```
C:\Users\chris\anaconda3\python.exe "C:\Program Files\
JetBrains\PyCharm 2020.3.5\plugins\python\helpers\pydev
\pydevconsole.py" --mode=client --port=55815

import sys; print('Python %s on %s' % (sys.version, sys
.platform))
sys.path.extend(['C:\\Users\\chris\\PycharmProjects\\
NAI', 'C:/Users/chris/PycharmProjects/NAI'])

Python 3.8.8 (default, Feb 24 2021, 15:54:32) [MSC v.
1928 64 bit (AMD64)]
Type 'copyright', 'credits' or 'license' for more
information
IPython 7.21.0 -- An enhanced Interactive Python. Type
 '?' for help.
PyDev console: using IPython 7.21.0

Python 3.8.8 (default, Feb 24 2021, 15:54:32) [MSC v.
1928 64 bit (AMD64)] on win32
In[2]: runfile('C:/Users/chris/PycharmProjects/NAI/LAB5
/neural_network_banknote_data.py', wdir='C:/Users/chris
/PycharmProjects/NAI/LAB5')
Iteration 1, loss = 0.72359589
Iteration 2, loss = 0.43321917
Iteration 3, loss = 0.25270152
Iteration 4, loss = 0.14636510
Iteration 5, loss = 0.09173490
Iteration 6, loss = 0.06703125
Iteration 7, loss = 0.05337323
Iteration 8, loss = 0.04353701
Iteration 9, loss = 0.03602699
Iteration 10, loss = 0.03215309
Iteration 11, loss = 0.02959958
Iteration 12, loss = 0.02644439
Iteration 13, loss = 0.02529455
Iteration 14, loss = 0.02353584
Iteration 15, loss = 0.02142219
Iteration 16, loss = 0.02061197
Iteration 17, loss = 0.01948536
Iteration 18, loss = 0.01836866
Iteration 19, loss = 0.01756608
Iteration 20, loss = 0.01681719
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Iteration 21, loss = 0.01604896
Iteration 22, loss = 0.01544583
Iteration 23, loss = 0.01487359
Iteration 24, loss = 0.01429559
Iteration 25, loss = 0.01377187
Iteration 26, loss = 0.01333012
Iteration 27, loss = 0.01304049
Iteration 28, loss = 0.01259085
Iteration 29, loss = 0.01207426
Iteration 30, loss = 0.01154889
Iteration 31, loss = 0.01123044
Iteration 32, loss = 0.01078716
Iteration 33, loss = 0.01046974
Iteration 34, loss = 0.01023671
Iteration 35, loss = 0.00986710
Iteration 36, loss = 0.00962109
Iteration 37, loss = 0.00928428
Iteration 38, loss = 0.00903451
Iteration 39, loss = 0.00884569
Iteration 40, loss = 0.00868764
Iteration 41, loss = 0.00845640
Iteration 42, loss = 0.00816356
Iteration 43, loss = 0.00796330
Iteration 44, loss = 0.00778650
Iteration 45, loss = 0.00758590
Iteration 46, loss = 0.00748243
Iteration 47, loss = 0.00733295
Iteration 48, loss = 0.00718723
Iteration 49, loss = 0.00704335
Iteration 50, loss = 0.00690490
Iteration 51, loss = 0.00668404
Iteration 52, loss = 0.00654379
Iteration 53, loss = 0.00655109
Iteration 54, loss = 0.00641229
Iteration 55, loss = 0.00621839
Iteration 56, loss = 0.00605552
Iteration 57, loss = 0.00592313
Iteration 58, loss = 0.00588677
Iteration 59, loss = 0.00584081
Iteration 60, loss = 0.00566852
Iteration 61, loss = 0.00557368
Iteration 62, loss = 0.00545567
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Iteration 63, loss = 0.00535825
Iteration 64, loss = 0.00524971
Iteration 65, loss = 0.00517363
Iteration 66, loss = 0.00506841
Iteration 67, loss = 0.00498941
Iteration 68, loss = 0.00490740
Iteration 69, loss = 0.00482267
Iteration 70, loss = 0.00477636
Iteration 71, loss = 0.00470731
Iteration 72, loss = 0.00463998
Iteration 73, loss = 0.00457226
Iteration 74, loss = 0.00450719
Iteration 75, loss = 0.00443506
Iteration 76, loss = 0.00436754
Iteration 77, loss = 0.00431117
Training loss did not improve more than tol=0.000100
for 10 consecutive epochs. Stopping.
Training set score: 100.00%
Test set score: 100.00%
Explained variance ratio for component 1: 54.50%
Explained variance ratio for component 2: 32.33%
Preserved variance sum: 86.83%
```