

# Dsybil: recommendation system

Decentralized system final project

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# Introduction

- Sybil resistant recommendation system
- File sharing system based on Peerster
  
- Loss (# of bad recommendations) is provably  
◦  $O(D \log M)$  even under worst-case attack
  - $D$  : Dimension of the objects
  - $M$  : Max # of sybil identities **voting on each obj**

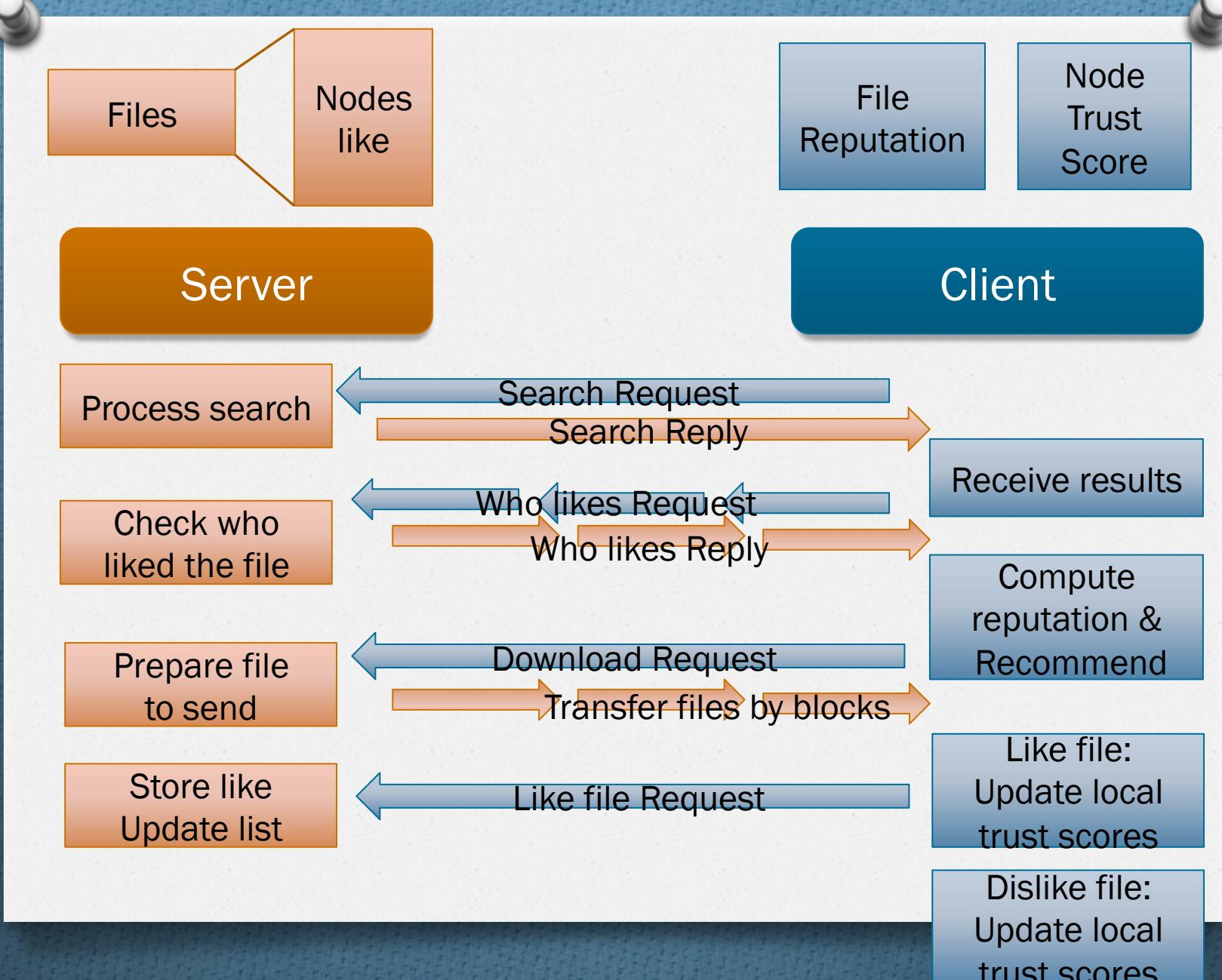
# Functionality

- Server:

- Share files
  - Keep records of which node liked each file

- Client:

- Get recommendation for file search
  - Like / Dislike files
  - Local trust score of other nodes
  - Reputation score of each file



# Reputation & Trust

- File Reputation

  - = Sum ( Local Trust( Nodes who liked the file) )

- Trust: initially set to S

  - Threshold of file rep: C, ( $>= C$ , overwhelming)

For reputation of  
all nodes who  
liked the files

		File	
		Overwhelming	(Rep < C)
Like	--	x $\alpha$	
	x $\beta$	x $\beta$	

(This demo we use parameters from the paper:

$S = 0.2, C = 1, \alpha = 5, \beta = 0$  )

# Recommend

- If exist overwhelming files
  - >randomly recommend one of the overwhelming file.
- If no overwhelming files
  - > randomly recommend one file.

# Demo

- Goal: after a few rounds of voting, the system will recommend good files.
- Server
- Client: Alice's view of other nodes' reputation
  - Good nodes E, F. Bad noes G, H.
- 5 rounds, each round 2 good file, 2 bad file

# Round 1

2 good objs

E: 0.2

F: 0.2

*total : 0.4*

2 bad objs

G: 0.2

H: 0.2

*total : 0.2*

*total : 0.2*

File

Name: r1file1good r1file2good

r1file3bad

r1file4bad

# Round 2

2 good objs

E: 0.2

*total : 0.2*

F: 0.2

*total : 0.2*

2 bad objs

G: 0.0

H: 0.2

*total : 0.2*

*total : 0.0*

File

Name: r2file1good r2file2good

r2file3bad

r2file4bad

# Round 3

2 good objs

F: 0.2

H: 0.2

*total : 0.4*

2 bad objs

G: 0.0

*total : 0.0*

*total : 0.0*

File

Name: r3file1good r3file2good

r3file3bad

r3file4bad

# Round 4

2 good objs

E: 1

*total : 1*

F: 1

*total : 1*

2 bad objs

H: 1

*total : 1*

*total : 0*

File

Name: r4file1good r4file2good

r4file3bad

r4file4bad

# Round 5

2 good objs

E: 1

*total : 0*

2 bad objs

G: 0

*total : 0*

H: 0

*total : 0*

File

Name: r5file1good r5file2good r5file3bad r5file4bad

# Alice local trust score

- E: 1       guide
- F: 1       guide
- G: 0
- H: 0

# Questions

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# Reference

Yu, H., Shi, C., Kaminsky, M., Gibbons, P. B., & Xiao, F. (2009, May). Dsybil: Optimal sybil-resistance for recommendation systems. In Security and Privacy, 2009 30th IEEE Symposium on (pp. 283-298). IEEE.