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Patterns in Tagging:

An Analysis of Collaborative Classification Practices in Social Bookmarking Tools

Connections 2006, Syracuse, NY, May 20-21

Social Bookmarking Tools

- share links, etc.
- users encouraged to add keywords
- Examples:
- del.icio.us - websites, etc.
 - <http://del.icio.us/>
- citeulike - journals, etc
 - <http://www.citeulike.org/>
- connotea - journals, etc
 - <http://www.connotea.org/>

» del.icio.us history for

Web Sudoku - Billions of Free Sudoku Puzzles to Play Online

<http://www.websudoku.com/>

this url has been saved by 3547 people.
save this item to your bookmarks »

user notes

May '06

<http://www.websudoku.com/>

- [freds4hb](#)

Solve Sudoku pozzles on the web!

- [raydot](#)

Each Sudoku has a unique solution that can be reached logically without guessing. Enter digits from 1 to 9 into the blank spaces. Every row must contain one of each digit. So must every column, as must every 3x3 square.

- [zlsk](#)

play the diamond on web!

- [ardian](#)

Everyone else is doing it, so why not me?

- [shaniber](#)

sudoku

- [vwendy](#)

Each Sudoku has a unique solution that can be reached logically without guessing. Enter digits from 1 to 9 into the blank spaces. [...]

common tags

cloud | [list](#)

[ajax](#) [brain](#) [cool](#) [daily](#) [entertainment](#) [flash](#) [free](#)
[freeware](#) [fun](#) [game](#) **[games](#)** [gaming](#) [interesting](#)
[internet](#) [japan](#) [japanese](#) [juegos](#) [logic](#) [math](#) [online](#)
[puzzle](#) [puzzles](#) [software](#) **[sudoku](#)** [web](#)

related items - [show ↓](#)

posting history

» first posted by [skagen](#) to [Sudoku](#)

May '06

by [simonpfox](#) to [games](#)

by [biki2](#) to [games](#)

by [anis7](#) to [jeu](#)

by [nsharat](#) to [sudoku](#)

by [zarisu](#) to [Games Sudoku Puzzles](#)

by [freds4hb](#) to [Sudoku web games](#)

by [bernardogn](#) to [system:unfiled](#)

by [willnorris](#) to [game](#)

CiteULike

Logged in as [meikipp](#) | [Log Out](#) | [FAQ](#) |  |  |  |  |  |  | 

Article title Search

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Everyone's library

Some recent papers posted to CiteULike - all mixed together. You can also see [just your library](#).

- [Bacterial species and speciation.](#)**
Syst Biol, Vol. 50, No. 4. (August 2001), pp. 513-524.
 by [Cohan](#) FM
 posted to [microbial-species](#) [speciation](#) by [jmeppley](#) as ★★★ on 2006-03-23 21:58:24
- [Some Lattice-based Scientific Problems Expressed in Haskell](#)**
JFP (to appear)
 by [Carpenter](#) DB, [Glaser](#) H
 posted to [functional-programming](#) [haskell](#) [lattice](#) [parallel](#) [scientific](#) by [dguibert](#) as ★★★ on 2006-03-23 21:51:34
- [Mitochondrial genome variation and the origin of modern humans.](#)**
Nature, Vol. 408, No. 6813. (7 December 2000), pp. 708-713.
 by [Ingman](#) M, [Kaessmann](#) H, [Pääbo](#) S, [Gyllensten](#) U
 posted to [complete](#) [divergence](#) [mt](#) [origins](#) [phylogeny](#) by [Archaeogenetics](#) as ✓ on 2006-03-23 21:51:33
- [Genetic variation: molecular mechanisms and impact on microbial evolution.](#)**
FEMS Microbiol Rev, Vol. 24, No. 1. (January 2000), pp. 1-7.
 by [Arber](#) W
 posted to [evolution](#) [horizontal-gene-transfer](#) by [jmeppley](#) as ★★ on 2006-03-23 21:48:03
- [Affinities, Benefits, and Costs: The ABCS of Good Scholars Gene Public](#)**

- ### Everyone's Tags
- Most active tags on CiteULike
- Filter:
- adaptation agent ai algebra algorithm algorithms analysis anthropology architecture attention auditory bayesian binding bioinformatics biology book cancer classification clustering cognition collaboration communication community complexity control cscw culture data database design development disease distributed dna docking economics education environment ethnography evaluation evolution expression fmri folding

