19360859053

HÜMEYRA ÇİMEN 04.05.2023

BURSA TEKNİK UNİVERSİTESİ BİLGİSAYAR MÜHENDİSLİĞİ

BİOINFORMATİK DERSİ PROJE-7 RAPOR

```
PS C:\Users\HÜMEYRA\snap\examples> cd node2vec
PS C:\Users\HÜMEYRA\snap\examples\node2vec> python
Python 3.10.11 (tags/v3.10.11:7d4cc5a, Apr  5 2023, 00:38:17) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
```

```
C:\Users\HÜMEYRA>pip install snap
Collecting snap
  Downloading snap-0.5.tar.gz (24 kB)
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing metadata (pyproject.toml) ... done
Building wheels for collected packages: snap
  Building wheel for snap (pyproject.toml) ... done
  Created wheel for snap: filename=snap-0.5-py3-none-any.whl size=19405 sha256=56785c94a067c37dbe40d4e279f7fba1dfb21255
11426ca54bd79a4d42d163a
  Stored in directory: c:\users\hümeyra\appdata\local\pip\cache\wheels\23\47\3a\e5fb340d43a8a8c70caebca869d602fa5f8fab1
c5826a8ebb
Successfully built snap
Installing collected packages: snap
Successfully installed snap-0.5
```

```
PS C:\Users\HÜMEYRA\snap\examples> ls


    Directory: C:\Users\HÜMEYRA\snap\examples


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         4.05.2023     11:08                agmfit
d-----         4.05.2023     11:08                agmgen
d-----         4.05.2023     11:08                bigclam
d-----         4.05.2023     11:08                cascadegen
d-----         4.05.2023     11:08                cascades
d-----         4.05.2023     11:08                centrality
d-----         4.05.2023     11:08                cesna
d-----         4.05.2023     11:08                circles
d-----         4.05.2023     11:08                cliques
d-----         4.05.2023     11:08                coda
d-----         4.05.2023     11:08                community
d-----         4.05.2023     11:08                concomp
d-----         4.05.2023     11:08                flows
d-----         4.05.2023     11:08                forestfire
d-----         4.05.2023     11:08                graphgen
d-----         4.05.2023     11:08                graphhash
d-----         4.05.2023     11:08                hysgen
d-----         4.05.2023     11:08                infopath
d-----         4.05.2023     11:08                kcores
d-----         4.05.2023     11:08                knnjaccardsim
d-----         4.05.2023     11:08                kronem
d-----         4.05.2023     11:08                kronfit
d-----         4.05.2023     11:08                krongen
d-----         4.05.2023     11:08                localmotifcluster
d-----         4.05.2023     11:08                lshtest
d-----         4.05.2023     11:08                magfit
d-----         4.05.2023     11:08                maggen
d-----         4.05.2023     11:08                mkdatasets
d-----         4.05.2023     11:08                motifcluster
d-----         4.05.2023     11:08                motifs
d-----         4.05.2023     11:08                ncpplot
d-----         4.05.2023     11:08                netevol
d-----         4.05.2023     11:08                netinf
d-----         4.05.2023     11:08                netstat
```

```
d-----         4.05.2023     11:08                flows
d-----         4.05.2023     11:08                forestfire
d-----         4.05.2023     11:08                graphgen
d-----         4.05.2023     11:08                graphhash
d-----         4.05.2023     11:08                hysgen
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d-----         4.05.2023     11:08                ncpplot
d-----         4.05.2023     11:08                netevol
d-----         4.05.2023     11:08                netinf
d-----         4.05.2023     11:08                netstat
d-----         4.05.2023     11:08                node2vec


d-----         4.05.2023     11:08                snap-examples.xcodeproj


d-----         4.05.2023     11:08                XcodeTest


-a----         4.05.2023     11:08         293531 as20graph.txt


-a----         4.05.2023     11:08           2045 ReadMe.txt
```

1 :Graff Oluşturma Graph Creation

```
>>> G1 = snap.TNGraph.New()
>>> G1.AddNode(1)
1
```

```
>>> G1.AddNode(5)
5
```

```
>>> G1.AddNode(32)
32
```

```
>>> G1.AddEdge(1,5)
-1
```

```
>>> G1.AddEdge(5,1)
-1
```

```
>>> G1.AddEdge(5,32)
-1
```

