Group A(mazing) Prezzie

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U.S. DEPARTMENT OF ENERGY

Priority calculation algorithm

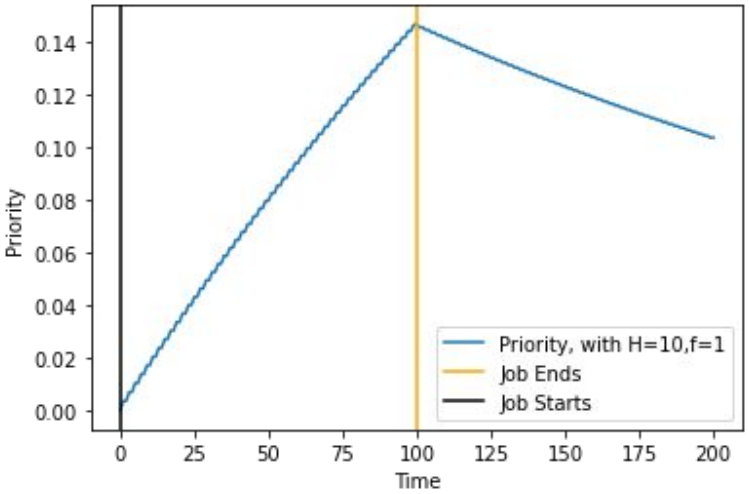
Remote user priority (RUP) of user u at any time t is given by

$$\pi_r(u,t) = \beta \times \pi_r(u, t-\delta t) + (1-\beta) \times \rho(u,t)$$

Where $\rho(u,t)$ is the uses of user u at time t, and

$$\beta = 0.5^{\delta t/h}$$

And h is a half life, set in the central manager's config file, under PRIORITY_HALFLIFE configure variable.



Simulation of a user's priority. They use half of our cluster's resources for 100 seconds, then their job stops. The half-life of the system is set at H=10

EUP, or effective user priority, is what's used by the negotiator to assign jobs.

$$\pi_e(u,t) = \pi_r(u,t) \times f(u,t)$$

Defined as the product of RUP and the 'priority boost factor'.

How the negotiator matches jobs with resources

Central manager side - condor_negotiator

- Create a list of all resources in the pool, along with all job submitters
- Sort submitters by EUP, with best priority at the top
- Iterate through the priority list until all submitters have resources

Job matching

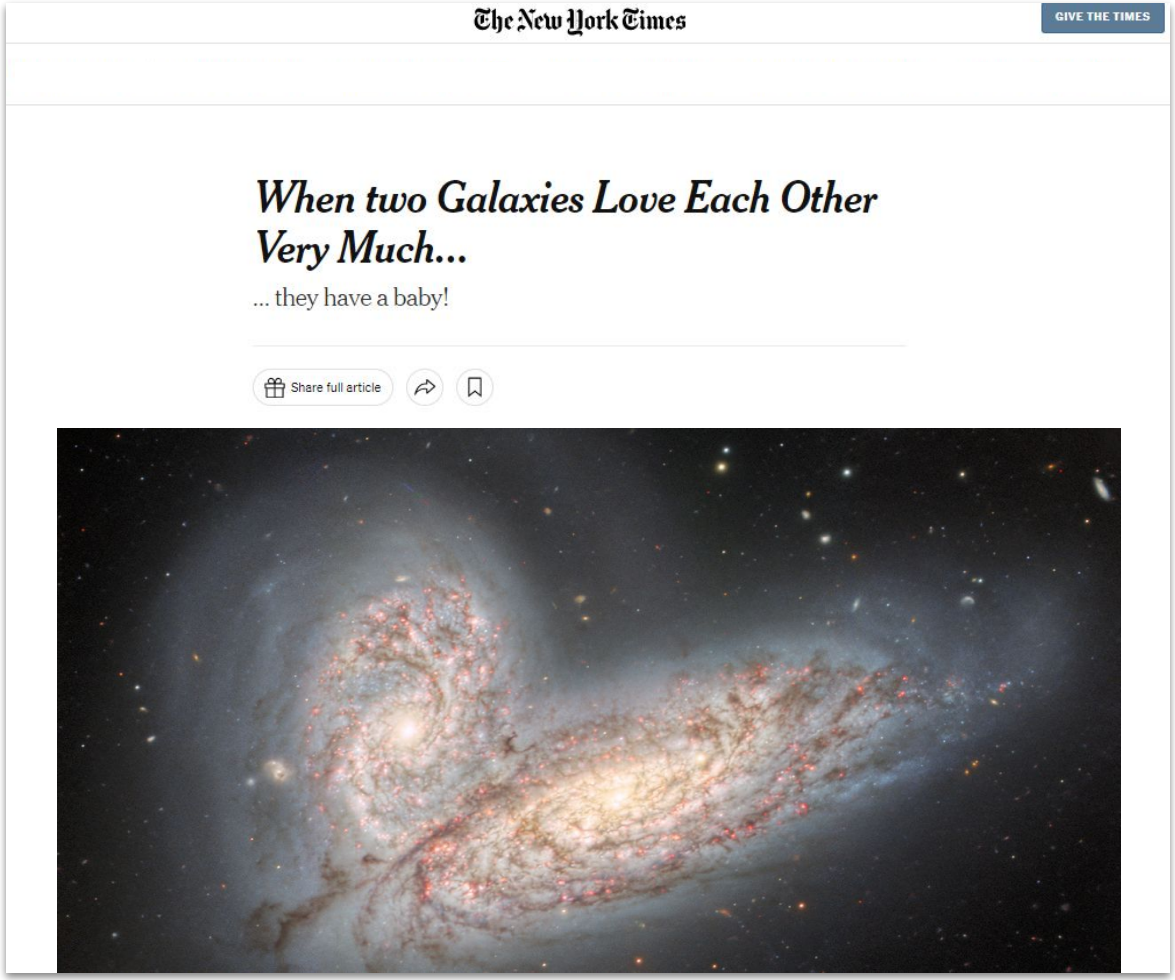
- If the job requests too many resources or if a machine is already claimed, a job isn't matched.
- Reason for claim
  - No preemption, Rank, and Priority
- The central manager then assigns the job to the top machine on the match list based on job rank and reason for claim.

