

FastCCI

Taming the Commons Category Tree

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WIKIMANIA
2014

Commons category tree?

It it really a tree?

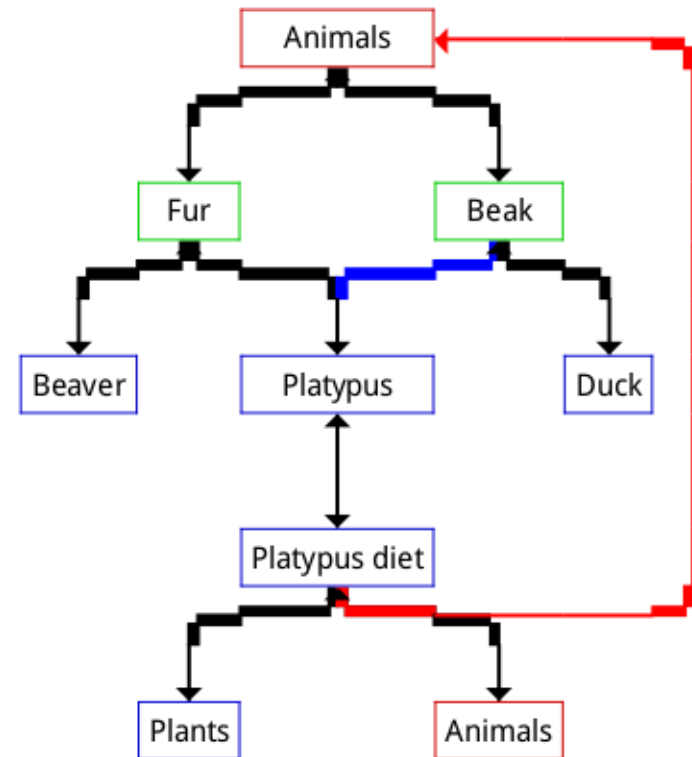
- Made-up example
- Diamond relations
- It gets worse...
- Loops!

It is a **directed graph**!

