



UNIVERSITY OF CAPE TOWN

STA5003W

MULTIVARIATE STATISTICS

Assignment 2

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September 2, 2019

Contents

Literature Review	2
Setup	2
Data	2
Analysis	3
Appendixes	4
Environment	4

Literature Review

Setup

Code for this assignment was written in Python version 3.7.1, using a random seed of 1234, a full list of the Python dependencies are listed in the dependencies in a YML file. This can be used, along with the code, to reproduce the analysis provided.

Data

Analysis

Appendixes

Environment

```
1 name: super-spirals
2 channels:
3   - pytorch
4   - conda-forge
5   - intel
6   - defaults
7 dependencies:
8   - _libgcc_mutex=0.1=main
9   - asn1crypto=0.24.0=py37_1003
10  - attrs=19.1.0=py37_1
11  - backcall=0.1.0=py37_0
12  - beautifulsoup4=4.8.0=py37_0
13  - blas=1.0=mkl
14  - bleach=3.1.0=py37_0
15  - blinker=1.4=py_1
16  - bokeh=1.3.2=py37_0
17  - bzip2=1.0.8=h516909a_0
18  - ca-certificates=2019.6.16=hecc5488_0
19  - certifi=2019.6.16=py37_1
20  - cffi=1.12.3=py37h8022711_0
21  - chardet=3.0.4=py37_1003
22  - click=7.0=py_0
23  - cryptography=2.5=py37hb7f436b_1
24  - cyclor=0.10.0=py37_0
25  - dbus=1.13.6=h746ee38_0
26  - decorator=4.4.0=py37_1
27  - defusedxml=0.6.0=py_0
28  - docutils=0.15.2=py37_0
29  - entrypoints=0.3=py37_0
30  - expat=2.2.6=he6710b0_0
31  - feedgenerator=1.9=py_1
32  - fontconfig=2.13.0=h9420a91_0
33  - freetype=2.9.1=h8a8886c_1
34  - glib=2.56.2=hd408876_0
35  - gmp=6.1.2=h6c8ec71_1
36  - gst-plugins-base=1.14.0=hbbd80ab_1
37  - gstreamer=1.14.0=hb453b48_1
38  - holoviews=1.12.3=py_2
39  - hvplot=0.4.0=py_0
40  - icu=58.2=h9c2bf20_1
41  - idna=2.8=py37_1000
42  - intel-openmp=2019.4=intel_243
43  - intelpython=2019.4=0
44  - ipykernel=5.1.1=py37h39e3cac_0
45  - ipython=7.7.0=py37h39e3cac_0
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Assignment 2

```
46 - ipython_genutils=0.2.0=py37_0
47 - ipywidgets=7.5.0=py_0
48 - jedi=0.13.3=py37_0
49 - jinja2=2.10.1=py_0
50 - joblib=0.13.2=py37_0
51 - jpeg=9b=h024ee3a_2
52 - json5=0.8.5=py_0
53 - jsonschema=3.0.1=py37_0
54 - jupyter=1.0.0=py37_7
55 - jupyter_client=5.3.1=py_0
56 - jupyter_console=6.0.0=py37_0
57 - jupyter_core=4.5.0=py_0
58 - jupyterlab=1.0.4=py37_0
59 - jupyterlab_server=1.0.0=py_1
60 - kaggle=1.5.5=py37_0
61 - kiwisolver=1.1.0=py37he6710b0_0
62 - libffi=3.2.1=he1b5a44_1006
63 - libgcc-ng=9.1.0=hdf63c60_0
64 - libgfortran-ng=7.3.0=hdf63c60_0
65 - libpng=1.6.36=2
66 - libsodium=1.0.16=3
67 - libstdcxx-ng=9.1.0=hdf63c60_0
68 - libtiff=4.0.10=h2733197_2
69 - libuuid=1.0.3=h1bed415_2
70 - libxcb=1.13=h1bed415_1
71 - libxml2=2.9.9=hea5a465_1
72 - markupsafe=1.1.1=py37h14c3975_0
73 - matplotlib=2.2.2=py37hb69df0a_2
74 - mistune=0.8.4=py37h7b6447c_0
75 - mkl=2019.4=intel_243
76 - mkl-service=2.0.2=py37h7b6447c_0
77 - mkl_fft=1.0.12=py37ha843d7b_0
78 - mkl_random=1.0.2=py37hd81dba3_0
79 - nbconvert=5.5.0=py_0
80 - nbformat=4.4.0=py37_0
81 - ncurses=6.1=hf484d3e_1002
82 - networkx=2.3=py_0
83 - ninja=1.9.0=py37hfd86e86_0
84 - nodejs=10.13.0=he6710b0_0
85 - notebook=6.0.0=py37_0
86 - numpy=1.16.4=py37h7e9f1db_0
87 - numpy-base=1.16.4=py37hde5b4d6_0
88 - olefile=0.46=py37_0
89 - openssl=1.0.2r=2
90 - packaging=19.0=py37_0
91 - pandas=0.25.0=py37he6710b0_0
92 - pandoc=2.2.3.2=0
93 - pandocfilters=1.4.2=py37_1
94 - param=1.9.1=py_0
```

Assignment 2