Two Studies

- 1. comparison of library descriptors, author keywords and user tags
 - citeulike
 - LIS journals - 165 articles, 1-13 users per article
 - compare descriptors, keywords, tags per article
- 2. analysis of tag usage, semantic structures formed by tags
 - del.icio.us
 - popular links - 64 URLs, 58728 posts
 - tags, frequency of tag use, cword analysis

General Results (both studies)

- Spelling variations
 - UK vs US English spelling
 - punctuation (toread vs to-read)
- Sesquipedalians
 - informationseekingbehaviour
- Acronyms and abbreviations
 - ir for information retrieval
 - gis for geographic information systems
- Language
 - Mostly English, some other languages

Author, User, Intermediary Tags

- comparison done using standard thesaurus terms (synonym, NT, BT, RT, etc.)
- most common relationship between three groups of terms was "related but not in the thesaurus" in 103 articles
- next most common: RT in 79 articles
- unrelated terms occurred in 157 articles

AUI (cont.)

- Sample Data: Paper on information literacy
User: bibliographic, il, information, instruction, literacy, no-tag
Author: information, computers, literacy, learning, perception
Intermediary: computer literacy, continuing professional development, information management
- users do use terms related to thesaurus terms, but not strictly Related Terms
- terminology differences can be significant

Tags that are like Keywords

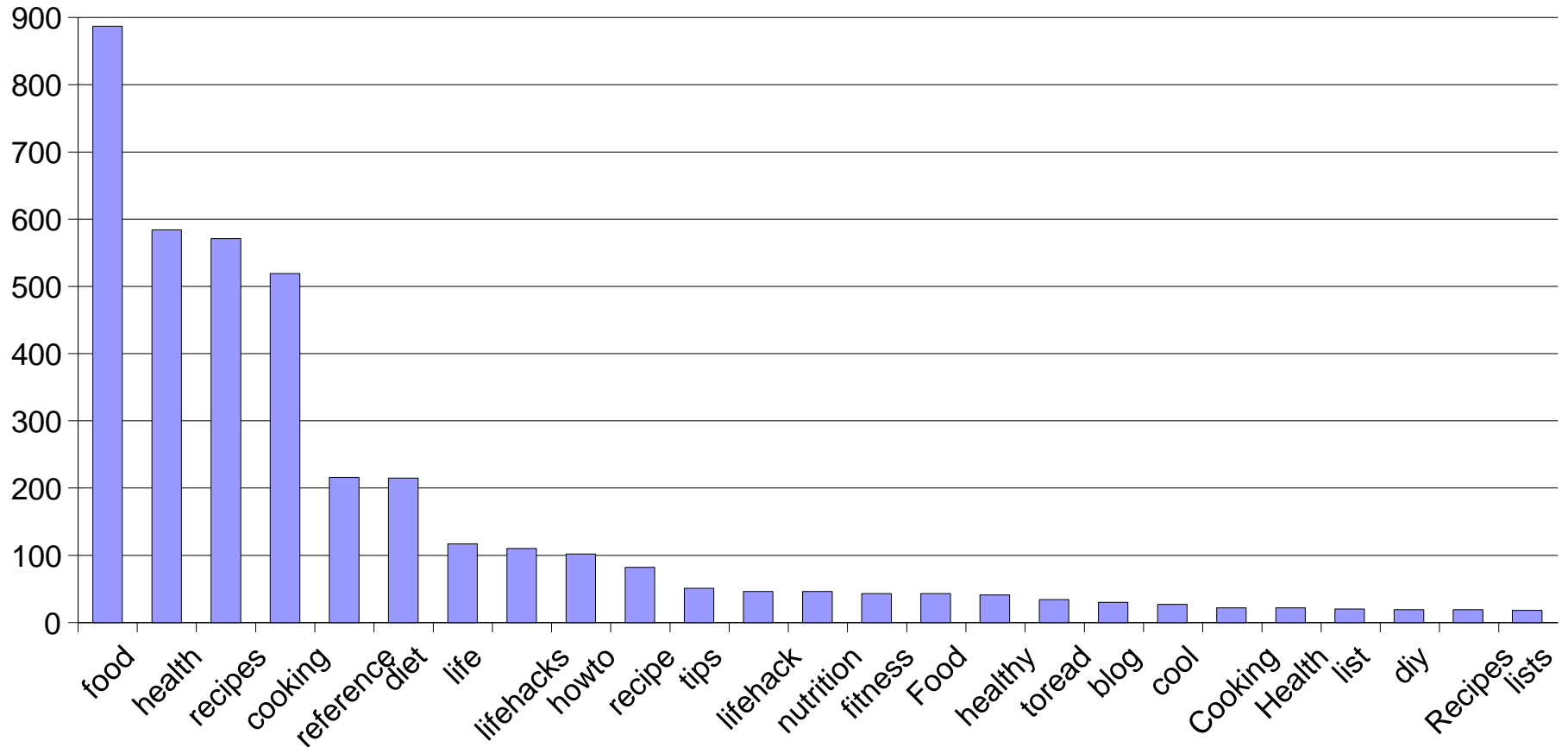
- Subject
 - information_seeking_behaviour
 - copyright
 - information_literacy
 - libraries
- Type
 - conference, article
- Geographic/spatial
 - country names

