Identity and Expertise in a Networked World

Can we measure a person's expertise?

It's a social construct, so we ask society...

Terrell Russell
Nov 2006
http://www.terrellrussell.com

Assumptions

- Identity is consolidating – online and offline
  - You are who you are
  - Online will become an extension of offline, not something separate

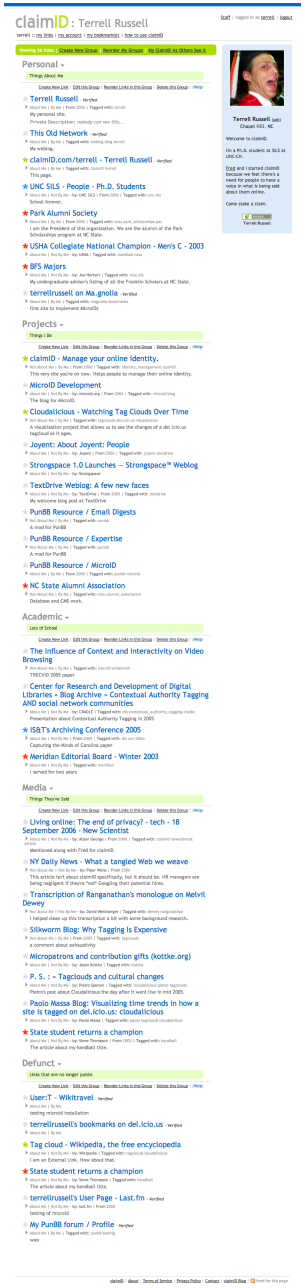
- People are interacting with more people in more mediated environments
  - A higher volume of people
  - A higher volume of systems and communities

- We have to decide how to evaluate these largely unknown spaces and people
  - We use personal history, trust, cognitive authority
  - Especially if we are a new entrant into an existing space or community

Background Work

- Identity
  - Operationalized at claimID.com
  - Manage links about yourself online

- Tagging
  - Operationalized at cloudalicio.us
  - Visualizes tagclouds over time



claimID : Terrell Russell

Staff | logged in as terrell | logout

terrell :: my links | my account | my bookmarklet | how to use claimID

Viewing 36 links | Create New Group | Reorder My Groups | My ClaimID As Others See It

Personal

Things About Me

Create New Link | Edit this Group | Reorder Links in this Group | Delete this Group | (Help)

Terrell Russell - *Verified*

About Me | By Me | From 2006 | Tagged with: terrell

My personal site.

Private Description: *nobody can see this...*

This Old Network - *Verified*

About Me | By Me | Tagged with: weblog blog terrell

My weblog.

claimID.com/terrell - Terrell Russell - *Verified*

About Me | By Me | Tagged with: claimID terrell

This page.

UNC SILS - People - Ph.D. Students

About Me | Not By Me - by: UNC SILS | From 2006 | Tagged with: unc sils

School forever.

Park Alumni Society

About Me | By Me | From 2006 | Tagged with: ncsu park_scholarships pas

I am the President of this organization. We are the alumni of the Park Scholarships program at NC State.

USHA Collegiate National Champion - Men's C - 2003

About Me | Not By Me - by: USHA | Tagged with: handball ncsu

BFS Majors

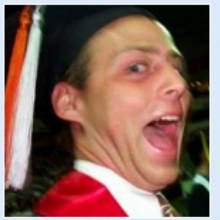
About Me | Not By Me - by: Joe Herkert | Tagged with: ncsu bfs

My undergraduate advisor's listing of all the Franklin Scholars at NC State.

terrellrussell on Ma.gnolia - *Verified*

About Me | By Me | Tagged with: magnolia bookmarks

first site to implement MicroIDs



Terrell Russell [edit]
Chapel Hill, NC

Welcome to claimID.