Job Priority List For Cluster

- Three Groups
  - Mathematics
    - 5% of the queue
  - Physics
    - 90% of the queue
  - Chemistry
    - 5% of the queue
- We also have some added criteria for who can submit jobs on our cluster
  - Ex:
    - If you're named "Andrew", no jobs for you

```
DAEMON_LIST = COLLECTOR, NEGOTIATOR
ALLOW_DAEMON = *
ALLOW_READ = *
ALLOW_WRITE = *
COLLECTOR_HOST = elisec
GROUP_NAMES = group_physics, group_math, group_physics.andrew, group_chemistry
GROUP_QUOTA_group_physics             =   0.9
GROUP_QUOTA_group_math                =   0.05
GROUP_QUOTA_group_physics.andrew      =   0.0
GROUP_QUOTA_group_chemistry           =   0.05
GROUP_ACCEPT_SURPLUS = false
GROUP_ACCEPT_SURPLUS_group_physics   = true
GROUP_ACCEPT_SURPLUS_group_math      = false
GROUP_ACCEPT_SURPLUS_group_chemistry = false
GROUP_ACCEPT_SURPLUS_group_physics.andrew   = false
```

Headlines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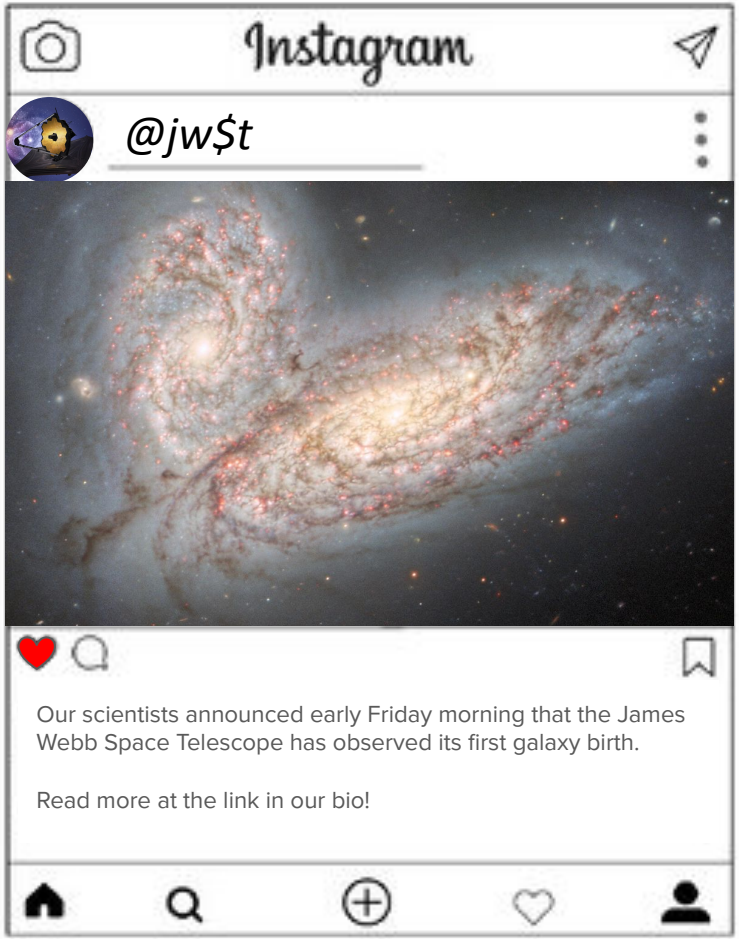

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