Tags that aren't like Keywords

- time and task management tags
 - toread, 2read, to-read, alire (French for toread)
 - lis510 (course code)
 - print, toprint
 - maybe
- affective tags
 - fun
 - cool
- other tags
 - new
 - no-tag, system:unfiled

Tag Convergence (frequency)

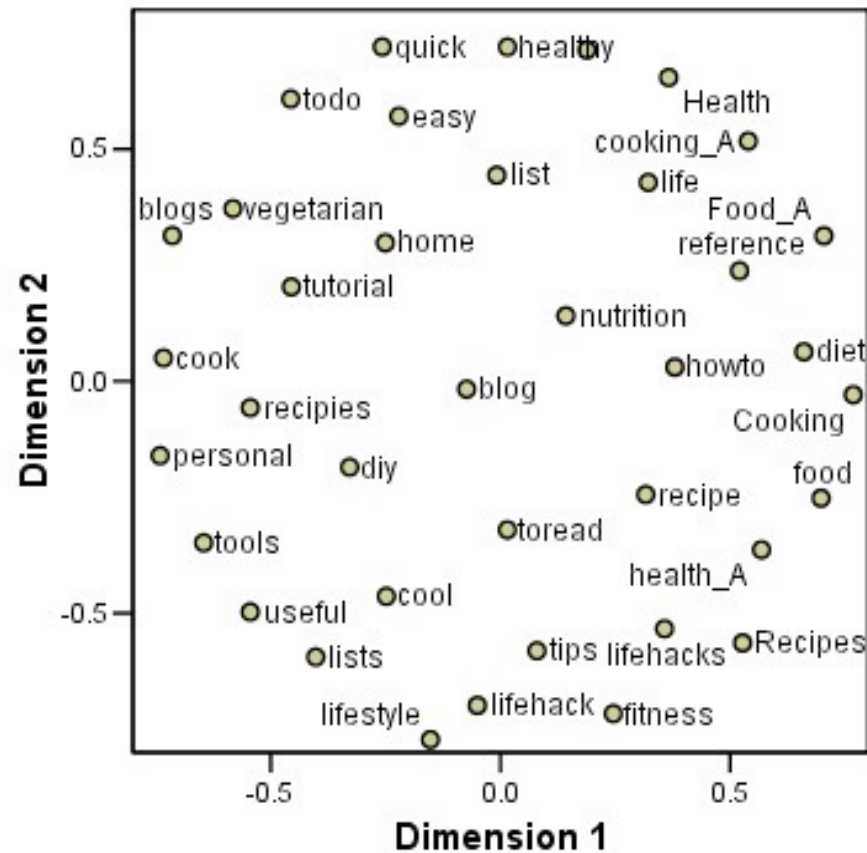
Over 100 Quick and Easy Foods



Co-tag Graphs (MDS)