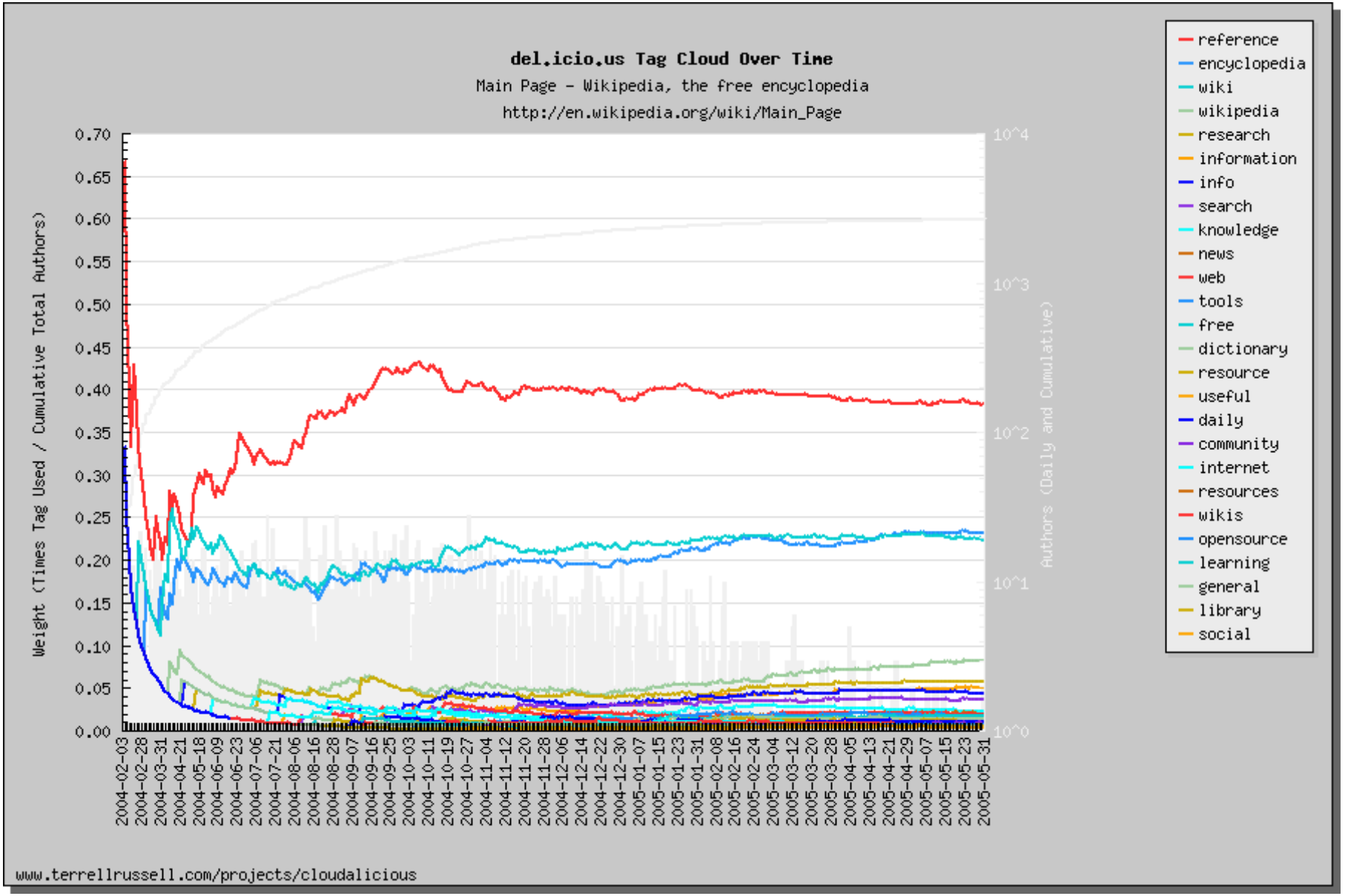
I'm a Ph.D. student at SILS at UNC-CH.

Fred and I started claimID because we feel there's a need for people to have a voice in what is being said about them online.

