matrixmult

February 27, 2019

1 Multiplicación de Matrices

Equipo 9

```
In [1]: import numpy as np
```

```
In [104]: A = np.matrix([np.linspace(1, 5, 5) for x in range(0, 5)])
          # B = np.matrix([np.linspace(5, 1, 5) for x in range(0, 5)])
          np.random.seed(0)
          B = np.random.randint(20, size=(5,5))
          A, B
```

```
Out[104]: (matrix([[1., 2., 3., 4., 5.],
                   [1., 2., 3., 4., 5.],
                   [1., 2., 3., 4., 5.],
                   [1., 2., 3., 4., 5.],
                   [1., 2., 3., 4., 5.]]), array([[12, 15,  0,  3,  3],
                  [ 7,  9, 19, 18,  4],
                  [ 6, 12,  1,  6,  7],
                  [14, 17,  5, 13,  8],
                  [ 9, 19, 16, 19,  5]]))
```

1.1 Para i, j, k

```
In [105]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for i in range(0, m):
              for j in range(0, n):
                  for k in range(0, r):
                      try:
                          C[i,j] = C[i,j] + A[i,k]*B[k,j]
                      except:
                          print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C
```

```
Out[105]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
```

```
       [145., 232., 141., 204.,  89.],
       [145., 232., 141., 204.,  89.]])
```

```
In [106]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for i in range(0, m):
              try:
                  C[:,i] = A[i,:]@B[:,i]
              except:
                  print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C
```

```
Out[106]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.]])
```

1.2 Para k, i, j

```
In [107]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for k in range(0, m):
              for i in range(0, n):
                  for j in range(0, r):
                      try:
                          C[i,j] = C[i,j] + A[i,k]*B[k,j]
                      except:
                          print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C
```

```
Out[107]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.]])
```

```
In [108]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for i in range(0, m):
              try:
                  C[:,i] = A[i,:]@B[:,i]
              except:
                  print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C
```

```
Out[108]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.]])
```

1.3 Para i, k, j

```
In [109]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for i in range(0, m):
              for k in range(0, n):
                  for j in range(0, r):
                      try:
                          C[i,j] = C[i,j] + A[i,k]*B[k,j]
                      except:
                          print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C

Out[109]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.]])

In [110]: m, n, r = (5,5,5)
          C = np.zeros((5,5))
          for i in range(0, m):
              try:
                  C[:,i] = A[i,:]@B[:,i]
              except:
                  print("Error while i=%d, j=%d, k=%d"%(i,j,k))
          C

Out[110]: array([[145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.],
                 [145., 232., 141., 204.,  89.]])
```