```
95 - parso=0.5.0=py_0
96 - patsy=0.5.1=py37_0
97 - pcre=8.43=he6710b0_0
98 - pelican=4.1.0=py_0
99 - pexpect=4.7.0=py37_0
100 - phantomjs=2.1.1=1
101 - pickleshare=0.7.5=py37_0
102 - pillow=6.1.0=py37h34e0f95_0
103 - pip=19.2.1=py37_0
104 - prometheus_client=0.7.1=py_0
105 - prompt_toolkit=2.0.9=py37_0
106 - ptyprocess=0.6.0=py37_0
107 - pycparser=2.19=py37_1
108 - pygments=2.4.2=py_0
109 - pyopenssl=19.0.0=py37_0
110 - pyparsing=2.4.0=py_0
111 - pyqt=5.6.0=py37h22d08a2_6
112 - pyrsistent=0.14.11=py37h7b6447c_0
113 - pysocks=1.7.0=py37_0
114 - python=3.7.0=h6e4f718_3
115 - python-dateutil=2.8.0=py_0
116 - python-dotenv=0.10.3=py_0
117 - python-slugify=3.0.3=py_0
118 - pytorch-cpu=1.1.0=py3.7_cpu_0
119 - pytz=2019.2=py_0
120 - pyviz_comms=0.7.2=py_0
121 - pyyaml=5.1.1=py37h7b6447c_0
122 - pyzmq=18.0.0=py37he6710b0_0
123 - qt=5.6.3=h8bf5577_3
124 - qtconsole=4.5.2=py_0
125 - readline=7.0=h7b6447c_5
126 - requests=2.22.0=py37_1
127 - scikit-learn=0.21.2=py37hd81dba3_0
128 - scipy=1.3.0=py37h7c811a0_0
129 - selenium=3.141.0=py37h7b6447c_0
130 - send2trash=1.5.0=py37_0
131 - setuptools=41.0.1=py37_0
132 - sip=4.18.1=py37hf484d3e_2
133 - six=1.12.0=py37_1000
134 - soupsieve=1.9.2=py37_0
135 - sqlite=3.27.2=6
136 - statsmodels=0.10.1=py37hdd07704_0
137 - tbb=2019.6=intel_243
138 - terminado=0.8.2=py37_0
139 - testpath=0.4.2=py37_0
140 - text-unidecode=1.2=py_0
141 - tk=8.6.9=hed695b0_1002
142 - toolz=0.10.0=py_0
143 - torchvision-cpu=0.3.0=py37_cuNone_1
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Assignment 2

```
144 - tornado=6.0.3=py37h7b6447c_0
145 - tqdm=4.32.2=py_0
146 - traitlets=4.3.2=py37_0
147 - unicode=1.1.1=py_0
148 - urllib3=1.24.3=py37_0
149 - wcwidth=0.1.7=py37_0
150 - webencodings=0.5.1=py37_1
151 - wheel=0.33.4=py37_0
152 - widgetsnbextension=3.5.0=py37_0
153 - xz=5.2.4=h14c3975_1001
154 - yaml=0.1.7=2
155 - zeromq=4.3.1=he6710b0_3
156 - zlib=1.2.11=h516909a_1005
157 - zstd=1.3.7=h0b5b093_0
158 prefix: /home/marcusskky/.conda/envs/super-spirals
```

References

- [1] Michael Widenius and Davis Axmark. *Mysql Reference Manual*. O'Reilly & Associates, Inc., Sebastopol, CA, USA, 1st edition, 2002.