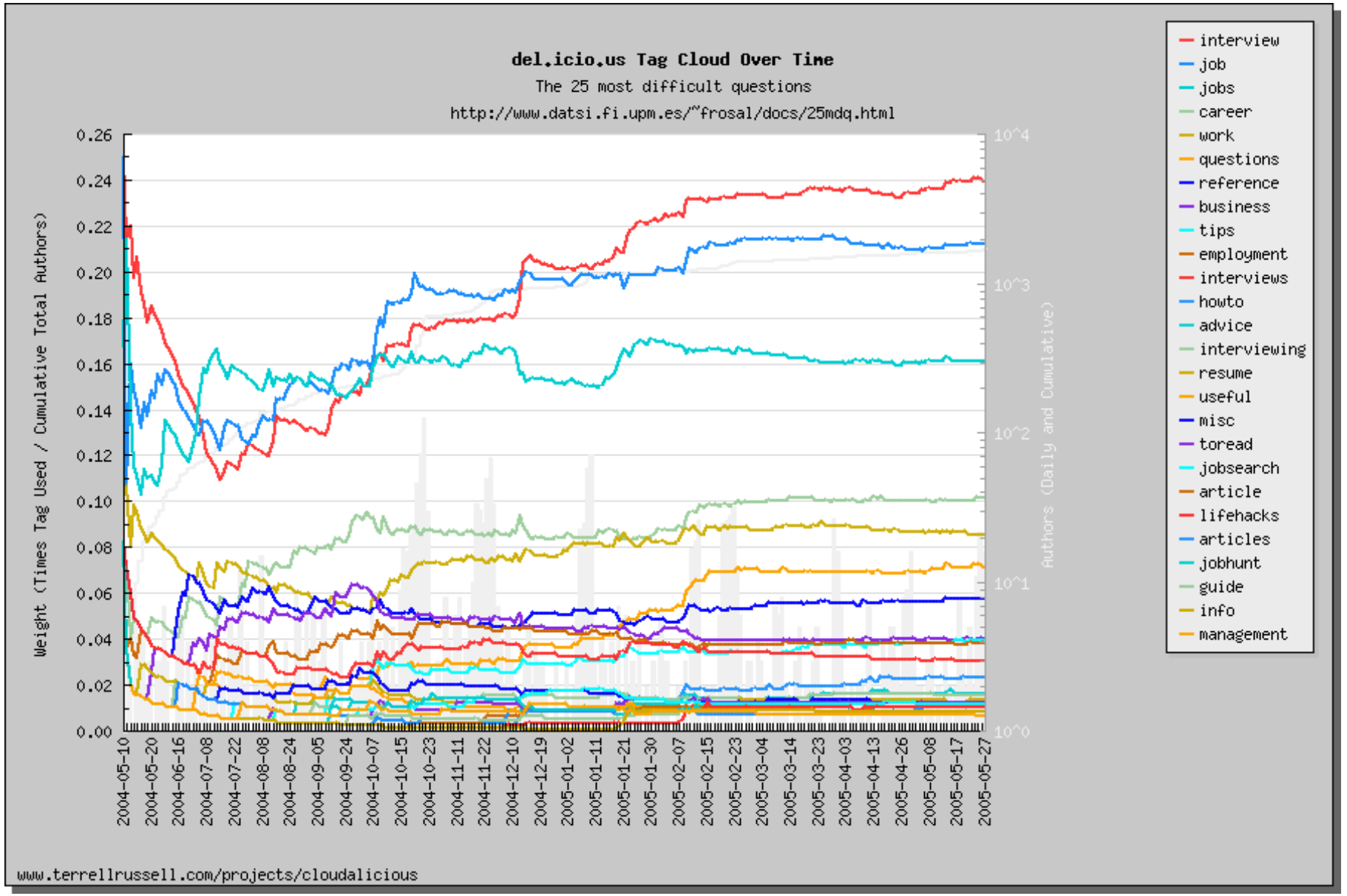
Come stake a claim.

