

Damegender Manual: Counting Males and Females in Internet Communities

for version 0.2.8, 06 May 2020

David Arroyo Menéndez (davidam@gnu.org)

This manual is for Damegender (version 0.2.8, 06 May 2020), which is an example in the Texinfo documentation.

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1 Introduction

Damegender is a gender detection tool from the name coded by David Arroyo MEnéndez (DAME)

...

2 Installation

Possible Debian/Ubuntu dependencies:

```
$ sudo apt-get install python3-nose-exclude python3-dev dict dict-freedict-  
eng-spa dict-freedict-spa-eng dictd
```

Now, to install damegender from sources:

```
$ git clone https://github.com/davidam/damegender  
$ cd damegender  
$ pip3 install -r requirements.txt
```

Now, to install damegender with python package:

```
$ python3 -m venv /tmp/d  
$ cd /tmp/d  
$ source bin/activate  
$ pip install --upgrade pip  
$ pip3 install damegender  
$ cd lib/python3.5/site-packages/damegender  
$ python3 main.py David
```

To install apis extra dependencies:

```
$ pip3 install damegender[apis]
```

To install mailing lists and repositories extra dependencies:

```
$ pip3 install damegender[mails_and_repositories]
```

To install all possible dependencies

```
$ pip3 install damegender[all]
```

Currently you can need an api key from:

- <https://store.genderize.io/documentation>
- <https://gender-api.com>
- <https://www.nameapi.org/>
- <https://v2.namsor.com/NamSorAPIv2/sign-in.html>

To configure your api key you can execute:

```
$ python3 apikeyadd.py
```

3 Commands

You must start to check tests to understand that all is ok:

```
$ cd src/damegender
$ ./testsbycommands.sh           # It must run for you
$ ./testsbycommandsextralocal.sh # You will need all dependencies
                                   # with: $ pip3 install damegender[all]
$ ./testsbycommandsextranet.sh   # You will need api keys
```

You can continue check python tests:

Execute all tests:

```
$ nosetests3 tests
```

Execute one file:

```
$ nosetests3 tests/test_basics.py
```

Execute one test:

```
$ nosetests3 tests/test_basics.py:TestBasics.test_indexing
```

If you are in a fresh installation, perhaps you want regenerate by your own risk some files downloaded to understand how it has been generated:

```
$ python3 postinstall.py
```

You can find an big list of commands to execute this shell scripts. Now a detailed execution of some selected examples:

The first command to learn is main.py. You can play now with this command:

```
# Detect gender from a name (INE is the dataset used by default)
```

```
$ python3 main.py David
```

```
David gender is male
```

```
363559 males for David from INE.es
```

```
0 females for David from INE.es
```

```
# Detect gender from a name only using machine learning (experimental way)■
```

```
$ python3 main.py Mesa --ml=nltk
```

```
Mesa gender is female
```

```
0 males for Mesa from INE.es
```

```
0 females for Mesa from INE.es
```

```
# Detect gender from a name (all census and machine learning)
```

```
$ python3 main.py David --verbose
```

```
365196 males for David from INE.es
```

```
0 females for David from INE.es
```

```
1193 males for David from Uruguay census
```

```
5 females for David from Uruguay census
```

```
26645 males for David from United Kingdom census
```

```
0 females for David from United Kingdom census
```

```
3552580 males for David from United States of America census
```

```
12826 females for David from United States of America census
```

```
David gender predicted with nltk is male
```

```

David gender predicted with sgd is male
David gender predicted with svc is male
David gender predicted with gaussianNB is male
David gender predicted with multinomialNB is male
David gender predicted with bernoulliNB is male
David gender predicted with forest is male
David gender predicted with tree is male
David gender predicted with mlp is male

```

The first Free Software for gender detection tool was created in C language program and you can look for a python version with the name `genderguesser`. Some people was working in a Free dataset called `name_dict.txt` with 48500 names. I want to give thanks to this effort with `nameincountries.py` due to the good work organizing many names in different countries.

```

$ python3 nameincountries.py David
grep -i " David " files/names/nam_dict.txt > files/grep.tmp
males: ['Albania', 'Armenia', 'Austria', 'Azerbaijan', 'Belgium', 'Bosnia and Herze-
govina', 'Czech Republic', 'Denmark', 'East Frisia', 'France', 'Georgia', 'Ger-
many', 'Great Britain', 'Iceland', 'Ireland', 'Israel', 'Italy', 'Kaza-
khstan/Uzbekistan', 'Luxembourg', 'Malta', 'Norway', 'Portugal', 'Roma-
nia', 'Slovenia', 'Spain', 'Sweden', 'Swiss', 'The Netherlands', 'USA', 'Ukraine']
females: []
both: []