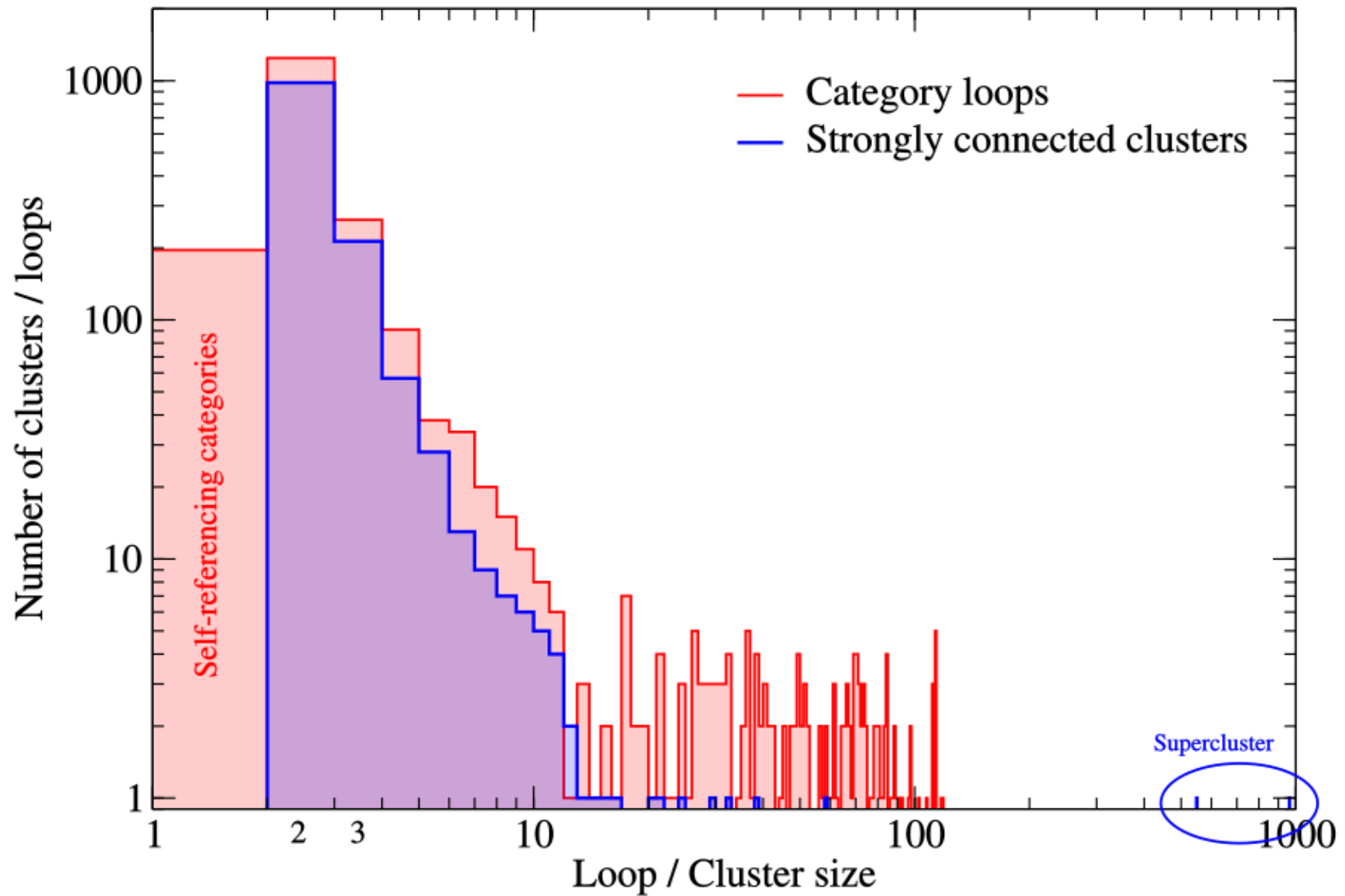
- Let's be careful with the arrow direction
- Well-defined element relation *"is subcategory of"*

The actual meaning is very loosely defined:

- **Hyponymy**: a sort/kind/type of...
- **Meronymy**: a part of..., a member of...
- **Attributes**: color, shape, size, nationality, technique, quality...
- **Location**: where, in..., from... (place/event, place/building, place/people, country/language...)
- **Timing**: when (time/event, time/depicted situation, time of birth, inception or construction...)
- **Agentive and influence relations**: creator/work, device/product, company/product...
- **Modification**: original/modified or modified/original (avoid cyclic structure)



Loops!

















Bundle *similar* images



Media in category "Mister Softee trucks in Hong Kong"

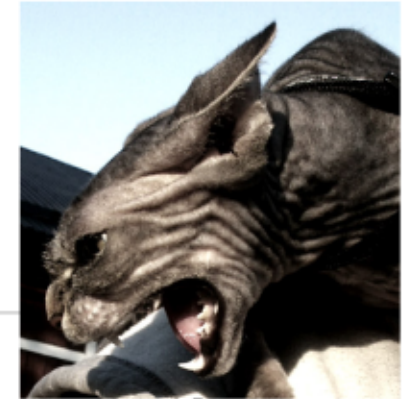
The following 14 files are in this category, out of 14 total.

						
HK_MisterSoftee GoldenComputerArcade.JPG[CopyVio]	HK_MisterSoftee MaOnShan.JPG[CopyVio]	HK_MisterSoftee Mongkok NullahRd.JPG[CopyVio]	HK_MisterSoftee SaiKung.JPG[CopyVio]	HK_MisterSoftee ShatinMTR.JPG[CopyVio]	HK_MisterSoftee TST.jpg[CopyVio]	HK_MisterSoftee VictoriaPark.JPG[CopyVio]
1.68 MB	285 KB	303 KB	306 KB	1.5 MB	768 KB	1.72 MB
						
