

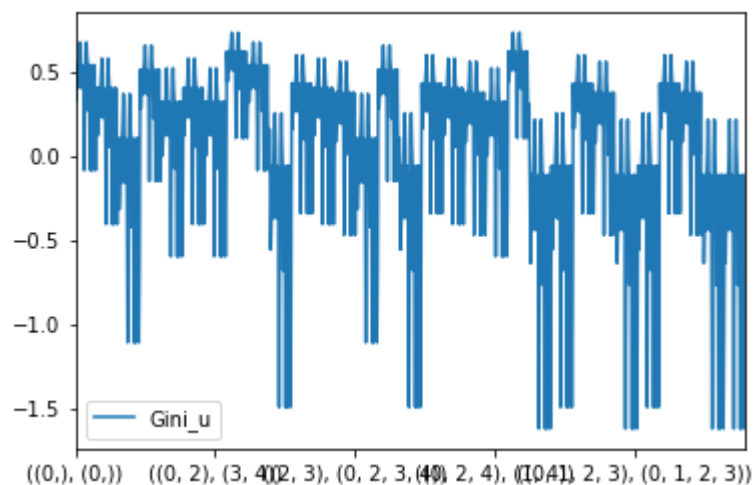
```
In [1]: from gini import *
size = (5, 5)
mat = np.random.choice([1,0],size)
orbi = OrBi(mat)
```

```
In [2]: import matplotlib.pyplot as plt

df_giniu_all = orbi.allBi_giniu()
display(df_giniu_all.describe())
df_giniu_all.plot()
```

	Gini_u
count	961.000000
mean	0.044943
std	0.488497
min	-1.624000
25%	-0.152000
50%	0.190400
75%	0.401600
max	0.731200

Out[2]: <matplotlib.axes._subplots.AxesSubplot at 0x7f6e13c60390>



```
In [3]: display(df_giniu_all.sort_values(by=['Gini_u']))
```

	Gini_u
((0, 1, 2, 3), (2, 3, 4))	-1.6240
((0, 1, 2, 3), (1, 2, 3, 4))	-1.6240
((0, 1, 2, 3, 4), (2, 3, 4))	-1.6240
((0, 1, 2, 3, 4), (1, 2, 3, 4))	-1.6240
((0, 1, 2, 3), (2, 4))	-1.6240
((0, 1, 2, 3, 4), (2, 4))	-1.6240
((0, 1, 2, 3, 4), (1, 2, 4))	-1.6240
((0, 1, 2, 3), (1, 2, 4))	-1.6240
((1, 2, 3, 4), (2, 3, 4))	-1.6240
((1, 2, 3), (2, 3, 4))	-1.6240
((1, 2, 3, 4), (1, 2, 3, 4))	-1.6240
((1, 2, 3), (1, 2, 3, 4))	-1.6240
((1, 2, 3), (1, 2, 4))	-1.6240
((1, 2, 3, 4), (2, 4))	-1.6240
((1, 2, 3), (2, 4))	-1.6240
((1, 2, 3, 4), (1, 2, 4))	-1.6240
((0, 1, 2, 4), (1, 2, 3, 4))	-1.4960
((0, 1, 2, 4), (2, 3, 4))	-1.4960
((0, 1, 2), (2, 3, 4))	-1.4960
((0, 1, 2), (1, 2, 3, 4))	-1.4960
((0, 1, 2, 4), (2, 4))	-1.4960
((0, 1, 2), (1, 2, 4))	-1.4960
((0, 1, 2, 4), (1, 2, 4))	-1.4960
((0, 1, 2), (2, 4))	-1.4960
((1, 2, 4), (2, 3, 4))	-1.4960
((1, 2), (2, 3, 4))	-1.4960
((1, 2, 4), (1, 2, 3, 4))	-1.4960
((1, 2), (1, 2, 3, 4))	-1.4960
((1, 2), (1, 2, 4))	-1.4960
((1, 2), (2, 4))	-1.4960
...	...
((0, 3), (0, 1, 2, 3))	0.6192
((0, 3), (0, 3, 4))	0.6192
((0, 3), (0,))	0.6192

	Gini_u
((0, 3, 4), (0,))	0.6192
((0, 3), (0, 1))	0.6192
((0, 3), (1, 3))	0.6192
((0, 3, 4), (1, 3))	0.6192
((0, 3, 4), (3,))	0.6192
((0, 3, 4), (0, 1))	0.6192
((0, 3), (3,))	0.6192
((3, 4), (0, 1, 3))	0.6544
((3,), (0, 1, 3))	0.6544
((3,), (0, 3))	0.6544
((3, 4), (0, 3))	0.6544
((0, 3, 4), (0, 1, 4))	0.6640
((0, 3, 4), (0, 2))	0.6640
((0, 3, 4), (0, 4))	0.6640
((0, 3, 4), (0, 1, 2))	0.6640
((0, 3), (0, 1, 2))	0.6640
((0, 3), (0, 4))	0.6640
((0, 3), (0, 2))	0.6640
((0, 3), (0, 1, 4))	0.6640
((0, 4), (0, 1, 3))	0.6736
((0,), (0, 3))	0.6736
((0, 4), (0, 3))	0.6736
((0,), (0, 1, 3))	0.6736
((0, 3, 4), (0, 3))	0.7312
((0, 3, 4), (0, 1, 3))	0.7312
((0, 3), (0, 1, 3))	0.7312
((0, 3), (0, 3))	0.7312

961 rows × 1 columns

```
In [4]: print()
print("biclusters with lowest gini_u:")
index_min = df_giniu_all.loc[df_giniu_all['Gini_u']==df_giniu_all.min()]
display(index_min)
[display(orbis.show_bi(list(i[0]),list(i[1]))) for i in list(index_min.index)]
print()
```

biclusters with lowest gini_u:

	Gini_u
((0, 1, 2, 3), (2, 3, 4))	-1.624
((0, 1, 2, 3), (1, 2, 3, 4))	-1.624
((0, 1, 2, 3, 4), (2, 3, 4))	-1.624
((0, 1, 2, 3, 4), (1, 2, 3, 4))	-1.624

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

```
In [5]: print()
print("biclusters with highest gini_u:")
index_max = df_giniu_all.loc[df_giniu_all['Gini_u']==df_giniu_all.max()]
display(index_max)
[display(orbi.show_bi(list(i[0]),list(i[1]))) for i in list(index_max.index)]
print()
```

biclusters with highest gini_u:

	Gini_u
((0, 3), (0, 3))	0.7312
((0, 3), (0, 1, 3))	0.7312
((0, 3, 4), (0, 3))	0.7312
((0, 3, 4), (0, 1, 3))	0.7312

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0

	0	1	2	3	4
0	0	0	1	0	1
1	0	0	1	1	1

	0	1	2	3	4
2	1	0	1	1	1
3	1	0	0	0	0
4	0	0	0	0	0



In []: