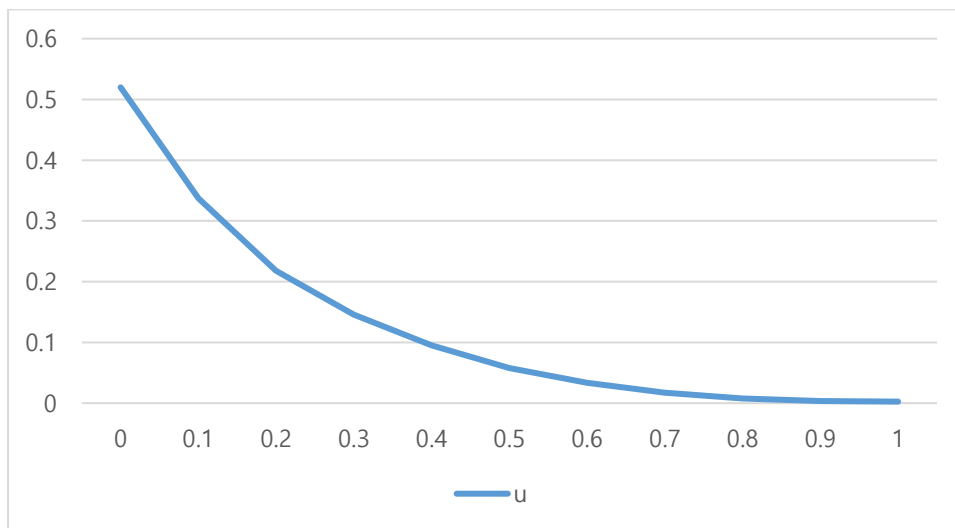


AI 607

PA#1

Preferential Attachment and PageRank

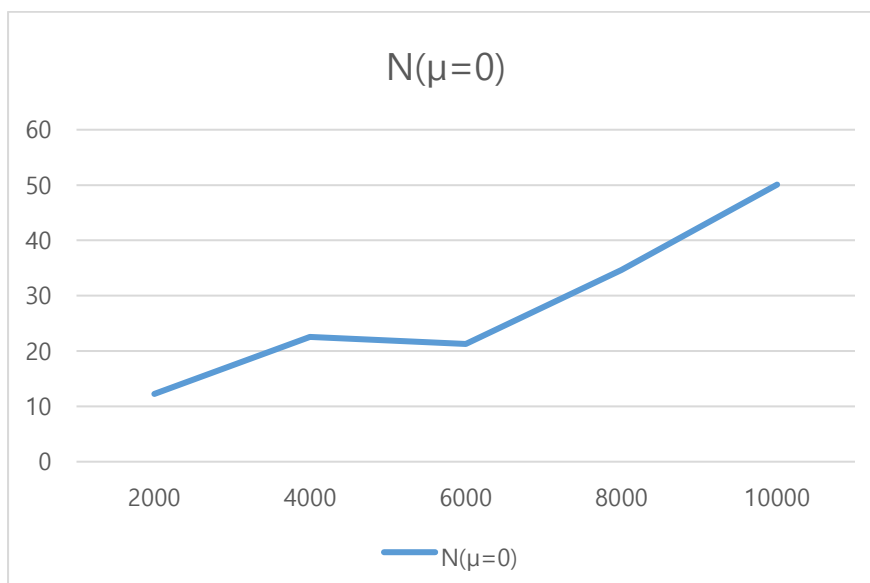
1.4.1 Effect of μ on the clustering coefficients (y-axis = c_{eff})

