

# Machine Learning

## HW3 – Report

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I found a couple of websites that helped me with understanding NMF a bit more. One of these websites had some code on it of how to use an NMF so I used this code, with making some required changes to make it work for this specific assignment. The website is as follows

<http://mlexplained.com/2017/12/28/a-practical-introduction-to-nmf-nonnegative-matrix-factorization/>

The other websites I found are

<https://people.eecs.berkeley.edu/~jfc/hcc/courseSP05/lecs/lec14/NMF03.pdf>

<http://www.aclweb.org/anthology/C90-3038>

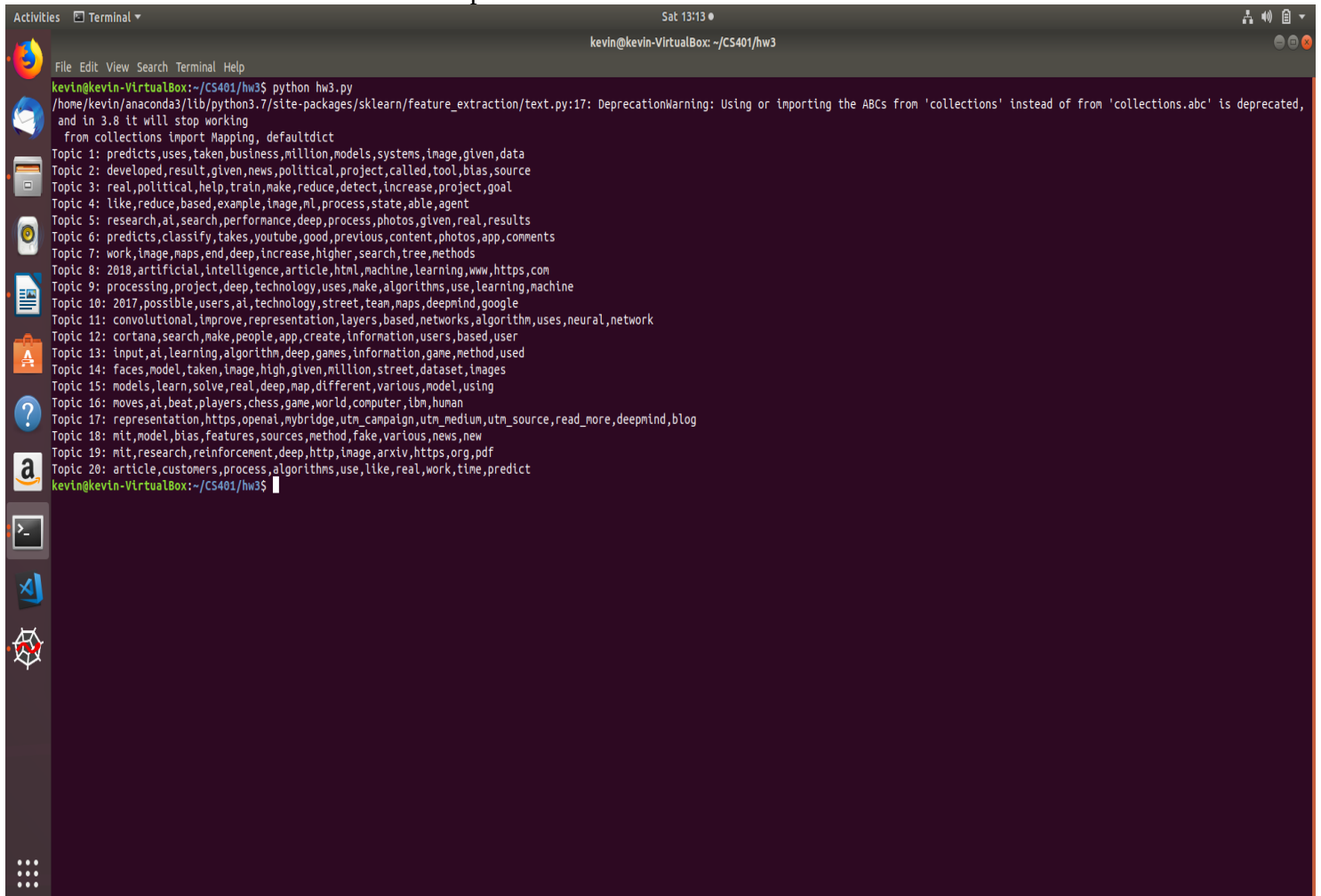
<http://derekgreene.com/slides/topic-modelling-with-scikitlearn.pdf>

I decided for this assignment and to make my code run smoother that I would place all of the text from the files into one main, big file. So I will submit this file as it will be required for my code to run correctly, as it did for me. The code is fairly short but a lot of researching on the above website was the main time consumer of this assignment.

I opened a terminal in Ubuntu and typed in the following to run the code:

python hw3.py

See below a screenshot of the output achieved:



```
kevin@kevin-VirtualBox: ~/CS401/hw3
File Edit View Search Terminal Help
kevin@kevin-VirtualBox:~/CS401/hw3$ python hw3.py
/home/kevin/anaconda3/lib/python3.7/site-packages/sklearn/feature_extraction/text.py:17: DeprecationWarning: Using or importing the ABCs from 'collections' instead of from 'collections.abc' is deprecated,
and in 3.8 it will stop working
  from collections import Mapping, defaultdict
Topic 1: predicts,uses,taken,business,million,models,systems,image,given,data
Topic 2: developed,result,given,news,political,project,called,tool,bias,source
Topic 3: real,political,help,train,make,reduce,detect,increase,project,goal
Topic 4: like,reduce,based,example,image,nl,process,state,able,agent
Topic 5: research,ai,search,performance,deep,process,photos,given,real,results
Topic 6: predicts,classify,takes,youtube,good,previous,content,photos,app,comments
Topic 7: work,image,maps,end,deep,increase,higher,search,tree,methods
Topic 8: 2018,artificial,intelligence,article,html,machine,learning,www,https,com
Topic 9: processing,project,deep,technology,uses,make,algorithms,use,learning,machine
Topic 10: 2017,possible,users,ai,technology,street,team,maps,deeplmind,google
Topic 11: convolutional,improve,representation,layers,based,networks,algorithm,uses,neural,network
Topic 12: cortana,search,nake,people,app,create,information,users,based,user
Topic 13: input,ai,learning,algorithm,deep,games,information,game,method,used
Topic 14: faces,model,taken,image,high,given,million,street,dataset,images
Topic 15: models,learn,solve,real,deep,map,different,various,model,using
Topic 16: moves,ai,beat,players,chess,game,world,computer,ibm,human
Topic 17: representation,https,openai,mybridge,utm_campaign,utm_medium,utm_source,read_more,deeplmind,blog
Topic 18: mit,model,bias,features,sources,method,fake,various,news,new
Topic 19: mit,research,reinforcement,deep,http,image,arxiv,https,org,pdf
Topic 20: article,customers,process,algorithms,use,like,real,work,time,predict
kevin@kevin-VirtualBox:~/CS401/hw3$
```