```

This Free Software has been developed in the frame of a Phd in the Universidad Rey Juan Carlos I with the Phd director Jesús González Barahona, so I have developed some commands to use `Perceval` (Free Software where he has done good contributions)

To count gender from a git repository:

```

$ python3 git2gender.py https://github.com/chaoss/grimoirelab-perceval.git -
-directory="/tmp/clonedir"
The number of males sending commits is 15
The number of females sending commits is 7

```

To count gender from a mailing list:

```

$ cd files/mbox
$ wget -c http://mail-archives.apache.org/mod_mbox/httpd-announce/201706.mbox
$ cd ..
$ python3 mail2gender.py http://mail-archives.apache.org/mod_mbox/httpd-
announce/

```

Perhaps you don't know a name, but you have obtained an free key for an api to retrieve it:

```

$ python3 api2gender.py Leticia --surname="Martin" --api=namsor
female
scale: 0.99

```

If you want to know the gender of a good number of names you can download results from an api and save in a file with `downloadjson.py`

```

$ python3 downloadjson.py --csv=files/names/min.csv --api=genderize

```

```
$ cat files/names/genderizefiles_names_min.csv.json
```

Now we are going to explain some commands for measure the successful of our solution

```
$ python3 accuracy.py --csv=files/names/min.csv
```

```
##### NLTK!!
```

```
Gender list: [1, 1, 1, 1, 2, 1, 0, 0]
```

```
Guess list:  [1, 1, 1, 1, 0, 1, 0, 0]
```

```
Dame Gender accuracy: 0.875
```

```
$ python3 confusion.py --csv="files/names/partial.csv" --api=nameapi --
jsondownloaded="files/names/nameapifiles_names_partial.csv.json"
```

A confusion matrix C is such that $C_{i,j}$ is equal to the number of observations known to be in group i but predicted to be in group j.

If the classifier is nice, the diagonal is high because there are true positives

Nameapi confusion matrix:

```
[[ 3, 0, 0]
```

```
 [ 0, 15, 1]]
```

```
$ python3 errors.py --csv="files/names/all.csv" --api="genderguesser"
```

Gender Guesser with files/names/all.csv has:

```
+ The error code: 0.22564457518601835
```

```
+ The error code without na: 0.026539047204698716
```

```
+ The na coded: 0.20453365634192766
```

```
+ The error gender bias: 0.0026103980857080703
```

Perhaps you are interested on reproduce experiments to determine features:

```
$ python3 infofeatures.py
```

```
Females with last letter a: 0.4705246078961601
```

```
Males with last letter a: 0.048672566371681415
```

```
Females with last letter consonant: 0.2735841767750908
```

```
Males with last letter consonant: 0.6355328972681801
```

```
Females with last letter vocal: 0.7262612995441552
```

```
Males with last letter vocal: 0.3640823393612928
```

```
$ python3 pca-components.py --csv="files/features_list.csv" # To deter-
mine number of components
```

```
$ python3 pca-features.py # To under-
stand the weight between variables for a target
```

Now we can go to play with surnames:

```
$ python3 surname.py Gil --total=es
```

```
There are 140004 people using Gil in Spain
```

```
$ python3 surname.py Lenon --total=us
```

```
There are 837 people using Lenon in United States of America
```

```
$ python3 ethnicity.py Smith
```

```
In United States of America the percentages about the race of Smith sur-
name is:
```

```
White: 73.35
```


Black: 22.22
Hispanic: 1.56
Asian Pacific Indian American: 0.40
American Indian and Alaska Native: 0.85
Various races: 1.63

4 Statistics

In the last chapter we were learning to execute some commands such as `accuracy.py`, `confusion.py`, or `errors.py`, but perhaps you need to understand more theory about statistics to understand why this commands is being interesting for you.

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