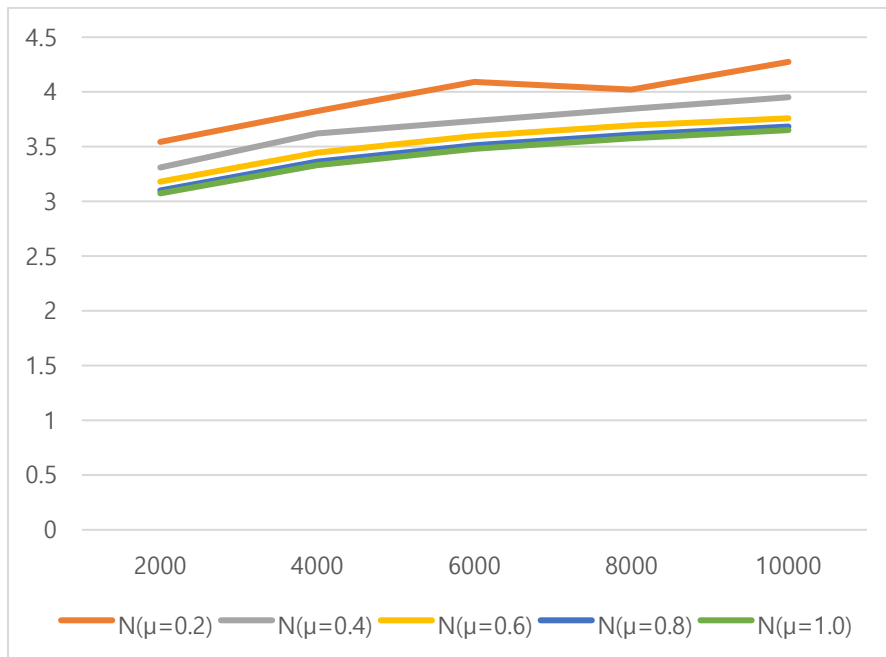


The clustering coefficient exponentially decrease with μ .

이것은 preferential attachment에 가중치를 둘수록, 특정 노드들을 중심으로 하는 (preferred 된) graph가 형성되는 것을 확인 가능함.

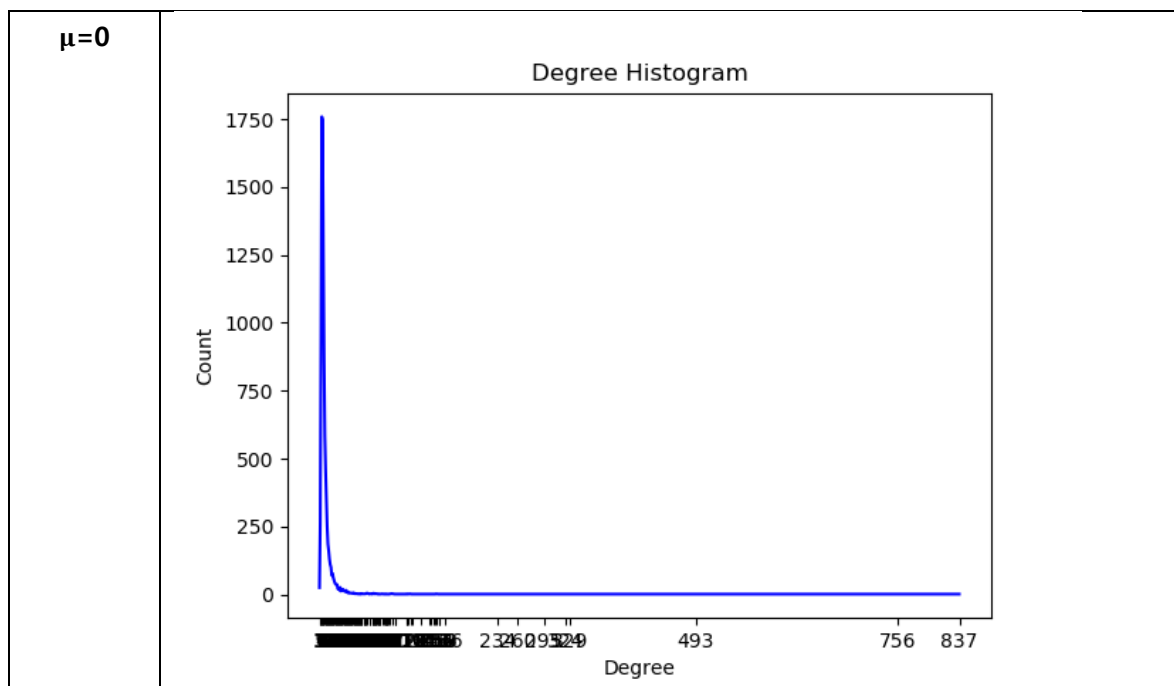
1.4.2 Effect of μ on the speed of increasing of average path length



