

Sequence Alignment using the Board Game

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```
In [ ]: %load_ext autoreload
        %autoreload 2

        # Import modules
        from seq_boardgame import seq_boardgame
        from seq_globalalign_boardgame import seq_globalalign_boardgame
        from seq_globalalign_nwalign import seq_globalalign_nwalign
```

Test cases for seq_boardgame

```
In [ ]: score = seq_boardgame( [ [0,5,1,100], [1,1,5,1], [1,20,1,5] ], -1 )
        print( f"Score = {score}" )
```

Score = 17

```
In [ ]: score = seq_boardgame([ [0,1,1], [1,1,1], [1,20,1] ], -100 )
        print( f"Score = {score}" )
```

Score = 2

```
In [ ]: score = seq_boardgame( [ [0,2,5], [6,3,4], [3,12,2] ] )
        print( f"Score = {score}" )
```

Score = 5

```
In [ ]: m = [ [0,3,16,-2,6,5,13,50],
               [9,5,-5,-4,36,13,11,-9],
               [25,-7,-4,56,44,13,28,-1],
               [2,26,16,13,-6,34,14,18],
               [29,-6,-5,32,0,6,27,40],
               [8,21,28,2,15,-7,-4,-6] ]
        score = seq_boardgame( m )
        print( f"Score = {score}" )
```

Score = 115

```
In [ ]: m=[ [0,0,0,0,0],
             [0,5,-4,-4,-4],
             [0,-4,-4,5,-4],
             [0,-4,5,-4,-4],
             [0,-4,-4,-4,5] ]
        score = seq_boardgame( m )
        print( f"Score = {score}" )
```

Score = 5

Test cases for seq_globalalign_boardgame

```
In [ ]: score = seq_globalalign_boardgame('ATCG', 'ACTG')
        print( f"Score = {score}" )
```

Score = 5

```
In [ ]: # Validate boardgame score (bg) with nwalgn score (nw)
score_bg = seq_globalalign_boardgame('AATG', 'AAGAAA')
score_nw = seq_globalalign_nwalgn('AATG', 'AAGAAA')

print(f"Boardgame Score = {score_bg}\n nwalgn Score = {score_nw}")
```

```
Boardgame Score = -5
nwalgn Score = -5.0
```

```
In [ ]: # Validate boardgame score (bg) with nwalgn score (nw)
score_bg = seq_globalalign_boardgame('AATG', 'AAGAAA', 4, -3, -10)
score_nw = seq_globalalign_nwalgn('AATG', 'AAGAAA', 4, -3, -10)

print(f"Boardgame Score = {score_bg}\n nwalgn Score = {score_nw}")
```

```
Boardgame Score = -18
nwalgn Score = -18.0
```

```
In [ ]: # Validate boardgame score (bg) with nwalgn score (nw)
p = 'CACTGCGAAGCGGCTTCTTCACAGCACGGGCTGGAACGGCAGGCACCGCGAGCCCTAGCACCCGACAAGCTGAGTGTGCAGGACGAGTCCCCACCACAC'
q = 'CGCGTTCAGGCTGCAGCTGGCAGGCATCGCGAGCCCGGAGCACCCACGAGCTCAGTGTGCAGGACGCGCCCCAGCACAG'

score_bg = seq_globalalign_boardgame(p, q)
score_nw = seq_globalalign_nwalgn(p,q)

print(f"Boardgame Score = {score_bg}\n nwalgn Score = {score_nw}")
```

```
Boardgame Score = 196
nwalgn Score = 196.0
```