HK_MobileSoftee CentralPiers.JPG[CopyVio]	HK_MobileSoftee FoTanHeadquarters.JPG[CopyVio]	HK_MobileSoftee SaiKung.JPG[CopyVio]	Mister_Softee HK1.jpg[CopyVio]	Mister_Softee HK2.jpg[CopyVio]	StarHouse.jpg[CopyVio]	Temple Street 9, Hong Kong, Mar 06.JPG[CopyVio]
2.69 MB	1.31 MB	2.58 MB	515 KB	142 KB	287 KB	536 KB

Category: Mister Softee trucks in Hong Kong

"So happy smiling cat" by Yumi Kimura from Yokohama, JAPAN. Licensed under CC BY-SA 2.0 via Wikimedia Commons.

Categories hide content



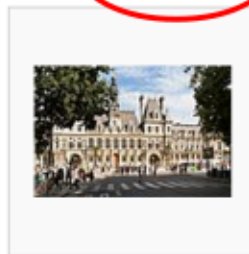
Pages in category "Paris"

This category contains only the following page.

- [Paris](#)

Media in category "Paris"

The following 5 files are in this category, out of 5 total.



[Avenue Victoria and Hotel de Ville, Paris 2014.jpg\[CopyVio\]](#)

1.04 MB



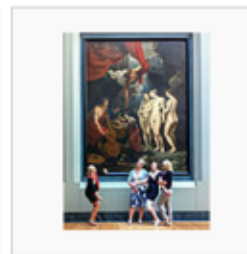
[Dans les rues de Paris, 2014.jpg\[CopyVio\]](#)

736 KB



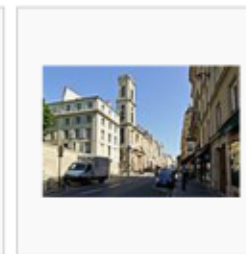
[Place d'Italie, Paris 2014.jpg\[CopyVio\]](#)

876 KB



[The Education of the Princess in the Louvre, Paris 2014.jpg\[CopyVio\]](#)

1.87 MB



[Église Saint-Jacques-du-Haut-Pas, Rue Saint-Jacques, Paris 2014.jpg\[CopyVio\]](#)

659 KB

[Categories](#) (±): [Cities and villages in France by department](#) (−) (±) (↓) (↑) | [Cities and villages in Île-de-France](#) (−) (±) (↓) (↑) | [Paris urban a](#)
Non-topical/index: [Categories with a gallery for a better choice of sub-categories](#) (−) (±) (↓) (↑)

Diffusion into countless sub-categories makes discovering images hard.

Categories *can* encode complex relations

- More than just a simple **and**:
 - Category:Star symbols **on top of** objects
 - Category:People **inside** flowers
Category:People **holding** flowers
Category:People **with** flowers
 - Category:Nandi sculptures **outside** India
6 levels below **Category:India**
 - Category:Sundials **without** sun
5 levels below **Category:Sun**



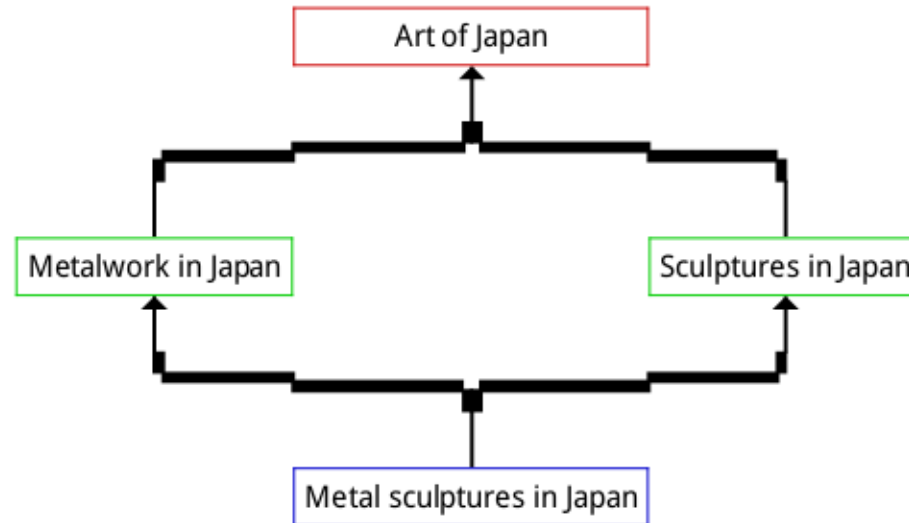
Categories *do* encode *complex* relations