HCARD
Terrell Russell

claimID.com



cloudalicio.us



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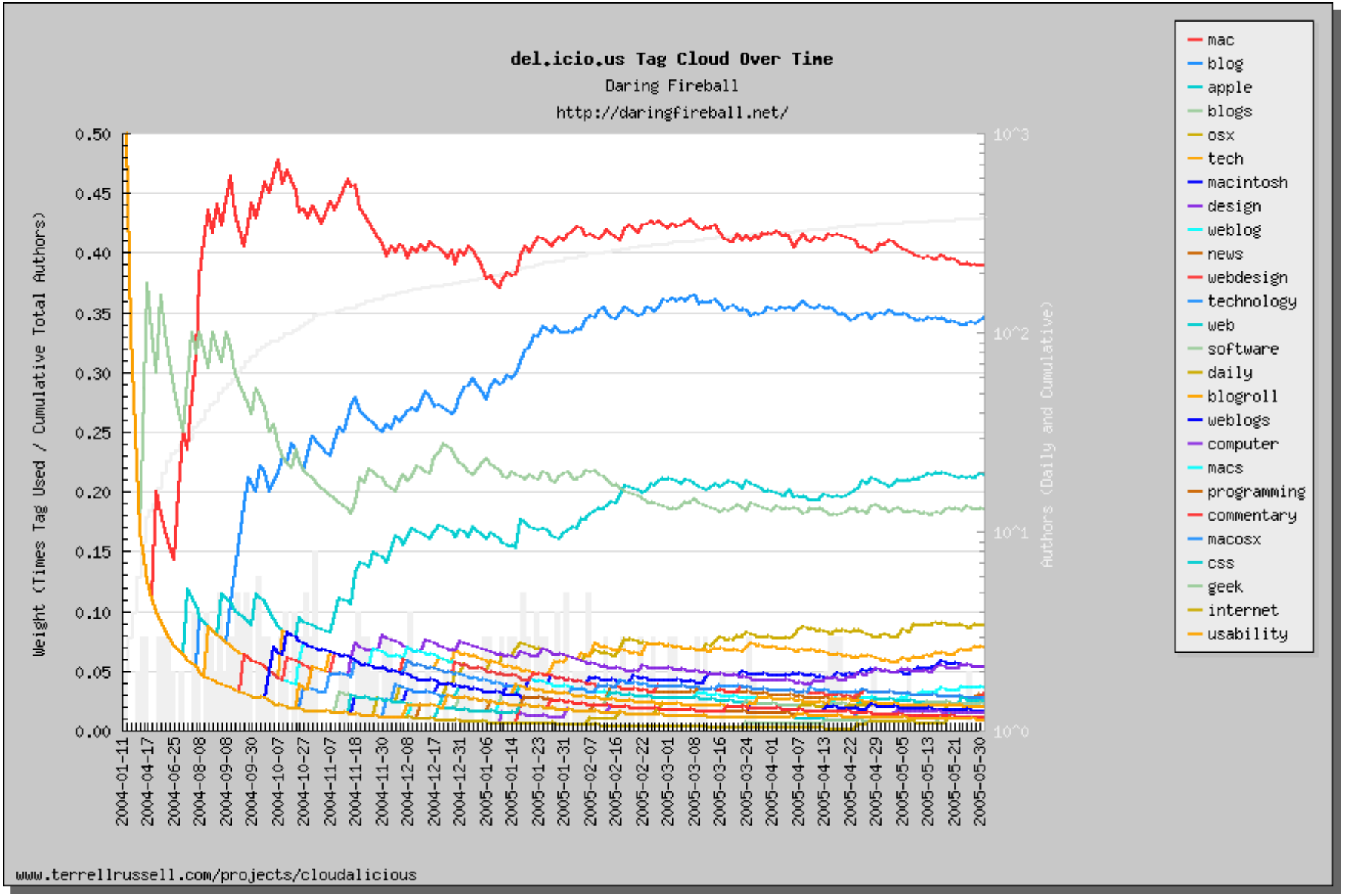


cloudalicio.us

Expertise Location (1/4)

- Computers have been a part of this process through three phases:
  - Artificial Intelligence
  - Knowledge Management
  - People!

> "Within knowledge intensive organizations, one of the most fundamental tasks is expertise location, 'how does one locate others with relevant expertise for a problem at hand within an organization?' An information seeker most often finds someone with the required expertise through mutual associates, paper directories, communication technologies, or, more recently, computer-based recommendation systems (McDonald and Ackerman, 1998). ... While people know at least local portions of the knowledge network intuitively, this knowledge must be built into computer-based recommendation systems." (Lutters, et al 2000)

Expertise Location (2/4)

- Artificial Intelligence
  - The computers will learn by watching.
    - They will work out their own rules for how the world operates.
    - They will apply these rules and come to know what is happening around them.
    - They will learn from this understanding.
    - Repeat.
  - This is hard.
  - Perhaps one day – still – this could be possible. By the late 90s, however, the research had largely shifted away from this approach.

Expertise Location (3/4)

- Knowledge Management and Expert Systems
  - Knowledge/Expertise is knowing what to do in a situation with many variables. Human experts do this, even subconsciously, by applying rules to situations - rules we've developed from experience and study.
  - If we can define these rules, encode them and feed them into a computer algorithm, then the computer can apply them faster than we can and across many different problem spaces.
  - The computer can know things and apply that knowledge just like us.
  - Given enough rules and enough inputs about the particular situation, a decision can be made (about who to hire, who to assign a job to, who to ask for help, etc.)
- Studies over the last 10 years have found that Expert Systems grade out better than novices and roughly equal to “recent hires”, but fail to meet the bar we set for “experts”. People are still better at applying knowledge.