2: Iterators

KODLAR: `// create a directed random graph on 100 nodes and 1k edges`

```
  PNGraph Graph = TSnap::GenRndGnm<PNGraph>(100, 1000);
  // traverse the nodes
  for (TNGraph::TNodeI NI = Graph->BegNI(); NI < Graph->EndNI(); NI++) {
    printf("node id %d with out-degree %d and in-degree %d\n",
      NI.GetId(), NI.GetOutDeg(), NI.GetInDeg());
  }
  // traverse the edges
  for (TNGraph::TEdgeI EI = Graph->BegEI(); EI < Graph->EndEI(); EI++) {
    printf("edge (%d, %d)\n", EI.GetSrcNId(), EI.GetDstNId());
  }
  // we can traverse the edges also like this
  for (TNGraph::TNodeI NI = Graph->BegNI(); NI < Graph->EndNI(); NI++) {
    for (int e = 0; e < NI.GetOutDeg(); e++) {
      printf("edge (%d %d)\n", NI.GetId(), NI.GetOutNId(e));
    }
  }
```

```
>>> G2 = snap.GenRndGnm(snap.TNGraph, 100, 1000)
>>>
```

```
>>> for NI in G2.Nodes():
...     print("node id %d with out-degree %d and in-degree %d" % (
...         NI.GetId(), NI.GetOutDeg(), NI.GetInDeg()))
...
node id 0 with out-degree 13 and in-degree 13
node id 1 with out-degree 9 and in-degree 12
node id 2 with out-degree 4 and in-degree 8
node id 3 with out-degree 11 and in-degree 14
node id 4 with out-degree 8 and in-degree 10
node id 5 with out-degree 10 and in-degree 8
node id 6 with out-degree 11 and in-degree 7
node id 7 with out-degree 7 and in-degree 8
node id 8 with out-degree 10 and in-degree 12
```

```
node id 8 with out-degree 10 and in-degree 12
node id 9 with out-degree 7 and in-degree 8
node id 10 with out-degree 15 and in-degree 16
node id 11 with out-degree 7 and in-degree 9
node id 12 with out-degree 12 and in-degree 11
node id 13 with out-degree 11 and in-degree 9
node id 14 with out-degree 9 and in-degree 13
node id 15 with out-degree 10 and in-degree 14
node id 16 with out-degree 11 and in-degree 12
node id 17 with out-degree 16 and in-degree 12
node id 18 with out-degree 10 and in-degree 7
node id 19 with out-degree 20 and in-degree 12
node id 20 with out-degree 17 and in-degree 10
node id 21 with out-degree 9 and in-degree 13
node id 22 with out-degree 11 and in-degree 9
node id 23 with out-degree 12 and in-degree 11
node id 24 with out-degree 13 and in-degree 7
node id 25 with out-degree 12 and in-degree 11
node id 26 with out-degree 6 and in-degree 10
node id 27 with out-degree 10 and in-degree 10
node id 28 with out-degree 11 and in-degree 13
node id 29 with out-degree 10 and in-degree 12
node id 30 with out-degree 7 and in-degree 13
node id 31 with out-degree 12 and in-degree 15
node id 32 with out-degree 7 and in-degree 8
node id 33 with out-degree 7 and in-degree 15
node id 34 with out-degree 8 and in-degree 13
```

```
node id 34 with out-degree 8 and in-degree 13
node id 35 with out-degree 11 and in-degree 8
node id 36 with out-degree 11 and in-degree 10
node id 37 with out-degree 12 and in-degree 5
node id 38 with out-degree 10 and in-degree 6
node id 39 with out-degree 9 and in-degree 8
node id 40 with out-degree 12 and in-degree 7
node id 41 with out-degree 5 and in-degree 5
node id 42 with out-degree 8 and in-degree 9
node id 43 with out-degree 10 and in-degree 12
node id 44 with out-degree 12 and in-degree 12
node id 45 with out-degree 10 and in-degree 10
node id 46 with out-degree 4 and in-degree 9
node id 47 with out-degree 9 and in-degree 12
node id 48 with out-degree 12 and in-degree 7
node id 49 with out-degree 11 and in-degree 11
node id 50 with out-degree 8 and in-degree 11
```

```
node id 50 with out-degree 8 and in-degree 11
node id 51 with out-degree 16 and in-degree 8
node id 52 with out-degree 13 and in-degree 10
node id 53 with out-degree 14 and in-degree 8
node id 54 with out-degree 12 and in-degree 10
node id 55 with out-degree 10 and in-degree 7
node id 56 with out-degree 9 and in-degree 10