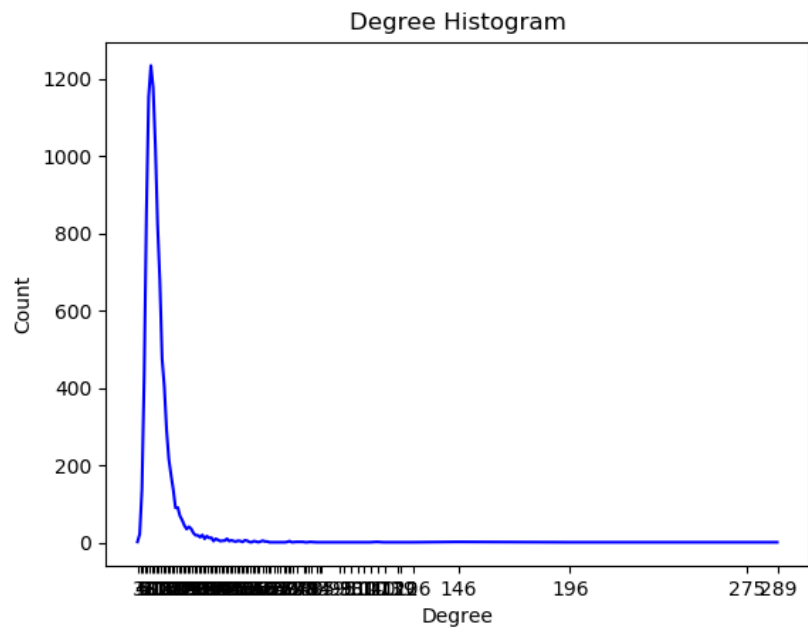


Average path length $\propto N, 1/\mu$

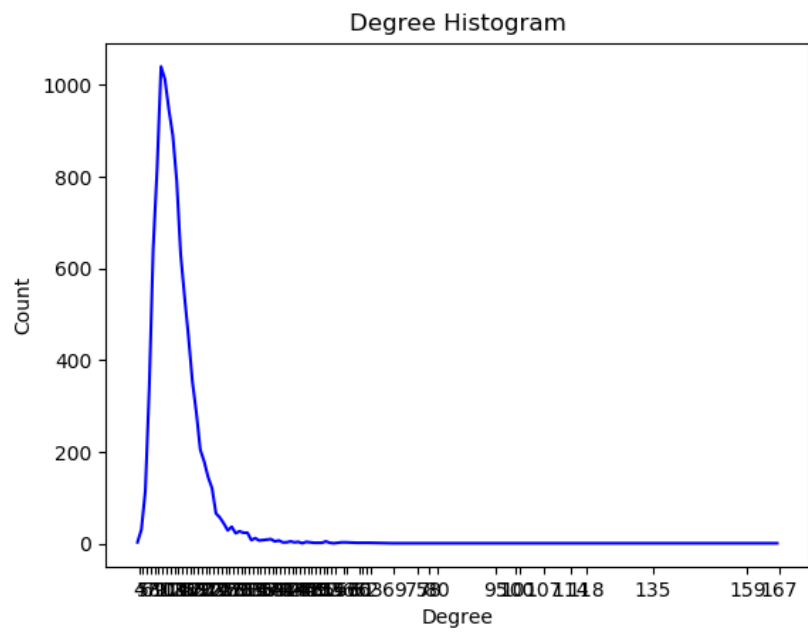
1.4.3 Effect of μ on the degree distribution



