

Looping_RL

October 28, 2019

1 Looping through all the letters in Right_to_Right direction

1.1 Importing notebooks

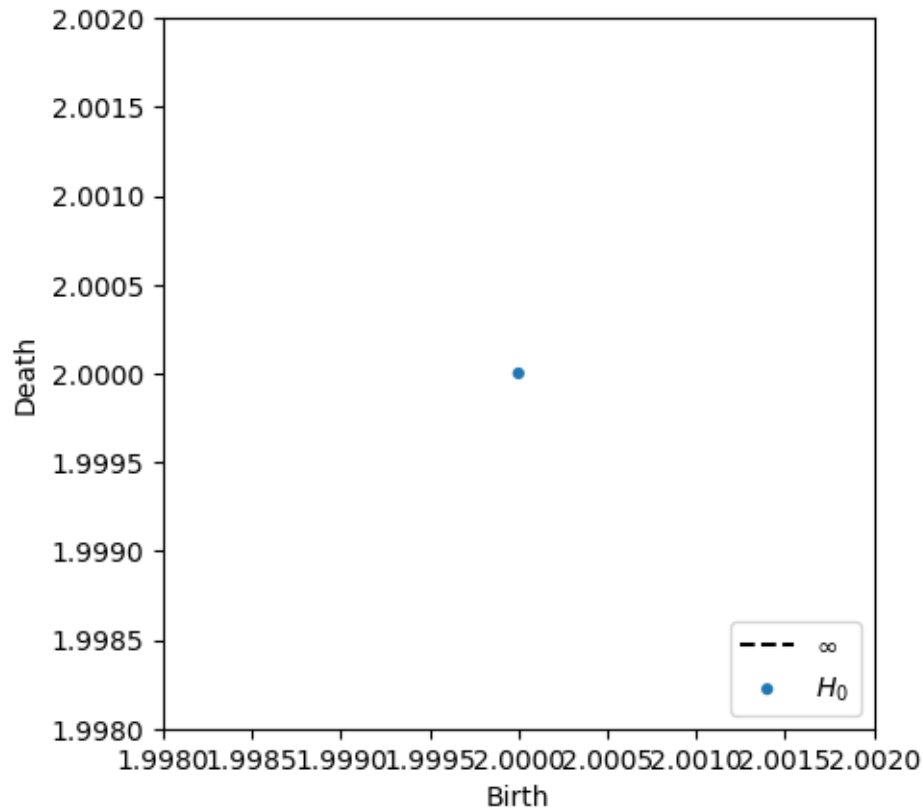
```
[1]: import numpy as np
import matplotlib.pyplot as plt
import scipy
from scipy import ndimage
import PIL
from persim import plot_diagrams
from ripser import ripser, lower_star_img
import csv
```

```
[7]: dgmRL = lower_star_img(letter)
print(dgm.shape)
print(dgm)
plot_diagrams(dgm)

plt.show()
```

(1, 2)

[[2. inf]]



```
[8]: # Right-to-left scanning through loops
letters = genfromtxt('letters.csv', delimiter=',') # Upload the file

dgmRL = [None]*26 #Initialize an empty list
for i in range(26):
    letter_one_line=letters[i,:]

    # initialize matrix of size 10x10 with all values 100
    letter=np.full((10, 10), 100)

    # convert one line letter to 10x10 matrix replacing zeros with 100
    for k in range(1,101):
        if letter_one_line[k]==1.0:
            row=int((k-1)/10)
            column=(k-1)%10
            letter[row,column]=10-k%10
    dgmRL[i] = lower_star_img(letter)

[9]: # Print A-Z diagrams
print(dgmRL[0:25])
```

```
[array([[ 2., inf]]), array([[ 3.,  4.],
```

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    [ 2., inf]], array([[ 2.,  7.],
    [ 2., inf]], array([[ 1., inf]], array([[ 2.,  7.],
    [ 2.,  7.],
    [ 2., inf]], array([[ 3.,  7.],
    [ 3., inf]], array([[ 3.,  7.],
    [ 3., inf]], array([[ 3., inf]], array([[ 4.,  5.],
    [ 4., inf]], array([[ 4., inf]], array([[ 3.,  6.],
    [ 3., inf]], array([[ 3., inf]], array([[ 2., inf]], array([[ 3.,
inf]], array([[ 2., inf]], array([[ 2., inf]], array([[ 2., inf]], array([[
3.,  5.],
    [ 3., inf]], array([[ 2.,  7.],
    [ 2., inf]], array([[ 2., inf]], array([[ 2., inf]], array([[ 2.,
inf]], array([[ 1., inf]], array([[ 3.,  5.],
    [ 3., inf]], array([[ 3., inf]])]

```

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[10]: # Print A diagram
print(dgmRL[0])

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```

[[ 2. inf]]

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[11]: # Print Z diagram
print(dgmRL[25])

```

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[[ 2.  6.]
 [ 2. inf]]

```