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Documentation for MID5 Document Classification

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**Notes:**

The scripts are written in python2, python3, and perl. Below, python3 denotes python3, and python is python2.

Some of the scripts are interactive, and some require arguments.

To use the SVMB classifier, you'll need SVM-Light (http://svmlight.joachims.org/)

The "MID" format is referred to several times below. This format is as follows, but note that not all metadata fields are included:

Key: 20110402-1-639-AP\_1-2April\_2011\_LN\_NP2.TXT

Date: 20110402

Source: Associated Press Online

Dateline: LITTLE ROCK Ark.

GoogledDateline: Little Rock, AR, USA

AmericanDateline: True

Countries: ('UNITED STATES OF AMERICA', 2)

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Officials say a Delta Airlines plane landed safely at Little Rock National

Airport after striking a flock of large birds.

Airport spokeswoman T.J. Williams says the pilots of Flight 5087 from Atlanta to

Little Rock reported hitting the birds Friday afternoon about 20 miles southeast

of the Arkansas airport. She says the pilots were able to land the plane without

incident.

Williams says Delta officials plan to examine the plane and decide if anything

needs to be done. She says officials don't know what type of birds the plane

hit.

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**Starting with LN Downloads**

***docdelim.py***

$ python3 docdelim.py

This script is interactive. Follow the instructions. The regex for delimiting LexisNexis documents is hardcoded in the script, so just enter "LN" when prompted.

Writes filedelim.json, a file that contains a list of all the text files, their delimiters, and the number of docs.

***docprint.py***

$ python3 docprint.py

This script expects filedelim.json as input.

It extracts as many metadata fields as recognized from the documents. Note, if the documents aren't from LexisNexis or Factiva, this will likely not find any metadata and everything will end up in the text (which may or may not be ok).

This script asks for 'json' or 'MID' format for the documents.\* output file. It also asks whether the documents are from LexisNexis or Factiva.

This script also writes a tab-separated file that contains all metadata, including the unique identified attached to each document. This summary.tsv file does not contain the document text.

This will take a while to run, depending on how many documents there are. Maybe 10 minutes for 270,000 LN documents.

This writes "documents.txt", which is the MID-formatted file that includes all the documents.

**Classification**

The documents.txt file is now ready to be classified. Bill has set up a classifier that takes this 'MID' format as input.

**To continue with Bill's classifier:**

Upload documents.txt to TACC, for example:

$ cd /Users/vjdorazio/Desktop/MID/MID5/MID 5.0 Lexis Nexis Reports/MID 5 2012

$ scp documents.txt \dorazio@login1.corral.tacc.utexas.edu:/corral-repl/utdallas/MID5/NLP/nlp2012

Log on to TACC and run Bill's classifier:

$ ssh dorazio@login1.corral.tacc.utexas.edu

$ cd /corral-repl/utdallas/MID5/NLP/relevanceClassifier

$ vi mid\_classify.sh

--modify input file, output file, and output directory as needed

$ ./mid\_classify.sh

-- takes time, about 2 hours

Probably want to them download the output:

$ scp -r dorazio@login1.corral.tacc.utexas.edu:/corral-repl/utdallas/MID5/NLP/nlp2012/outputClassifications.tsv .

***merge\_results.py***

$ python merge\_results.py

This asks for additional inputs: (1) the full path and filename for the output of Bill's classifier, and (2) the full path and filename for the documents.txt file.

This writes as output: sorted\_pos.txt

The output is a file in the same "MID" format as documents.txt. Continue to section titled "After Classification"

**To continue with PreText and the SVM-B classification:**

***text\_tokens.pl***

$ perl text\_tokens.pl CountryInfo.120116.txt stopwords.txt porter.pm

The three arguments that are passed to text\_tokens.pl are Schrodt's 'CountryInfo' file, a list of stopwords, and a stemming algorithm. Ensure that each of these three arguments correspond to a file in the same directory.

This file takes as input documents.txt. Note that a documents.json file will not work.

This skips over all metadata, and removes stopwords and named entities from the text. It also stems all words.

This outputs: tokens.txt and spreadsheet.tsv. Note that spreadsheet.tsv is (I think) the same as summary.tsv from docprint.py.