node id 57 with out-degree 11 and in-degree 10
node id 58 with out-degree 10 and in-degree 11
node id 59 with out-degree 10 and in-degree 14
node id 60 with out-degree 8 and in-degree 12
node id 61 with out-degree 11 and in-degree 10
node id 62 with out-degree 12 and in-degree 13
node id 63 with out-degree 11 and in-degree 10
node id 64 with out-degree 11 and in-degree 7
node id 65 with out-degree 8 and in-degree 11
node id 66 with out-degree 9 and in-degree 11
node id 67 with out-degree 8 and in-degree 10
node id 68 with out-degree 5 and in-degree 9
node id 69 with out-degree 9 and in-degree 7
node id 70 with out-degree 14 and in-degree 12
node id 71 with out-degree 9 and in-degree 11
node id 72 with out-degree 8 and in-degree 9
node id 73 with out-degree 7 and in-degree 7
```

```
node id 73 with out-degree 7 and in-degree 7
node id 74 with out-degree 5 and in-degree 9
node id 75 with out-degree 8 and in-degree 12
node id 76 with out-degree 9 and in-degree 9
node id 77 with out-degree 9 and in-degree 12
node id 78 with out-degree 9 and in-degree 11
node id 79 with out-degree 17 and in-degree 11
node id 80 with out-degree 14 and in-degree 6
node id 81 with out-degree 7 and in-degree 15
node id 82 with out-degree 5 and in-degree 5
node id 83 with out-degree 12 and in-degree 8
node id 84 with out-degree 6 and in-degree 11
node id 85 with out-degree 10 and in-degree 9
node id 86 with out-degree 8 and in-degree 7
node id 87 with out-degree 7 and in-degree 8
node id 88 with out-degree 7 and in-degree 6
node id 89 with out-degree 10 and in-degree 10
node id 90 with out-degree 8 and in-degree 7
node id 91 with out-degree 11 and in-degree 10
```

```
node id 92 with out-degree 11 and in-degree 11
node id 93 with out-degree 11 and in-degree 6
node id 94 with out-degree 13 and in-degree 12
node id 95 with out-degree 12 and in-degree 11
node id 96 with out-degree 7 and in-degree 12
node id 97 with out-degree 7 and in-degree 11
node id 98 with out-degree 11 and in-degree 10
node id 99 with out-degree 14 and in-degree 7
```

```
>>> for EI in G2.Edges():
...     print("edge (%d, %d)" % (EI.GetSrcNId(), EI.GetDstNId()))
...
edge (0, 20)
edge (0, 26)
edge (0, 43)
edge (0, 44)
edge (0, 56)
edge (0, 59)
edge (0, 62)
edge (0, 70)
edge (0, 72)
edge (0, 86)
edge (0, 89)
edge (0, 95)
edge (0, 96)
edge (1, 9)
```

```
edge (1, 9)
edge (1, 19)
edge (1, 30)
edge (1, 34)
edge (1, 53)
edge (1, 56)
edge (1, 59)
edge (1, 94)
edge (1, 97)
edge (2, 17)
edge (2, 33)
edge (2, 89)
edge (2, 95)
edge (3, 15)
edge (3, 21)
edge (3, 24)
edge (3, 30)
edge (3, 31)
```

```
>>> G3 = snap.GenForestFire(1000, 0.35, 0.35)

***ForestFire:  GeoFire  Nodes:1000  StartNodes:1  Take2AmbProb:0
                FwdBurnP:0.35  BckBurnP:0.35  ProbDecay:1  Orphan:0
(1000, 4120)  burned: [1,1,3]  [0.01s]
```

```
>>> FOut = snap.TFOut("test.graph")
>>> G3.Save(FOut)
>>> FOut.Flush()
>>> FIn = snap.TFIn("test.graph")
>>> G4 = snap.TNGraph.Load(FIn)
>>>
>>> snap.SaveEdgeList(G4, "test.txt", "Save as tab-separated list of edges")
>>> G5 = snap.LoadEdgeList(snap.TNGraph, "test.txt", 0, 1)
>>>
```

```
>>> G6 = snap.GenForestFire(1000, 0.35, 0.35)

***ForestFire:  GeoFire  Nodes:1000  StartNodes:1  Take2AmbProb:0
                FwdBurnP:0.35  BckBurnP:0.35  ProbDecay:1  Orphan:0
(1000, 4479)  burned: [1,1,1]  [0.01s]
>>>
```

```
>>> G7 = G6.ConvertGraph(snap.TUNGraph)
>>>
>>> WccG = G6.GetMxWcc()
>>>
>>> SubG = G6.GetSubGraph([0,1,2,3,4])
>>>
>>> Core3 = G6.GetKCore(3)
>>>
>>> G6.DelDegKNodes(10, 5)
```

```
>>> G8 = snap.GenPrefAttach(1000, 3)
>>>
>>> CntV = G8.GetWccSzCnt()
>>>
>>> CntV = G8.GetOutDegCnt()
>>>
>>> EigV = G8.GetLeadEigVec()
>>>
>>> G8.GetBfsFullDiam(100)
6
```

```
>>> G8.GetTriads()
336
```

```
>>> G8.GetClustCf()
0.04278356286067983
```