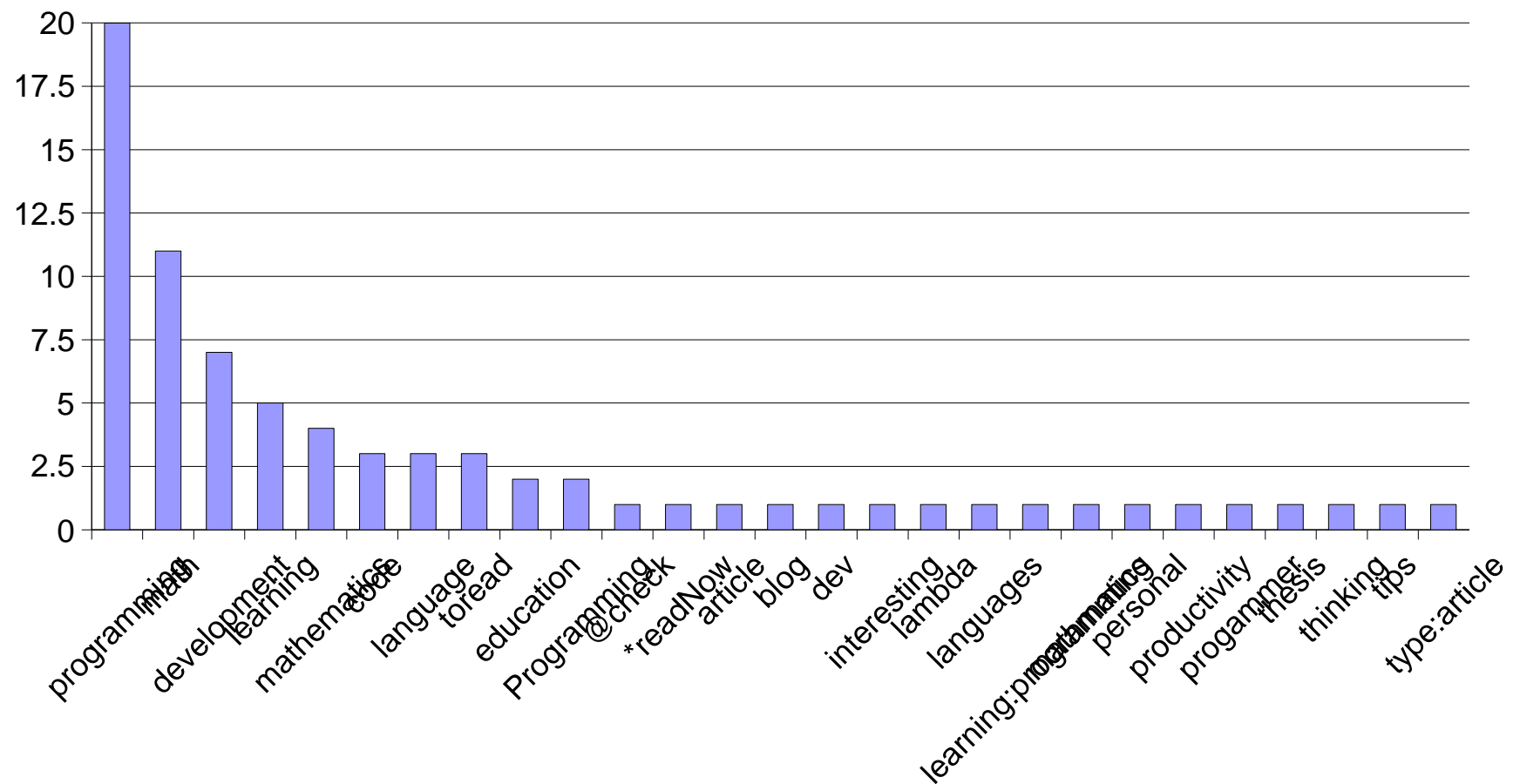
Object Points

Common Space



Tag convergence 2

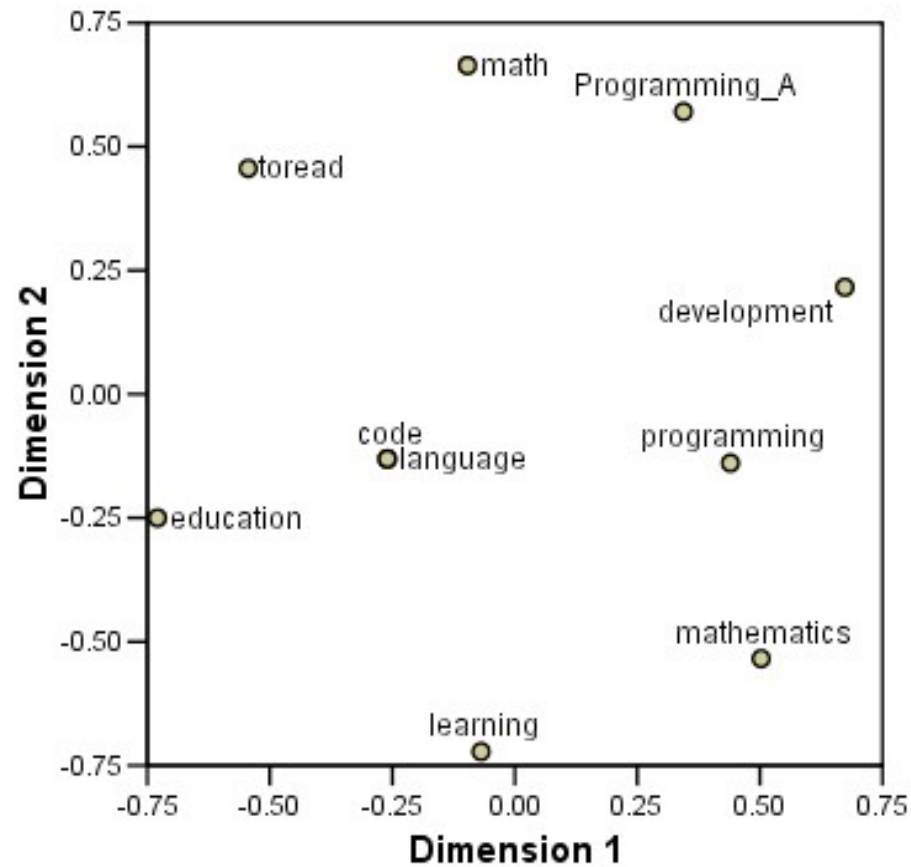
Programming like a mathematician



Co-tag Graphs 2

Object Points

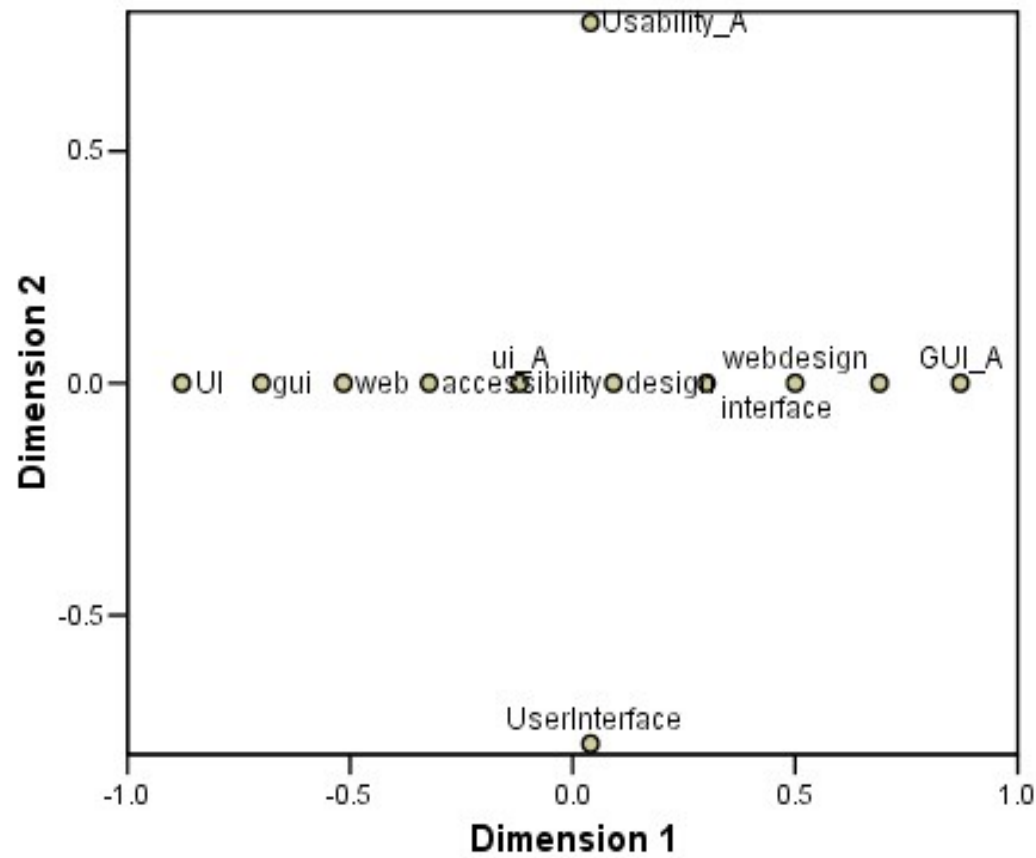
Common Space



Co-tag Graphs 3

Object Points

Common Space



Conclusions

- tagging has all the problems of free text search/indexing
- tagging demonstrates need for examination of how users associate groups of documents (e.g. time and task management)
- tag groups tend to converge on a useful set of terms
- interesting structures formed by tag groups, worthy of further study

Acknowledgments

- Social Sciences and Humanities Research Council
- Faculty of Information and Media Studies, University of Western Ontario

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