500
1/1 [=====] - 0s 997us/step - loss: 1.5017e-04
Epoch 426/500
1/1 [=====] - 0s 998us/step - loss: 1.4709e-04
Epoch 427/500
1/1 [=====] - 0s 997us/step - loss: 1.4407e-04
Epoch 428/500
1/1 [=====] - 0s 998us/step - loss: 1.4111e-04
Epoch 429/500
1/1 [=====] - 0s 0s/step - loss: 1.3821e-04
Epoch 430/500
1/1 [=====] - 0s 997us/step - loss: 1.3537e-04
Epoch 431/500
1/1 [=====] - 0s 997us/step - loss: 1.3259e-04
Epoch 432/500
1/1 [=====] - 0s 997us/step - loss: 1.2987e-04
Epoch 433/500
1/1 [=====] - 0s 997us/step - loss: 1.2720e-04
Epoch 434/500
1/1 [=====] - 0s 998us/step - loss: 1.2459e-04
Epoch 435/500
1/1 [=====] - 0s 997us/step - loss: 1.2203e-04
Epoch 436/500
1/1 [=====] - 0s 0s/step - loss: 1.1952e-04

Epoch 437/500
1/1 [=====] - 0s 997us/step - loss: 1.1707e-04
Epoch 438/500
1/1 [=====] - 0s 997us/step - loss: 1.1466e-04
Epoch 439/500
1/1 [=====] - 0s 997us/step - loss: 1.1231e-04
Epoch 440/500
1/1 [=====] - 0s 0s/step - loss: 1.1000e-04
Epoch 441/500
1/1 [=====] - 0s 997us/step - loss: 1.0774e-04
Epoch 442/500
1/1 [=====] - 0s 0s/step - loss: 1.0553e-04
Epoch 443/500
1/1 [=====] - 0s 997us/step - loss: 1.0336e-04
Epoch 444/500
1/1 [=====] - 0s 997us/step - loss: 1.0124e-04
Epoch 445/500
1/1 [=====] - 0s 998us/step - loss: 9.9159e-05
Epoch 446/500
1/1 [=====] - 0s 0s/step - loss: 9.7122e-05
Epoch 447/500
1/1 [=====] - 0s 997us/step - loss: 9.5127e-05
Epoch 448/500
1/1 [=====] - 0s 997us/step - loss: 9.3173e-05
Epoch 449/500
1/1 [=====] - 0s 998us/step - loss: 9.1260e-05
Epoch 450/500
1/1 [=====] - 0s 997us/step - loss: 8.9385e-05
Epoch 451/500
1/1 [=====] - 0s 998us/step - loss: 8.7547e-05
Epoch 452/500
1/1 [=====] - 0s 998us/step - loss: 8.5750e-05
Epoch 453/500
1/1 [=====] - 0s 0s/step - loss: 8.3988e-05
Epoch 454/500
1/1 [=====] - 0s 997us/step - loss: 8.2263e-05
Epoch 455/500
1/1 [=====] - 0s 997us/step - loss: 8.0572e-05
Epoch 456/500
1/1 [=====] - 0s 997us/step - loss: 7.8918e-05
Epoch 457/500
1/1 [=====] - 0s 0s/step - loss: 7.7297e-05
Epoch 458/500
1/1 [=====] - 0s 998us/step - loss: 7.5709e-05
Epoch 459/500
1/1 [=====] - 0s 997us/step - loss: 7.4155e-05
Epoch 460/500
1/1 [=====] - 0s 997us/step - loss: 7.2632e-05
Epoch 461/500
1/1 [=====] - 0s 998us/step - loss: 7.1139e-05
Epoch 462/500
1/1 [=====] - 0s 998us/step - loss: 6.9679e-05
Epoch 463/500
1/1 [=====] - 0s 997us/step - loss: 6.8247e-05
Epoch 464/500
1/1 [=====] - 0s 998us/step - loss: 6.6846e-05
Epoch 465/500
1/1 [=====] - 0s 997us/step - loss: 6.5473e-05
Epoch 466/500
1/1 [=====] - 0s 998us/step - loss: 6.4128e-05
Epoch 467/500
1/1 [=====] - 0s 0s/step - loss: 6.2810e-05
Epoch 468/500
1/1 [=====] - 0s 997us/step - loss: 6.1521e-05
Epoch 469/500

```
1/1 [=====] - 0s 997us/step - loss: 6.0256e-05
Epoch 470/500
1/1 [=====] - 0s 998us/step - loss: 5.9020e-05
Epoch 471/500
1/1 [=====] - 0s 997us/step - loss: 5.7806e-05
Epoch 472/500
1/1 [=====] - 0s 998us/step - loss: 5.6619e-05
Epoch 473/500
1/1 [=====] - 0s 997us/step - loss: 5.5457e-05
Epoch 474/500
1/1 [=====] - 0s 997us/step - loss: 5.4317e-05
Epoch 475/500
1/1 [=====] - 0s 997us/step - loss: 5.3201e-05
Epoch 476/500
1/1 [=====] - 0s 998us/step - loss: 5.2109e-05
Epoch 477/500
1/1 [=====] - 0s 997us/step - loss: 5.1038e-05
Epoch 478/500
1/1 [=====] - 0s 998us/step - loss: 4.9990e-05
Epoch 479/500
1/1 [=====] - 0s 997us/step - loss: 4.8964e-05
Epoch 480/500
1/1 [=====] - 0s 997us/step - loss: 4.7958e-05
Epoch 481/500
1/1 [=====] - 0s 998us/step - loss: 4.6973e-05
Epoch 482/500
1/1 [=====] - 0s 997us/step - loss: 4.6008e-05
Epoch 483/500
1/1 [=====] - 0s 997us/step - loss: 4.5064e-05
Epoch 484/500
1/1 [=====] - 0s 997us/step - loss: 4.4137e-05
Epoch 485/500
1/1 [=====] - 0s 998us/step - loss: 4.3231e-05
Epoch 486/500
1/1 [=====] - 0s 997us/step - loss: 4.2344e-05
Epoch 487/500
1/1 [=====] - 0s 998us/step - loss: 4.1474e-05
Epoch 488/500
1/1 [=====] - 0s 997us/step - loss: 4.0622e-05
Epoch 489/500
1/1 [=====] - 0s 0s/step - loss: 3.9787e-05
Epoch 490/500
1/1 [=====] - 0s 0s/step - loss: 3.8970e-05
Epoch 491/500
1/1 [=====] - 0s 997us/step - loss: 3.8169e-05
Epoch 492/500
1/1 [=====] - 0s 997us/step - loss: 3.7386e-05
Epoch 493/500
1/1 [=====] - 0s 998us/step - loss: 3.6618e-05
Epoch 494/500
1/1 [=====] - 0s 997us/step - loss: 3.5866e-05
Epoch 495/500
1/1 [=====] - 0s 998us/step - loss: 3.5129e-05
Epoch 496/500
1/1 [=====] - 0s 997us/step - loss: 3.4408e-05
Epoch 497/500
1/1 [=====] - 0s 0s/step - loss: 3.3701e-05
Epoch 498/500
1/1 [=====] - 0s 0s/step - loss: 3.3008e-05
Epoch 499/500
1/1 [=====] - 0s 997us/step - loss: 3.2330e-05
Epoch 500/500
1/1 [=====] - 0s 997us/step - loss: 3.1666e-05
<keras.callbacks.History at 0x218b4f1d940>
```

Out[7]:

And now we print the prediction done by our model

In [8]:

```
print(model.predict([10.0]))
```

```
[[18.983582]]
```