Expertise Location (4/4)

- People!
  - Move the intelligence out to the edges. Ask the people who are already doing this stuff. Keep them in the loop. Make sure what is being calculated and used as part of the recommender system is continually "in check" and "good enough".
  - Complementary to the Knowledge Management algorithms developed in the last 10 years.
  - Strengths of using people
    - Little/No false positives (the bosses knew everything)
    - Feedback loop for the people themselves – allows them to make new connections in the way that they do best
  - Weaknesses
    - Manual – slower, relatively more expensive than automatic discovery

Finding an Expert

- In “Real Life”, we find an expert through
  - Original research, taking both time and effort
  - Paper trail of credentialed authority/expertise/experience
  - Our own domain-specific knowledge
  - **Trusted peers** who have been there before us

- In mediated systems, we do the same thing
  - We ascribe value to information that seems authoritative
    - How do we do that? (Rieh)
  - We also ascribe cognitive authority (expertise) to individuals
    - Those who produce or are heavily involved with this information
    - But only in appropriate, related contexts

Trusted Peers

- Expertise is highly contextualized
  - We don't trust our mechanic to do our tax returns.

- Trusted peers
  - They have their own contextually trusted peers
  - If our trusted peers are willing to share with us their trusted peers, we (should) value that information
  - When we first move to an area, we ask our neighbors and co-workers about
    - the best mechanics
    - the best dentists
    - the best place to find good sushi

How to contextualize? Contextual Authority Tagging

- A person's areas of expertise (cognitive authority) can be represented by:
  - A set of words/phrases
  - A weighted list of words
    - The aggregation of multiple people's sets of words
    - Like the tagclouds at del.icio.us
  - The object being tagged on the right is a URL
  - We're looking to tag a person's knowledge

common tags cloud | list

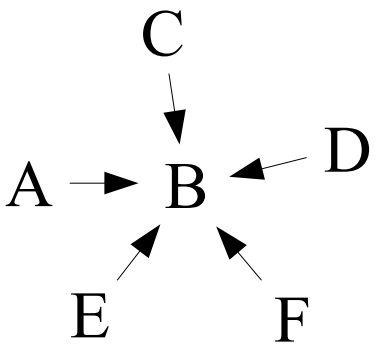
7103	reference
5754	encyclopedia
4576	wiki
4307	wikipedia
2925	research
1569	information
1272	search
925	info
657	tools
338	dictionary
335	news
323	free
286	web
273	web2.0
252	knowledge
240	education
239	community
203	imported
182	internet
175	daily
171	resources
131	learning
131	resource
126	useful
124	english

Complementary to automatic methods

- These aggregated “Expertise Tags” would be:
  - Continually updated, current
  - Recursive, allowing for self-reflection
  - Transparent and visible to all involved
  - A social mirror, reflecting a perspective that's otherwise hard to see

- Could be massaged/prepopulated with algorithmically discovered terms
- Could be limited to a “word bank” or controlled vocabulary, if needed
- Could be tempered by having all tags be “approved” before becoming public

Four Lists



- Collected
  - B_A – What does A think B knows about?
  - B_B – What does B think B knows about?
  - B^*_B – What does B think EVERYONE thinks B knows about?
- Generated
  - B^* – What does EVERYONE think B knows about?
    - This is a weighted list

Research Questions

- Can a group's assessment of an individual's expertise be measured?
- How do we determine this assessment's validity?
  - Is it internally consistent among peers? Does this matter?
  - Is it “good enough”, from different perspectives?
  - If it's wrong, what about it is wrong?
  - Is it comfortable to the person being evaluated?
  - Does the person find it agreeable?
  - What terms are missing? Who decides?
  - What if every term has to be 'approved' by the person a priori?

- **Can it get close enough to add value for other applications?**
  - **recommender systems, voting booths, who gets promoted**

Group Variables

- Group Type
  - Friends
  - Family
  - Professional (Faculty/Society)
  - Neighborhood
  - Hobby
  - Business (Company/Organization)
- Group Size
  - Small (<20 people)
  - Medium (<150 people)
  - Large (150+ people)
- Group Age
  - New
  - Established
- Group Location
  - Disperse
  - Localized
- Group Demographics
  - Age
  - Sex
  - Ethnicity

Group Decision-Making

- One vote per person allows us to measure what is popular, not what is correct or known. The systems we build concerning knowledge should not be democratic. We need to listen to the experts when they're talking about things they know.

- These assessments of expertise can be used to weight an individual's vote.

- A weighted vote is not a substitute for the popular vote, it is an additional vector to consider when making decisions as a group.

- Community examples where this could be useful:
  - Slashdot
  - Digg
  - Wikipedia