Horace Chan, hcc39
Kevin Chen, kfc35
Shihui Song, ss2249

README

← Precomputations →

netid used = hhc39
rejectMin = 0.9207
rejectLimit = 0.9307

number of edges selected = 7524242

Our input file is in the source code directory named *hadoopInput.txt* found at
http://sweet-mapreduce.s3.amazonaws.com/pagerank/hadoopInput.txt
key\tabvalue
nodeID   current_pagerank num_Outgoing_edges list_of_outNodes_if_exists

← Computations →

Simple PageRank:

- Mapper:
  - Parses the value and sends its rank to its outNodes or to the counter for no outNodes

- Reducer:
  - Adds its residual to the counter (multiple the number by 10E12)
  - Output the files in the exact same format as mapper receives them

Block PageRank:

- Mapper:
  - Parses the value and sends the value to its node
  - If it does have any out edges, add its pagerank to the counter for no out edges
  - Calculates its outrank to each outNode
    - If its outNode is in the same block, send its nodeID to it.
    - Else send its outrank to that node's block.
- Reducer:
  - Process all edges to create various structures and pageranks.
  - Iterate at most 10 times or until the block residual is less than 0.01. (Keep the iteration average)
  - Find the biggest nodeID in each block and pass it to its corresponding counter

← Simple PageRank Residuals →

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Iteration 0: 2.3386718
Iteration 1: 0.322979956
Iteration 2: 0.1918914
Iteration 3: 0.0940770
Iteration 4: 0.06284983

← Block PageRank Results →

Iteration 0:
- Average residual = 2.8049558
- Average block passes = 10.0

Iteration 1:
- Average residual = 0.04260475
- Average block passes = 10.0

Iteration 2:
- Average residual = 0.022838521
- Average block passes = 8.8529

Iteration 3:
- Average residual = 0.009014112
- Average block passes = 6.588235

Iteration 4:
- Average residual = 0.00336219
- Average block passes = 3.67647

Iteration 5:
- Average residual = 0.0011761935
- Average block passes = 2.867647

Iteration 6:
- Average residual = 0.000592357
- Average block passes = 1.79412

NodeValues:
10328 $4.319348821606375E-7$
20373 $2.1890460137472094E-7$
30629 $2.6395508481579744E-7$
40645 $2.2989305755883814E-5$
50462 0.004996052198244532
60841 $1.174962364757708E-5$
70591 $2.2989305755883814E-5$
80118 $5.648313487371047E-7$
90497 $9.12680724963211E-7$
100501 $9.947588643246979E-7$
110567 0.0010385161598862387
120945 $8.083498330533892E-7$

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130999 2.2870158358644882E-7
140574 0.0010355066474836549
150953 9.841093652267307E-4
161332 2.2854951633612142E-7
171154 2.2950678306765247E-7
181514 2.243187263968156E-7
191625 2.5463139361086564E-4
202004 9.2579690890116E-7
212383 9.316657917888664E-4
222762 2.2843717967677346E-7
232593 2.379201715629373E-7
242878 1.0811246563018993E-6
252938 5.789135598316742E-6
263149 1.1428332676052142E-5
273210 2.7739420857968182E-5
283473 2.9008063086273855E-7
293255 2.276891520706872E-6
303043 9.622719042969374E-7
313370 2.5496880145449194E-7
323522 5.628111223509731E-7
333883 1.9162636023160283E-5
343663 2.3133872403950795E-6
353645 1.992270532002372E-6
363929 1.454183755980942E-5
374236 2.3934256420346934E-7
384554 7.03461076849323E-5
394929 4.155427914183562E-6
404712 7.186285256350923E-7
414617 3.7370954517504086E-7
424747 1.566373254197686E-6
434707 5.369747105045496E-7
444489 5.089453473135081E-7
454285 3.513688370062479E-7
464398 5.384314688106181E-7
474196 5.267122496815928E-7
484050 1.6418724738416687E-5
493968 7.769740632563809E-7
503752 8.198704260370157E-7
514131 0.0011273233378967273
524510 8.127998411155226E-4
534709 0.009354401321411191
545088 0.0018051562809152219
555467 0.0017417340153189926

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```
565846 2.1890460137472094E-7
576225 1.1337804447283159E-5
586604 3.9166980465291974E-4
596585 1.320887787835979E-6
606367 3.2011124782804495E-7
616148 9.65544526725193E-7
626448 2.1890460137472094E-7
636240 2.2865959949898204E-7
646022 5.703018822112346E-7
655804 2.2865959949898204E-7
665666 2.561183836084235E-7
675448 2.1890460137472094E-7
685229 3.5802962803733733E-7
```

===
Simple PageRank Biggest Node Values (Not required, but for reference and comparison)

```
10328 4.320502157880822E-7
20373 2.1890460137472094E-7
30629 2.639709735819499E-7
40645 2.2756831743015763E-5
50462 0.004924835690106168
60841 1.17827474655514E-5
70591 2.2756831743015763E-5
80118 5.681361142382386E-7
90497 9.126606461661738E-7
100501 9.95310847764767E-7
110567 0.0010560900838880159
120945 8.093073671968848E-7
130999 2.2870168167467523E-7
140574 0.0010230794687321493
150953 9.738198247022928E-4
161332 2.2854953741465744E-7
171154 2.2950929747351004E-7
181514 2.243144445954324E-7
191625 2.4253800702408445E-4
202004 9.211190575712112E-7
212383 0.0013981947790866877
222762 2.2843168247743364E-7
232593 2.3784428363201164E-7
242878 1.0861460840974737E-6
252938 6.0744935563099556E-6
263149 9.871596933292109E-6
```

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273210 2.676125603420955E-5
283473 2.903693020074418E-7
293255 2.9242383359784574E-6
303043 9.327927910937457E-7
313370 2.549675354252489E-7
323522 5.567487732047913E-7
333883 1.8956207124830548E-5
343663 2.105148702612699E-6
353645 2.0140258836609213E-6
363929 1.5027794014745352E-5
374236 2.393542481975318E-7
384554 6.664498531202442E-5
394929 4.19518243422784E-6
404712 7.176648057900472E-7
414617 3.700473053962216E-7
424747 2.092600481389149E-6
434707 5.459027486918723E-7
444489 5.099446173933898E-7
454285 3.5137398094117916E-7
464398 5.332167286747009E-7
474196 5.297041822054201E-7
484050 1.6462591000801377E-5
493968 8.050461927790302E-7
503752 7.910470264359278E-7
514131 0.0011250467047784812
524510 9.388222567127219E-4
534709 0.009313421601285055
545088 0.001783964134044542
555467 0.0018517419343689603
565846 2.1890460137472094E-7
576225 1.119927448302529E-5
586604 3.957694252852773E-4
596585 1.3307274389062014E-6
606367 3.199434145094551E-7
616148 9.659916821165973E-7
626448 2.1890460137472094E-7
636240 2.286596942056035E-7
646022 5.682083335942199E-7
655804 2.286596942056035E-7
665666 2.561183836084235E-7
675448 2.1890460137472094E-7
685229 3.6042588838503097E-7