Category:Demographic maps of 15-17 year old dependent children whose fathers speak another language and did not state proficiency in English and whose mothers speak another language and speak English not well or not at all in Australia by state or territory

And this monster has **sub-categories!**

Some categories are natural intersections



= Japan & Metalworks & Sculptures
2.850.563 category diamonds found (not all permutations!)

`./fastcci_diamond(<3s)`

"Angry Sphynx" by User:Trilobite2. Licensed under CC BY-SA 3.0 via Wikimedia Commons.

What about using tags?

- Tags or "Topics" are commonly used in popular Photo communities (Flickr, 500px)
- No hierarchy
- We may get tags (through WikiData), however:
 - Don't hold your breath!
 - Community consensus?
 - Additional maintenance burden?
 - Can not replace all Category applications
 - Won't solve **today's** problems

Category intersection

- Treat categories as Tags
- Certainly works for higher level categories
Kittens, Wyoming, Bicycles, Green
- Consider all images in and below all sub-categories
- Meaning
 - All images which both labels apply to
- Problem
 - Higher up categories loose meaning
the further "down" in the graph we go

The longest Category chain

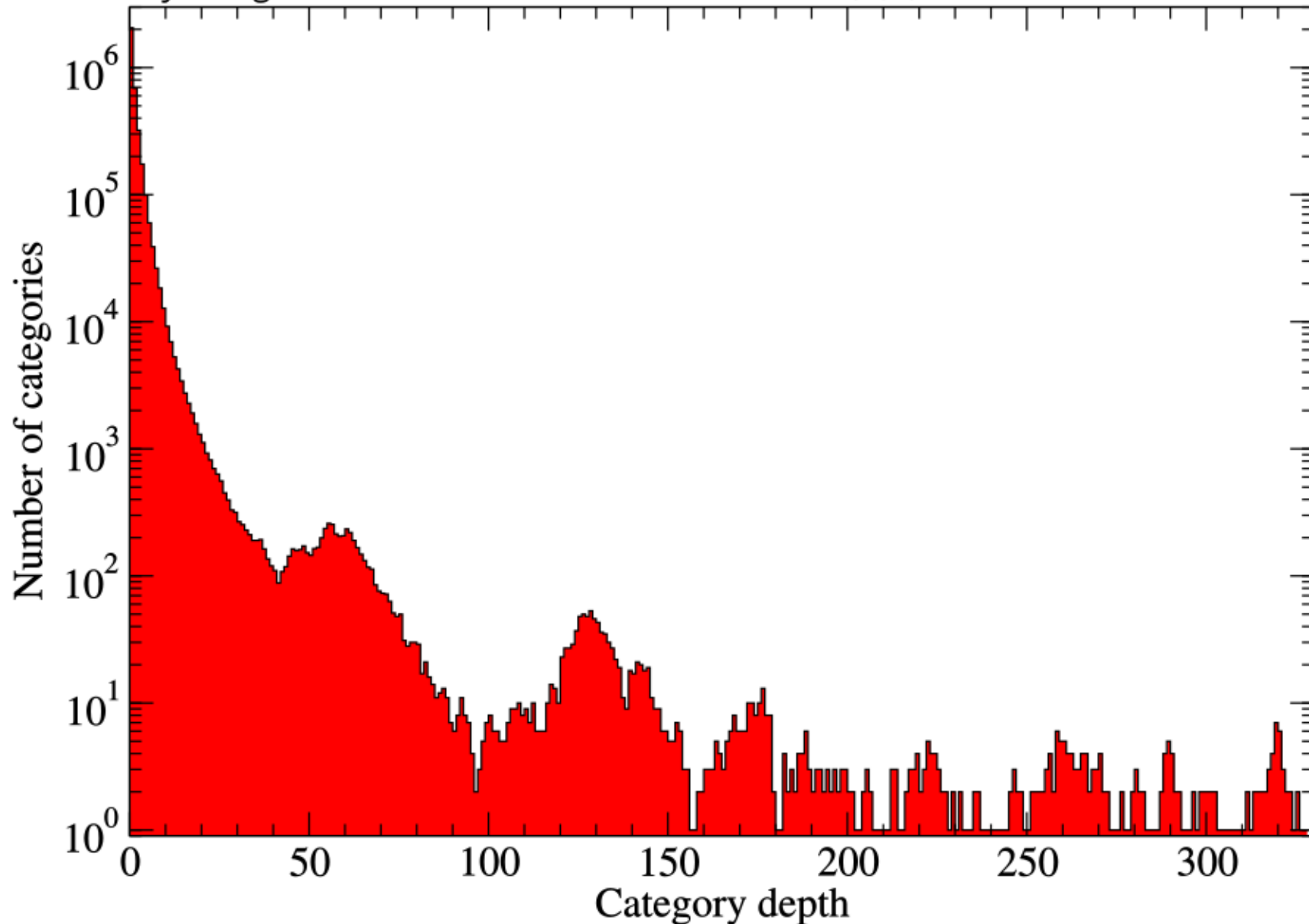
CommonsRoot → Commons → Commons maintenance content → Categories requiring diffusion → Categories requiring permanent diffusion → Science → Scientific disciplines → Interdisciplinary fields → Science studies → Knowledge → Academia → Academic disciplines → Engineering → Engineering by type → Mechanical engineering → Manufacturing → Resources → People → People by medium → Portraits → Portraits by model → Portraits of animals → Animal heads → Mammal heads → Primate heads → Hominidae heads → Human heads → Human faces → Facial expressions → Anger → Violence → Fighting → Fights → Martial arts → Martial arts by type → Archery → Arrows → Arrow symbols → Vectors → Vector mathematics → Direction → Velocity → Acceleration → Movement recording → Video and movie technology → Computer graphics → Computer graphics by type → Animations → Animations by subject → Medical animations → Computer generated images → Digital art → Computer art → Digital image processing → Algorithms → Numerical analysis → Finite difference method → Grids → Lattices → Square lattices → Magic squares → Collaborative work → VIAF inter project linking → Categories with authority control data → Electronic circuits → Circuit diagrams → Electronic diagrams → Waveforms → Transverse wave → Electromagnetic radiation → Optics → Optical technology → Photography → Photographs → Photographs by topic → Views → Views by