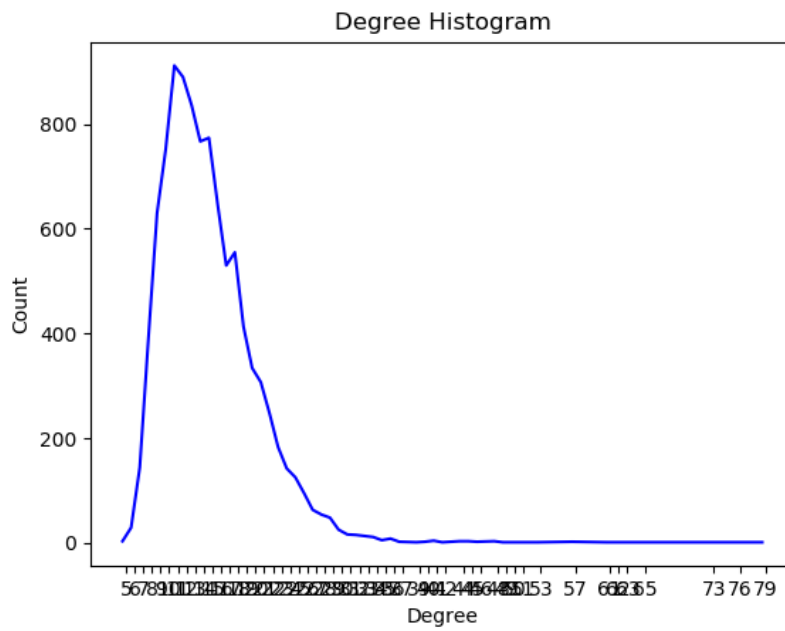
$\mu=0.2$



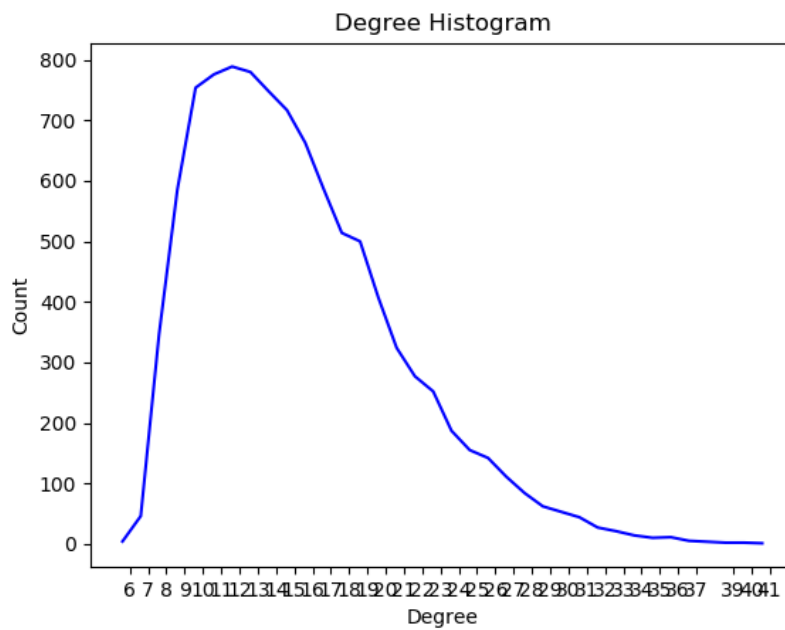
$\mu=0.4$

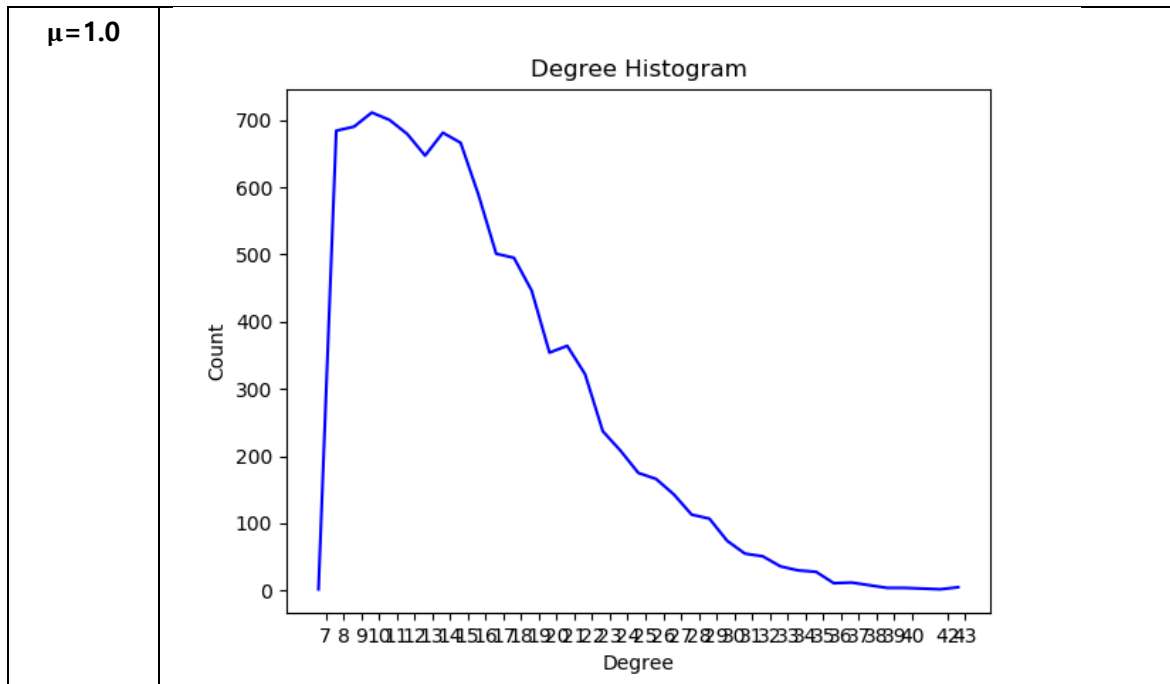


$\mu=0.6$



$\mu=0.8$





2.4 Report how the list of 10 nodes with the highest pagerank scores and their pagerank scores in the web-Stanford dataset (<http://snap.stanford.edu/data/web-Stanford.html>) change as we increase the damping factor from 0.1 to 0.9 with interval 0.2.

| Damping factor | Results (Web Stanford) |
|----------------|--|
| 0.1 | [('226411', 0.014946353020991694), ('234704', 0.008214219035624965), ('241454', 0.0076915281370191066), ('105607', 0.007437560293235598), ('38342', 0.007201099023637889), ('167295', 0.007193809170012635), ('198090', 0.007084764641347656), ('81435', 0.007075810976062213), ('214128', 0.007074157901326248), ('34573', 0.007038013619980335)] |
| 0.3 | [('226411', 0.014853878032933816), ('241454', 0.0079888502235203), ('234704', 0.007612693453418488), ('105607', 0.0072473910158901145), ('89073', 0.007146525235103824), ('38342', 0.006873767167890277), ('167295', 0.006871306185818802), ('198090', 0.0064702403159588966), ('81435', 0.006420311428380471), ('214128', 0.006414932859076555)] |
| 0.5 | [('226411', 0.014399284917792871), ('241454', 0.00807136193823962), ('89073', 0.00790275077255705), ('105607', 0.006911051387432928), ('234704', 0.006805213409672416), ('167295', 0.006393275398071685), ('38342', 0.006315398408754895), ('198090', 0.005600429882603798), ('81435', 0.005466677975003333), ('214128', 0.0054537193237522005)] |

| | |
|------------|---|
| 0.7 | [('226411', 0.013404893313287657), ('89073', 0.008732821749966868), ('241454', 0.007824683046318335), ('105607', 0.006262536325667668), ('234704', 0.005711561012298602), ('167295', 0.005548904269066818), ('38342', 0.005313217383750389), ('198090', 0.004366942162659329), ('81435', 0.004103472655289573), ('214128', 0.004079975742780583)] |
| 0.9 | [('226411', 0.011022289311472644), ('89073', 0.009713929893273472), ('241454', 0.006229063880616446), ('105607', 0.004536829959293071), ('234704', 0.003944357778685778), ('167295', 0.0035063597015546613), ('181701', 0.0033731995838068678), ('259455', 0.003301299684668594), ('247241', 0.003301299684668594), ('77999', 0.0032956586287251144)]"] |

Damping factor changes the order of page rank...