This takes a while to run, figure 60-90 minutes.

***term\_doc\_dict.pl***

$ perl term\_doc\_dict.pl 20 NTFSVM mid5vocab.txt

The first argument, here it is 20, is a document frequency threshold. 20 is probably fine. The second argument contains the type of feature representation for the output format. To continue with the SVM classification, enter NTFSVM.

The third argument is the vocabulary produced by the training set. This may not be necessary for all classifiers, but it is for the SVM Light format. This file here is mid5vocab.txt. Each line contains a token and a number separated by a tab. This list of tokens must be in the same order as the list of tokens that was used to train the model.

This script takes tokens.txt as input, and outputs a file svm\_ntf.dat. This file can be read by SVM-Light, the software used to classify with the SVMB classifier.

At this point, it's probably a good idea to change the name of the data file:

$mv svm\_ntf.dat svm\_ntf2011.dat

**Classification with SVM-Light**

SVM-Light should be installed from: http://svmlight.joachims.org/

Next, use the SVMB classifier, which is mid5v0.model. To do this, move the .dat files to the SVM-Light directory, then classify.

$ mv svm\_ntf2011.dat ./svm\_light

$ cd svm\_light

$ ./svm\_classify svm\_ntf2011.dat mid5v0.model svm\_ntf2011.predict

Next, mv the \*.dat and \*.predict files back to the directory with the documents.txt (and other) files.

***merge\_results.pl***

$ perl merge\_results.pl 0 svm\_ntf2011.predict svm\_ntf2011.dat

Note here that the 0 corresponds to the cutoff point using the SVM-Light score. For more documents, make it smaller. For fewer, make it larger. A good threshold here is quite subjective, and it's rather easy to pull more documents later.

This script requires "MID.ISO.CODES.txt" and "documents.txt" to also be in the same directory. "documents.txt" is hardcoded in the program, **go in and change $documents\_file to whatever the name of this file is (e.g., "documents2012.txt")**

This outputes three files: sorted\_pos.txt, sorted\_neg.txt, and sorted\_pos.dat. These files are self-explanatory: the .txt files are the full "MID" format text files, one with positive and one with negatives. The .dat file is the SVM Light data-formatted positive features vectors.

**After Classification**

After classification, however that might happen (SVMB, or Bill's classifier), there will be a file that is "MID" formatted and contains the documents classified as positive.

There are three steps for adding metadata and further trimming documents:

1. remove documents with datelines in the United States other than New York, NY and Washington, DC (googleddateline.py)
2. remove documents without two states mentioned (actorcount.py)
3. remove exact duplicates (MIDtoDB.py)

These are all python2 files.

***googled\_dateline.py***

$ python googled\_dateline.py

Assumes that a file called "sorted\_pos.txt" exists in directory

This adds two metadata fields: GoogledDateline (formatted address), and AmericanDateline (true/false)

Note that this uses Google's geolocator, which is limited to 15,000 per day, so be careful with this one. To get the API key, go here and get the key: https://developers.google.com/maps/documentation/geolocation/intro. Script will ask for the API key, so just copy and paste it in. Google might ask which API, if so select "Places". The project is called "mid5geo".

This scripts writes "sorted\_pos2.txt" as output

***actor\_count.py***

$ python actor\_count.py

This adds one metadata field: Countries: (string with country followed by number of mentions)

Takes as input Schrodt's CountryInfo file, "CountryInfo.120116.txt" and "sorted\_pos2.txt"

This script writes "sorted\_pos3.txt"

***MIDtoDB.py***

$ python MIDtoDB.py

This script takes as input sorted\_pos3.txt, and outputs two files: metadata.tsv and sorted\_pos4.txt.

The data is read into an sqlite3 database, so this may require some additional python packages to be installed on your machine.

metadata.tsv is a tab-delimited file of all document metadata, i.e., everything except the story text. Rename to, e.g., metadata2011.tsv

sorted\_pos4.txt is the same as sorted\_pos3.txt but has all exact duplicates removed. Rename to, e.g., sorted\_pos2011.txt.

I've created folders for each year, and have places files into those folders when finished.