subject → Landscapes → Geomorphology → Landforms → Mountains → Hills → Hillslopes → Hillslope processes → Mass movements → Fluid flows → Travel → Migration → Human migration → Humanitarian aid → Welfare → Health → Health problems → Environmental problems → Endangered species → Species by IUCN Red List category → IUCN Least Concern species → Homo sapiens → Human behavior → Body language → Bodily functions → Thinking → Abstraction → Abstract art → Art by genre → Architecture → Structures → Construction → Infrastructure → Infrastructure by function → Communication infrastructure → Communication technology → Digital technology → Computers → Computer code → Computer programs → Software → Software engineering → Data modeling → Ontology → Life → Biology → Behavior → Ethology → Learning → Critical thinking → Belief → Philosophy → Philosophy of science → Cognitive science → Mind → Consciousness studies → Philosophy of mind → Cognition → Intelligence → Creativity → Art → Humanities and art → Linguistics → Language → Vocabulary → Words → Verbs → Design → Modelling → Scientific modeling → Information visualization → Graphics → Symbols → Allegories → Personifications → Virtues → Allegories of virtues → Truth → Logical truth → Logical consequence → Deductive reasoning → Theories of deduction → Formalism (deductive) → Formal sciences → Classification systems → Taxonomy → Tree structures → Tree diagrams → Phylogenetic trees → Phylogenetic tree of life → WikiProject Tree of Life → Taxon categories → Neomura → Eukaryota → Opisthokonta → Animalia → Eumetazoa → Bilateria → Deuterostomia → Chordata → Vertebrata → Gnathostomata → Tetrapoda → Mammalia → Theria → Eutheria → Primates → Haplorrhini → Simiiformes → Catarrhini → Hominoidea → Hominidae → Homo → Homo in art → People in art → Figures → Body → Animal body → Zootomy → Zootomy by taxon → Mammal anatomy → Primate anatomy → Hominidae anatomy → Human anatomy → Organs of the human body → Human body organs in art → Human heads in art → Human faces in art → Faces of men in art → Beards in art → Saint Peter → Places named after Saint Peter → Saint Petersburg → People of Saint Petersburg → Alfred Nobel → Nobel Prize → Nobel Prize by discipline → Nobel Peace Prize → Nobel Peace Prize laureates → European Union → Members of the European Union → Denmark → Geography of Denmark → Nature of Denmark → Water in Denmark → Bodies of water in Denmark → Baltic Sea → Countries bordering the Baltic Sea → Middle Europe → Countries of Middle Europe → Slovenia → Geography of Slovenia → Nature of Slovenia → Water in Slovenia → Bodies of water in Slovenia → Adriatic Sea → Adriatic Sea Basin → Italian Peninsula → Italy → Geography of Italy → Seas of Italy → Mediterranean Sea → History of the Mediterranean → Classical antiquity → Classics → Ancient history → Ancient peoples → Semitic peoples → Arabs → Arab world → Greater Middle East → Algeria → Geography of Algeria → Geomorphology of Algeria → Landforms of Algeria → Mountains of Algeria → Mountain ranges of Algeria → Atlas Mountains → Habitat → Territories → States and territories by year of establishment → States and territories established in the 2nd millennium → States and territories established in the 18th century → States and territories established in the 1770s → States and territories established in 1776 → United States → Society of the United States → Education in the United States → Science and technology in the United States → Geology of the United States → Geomorphology of the United States → Landforms of the United States → Coasts of the United States → Coastal geomorphology of the United States → Islands of the United States → Islands of the United States by state → Islands of New York → Islands of New York City → Islands of Manhattan → Liberty Island → Statue of Liberty → People associated with the Statue of Liberty → François Mitterrand → Things named after François Mitterrand → Quai François-Mitterrand (Paris) → Palais du Louvre → Musée du Louvre → Collections of the Louvre → Antiquities in the Louvre → Greek antiquities in the Louvre → Greek antiquities in the Louvre - Nike of Samothrace stair → Nike of Samothrace → Copies of Nike of Samothrace → Prix Ars Electronica → Prix Ars Electronica winners → Wikipedia → Wikipedia community → Wikipedians → Wikipedians by continent → Wikipedians in Europe → Wikipedians in Poland → Wikimedia meetups in Poland → Polish Wikiexpeditions → Wikiekspedycja 2011 → Places visited during Wikiekspedycja 2011 → Sanok → Geography of Sanok → Places in Sanok → Visitor attractions in Sanok → Architecture of Sanok → Buildings in Sanok → Buildings in Sanok by function → Military buildings in Sanok → Barracks in Sanok → Former Austro-Hungarian Army barracks in Sanok → Old military barracks in Olchowce, Sanok 1876-1989 → Galizisches Ulanen Regiment "von Böhm-Ermolli" Nr. 13 → Konfederatka → November Uprising → People of the Polish-Russian War 1830-1831 → November Uprising participants → Juliusz Słowacki → Monuments and memorials to Juliusz Słowacki → Things named after Juliusz Słowacki → Juliusz Słowacki streets → Słowackiego streets in Poland → Juliusza Słowackiego Street in Gdańsk → Gdańsk Lech Wałęsa Airport → Aircraft at Gdańsk Lech Wałęsa Airport → Aircraft at Gdańsk Lech Wałęsa Airport by aircraft type → Airbus aircraft at Gdańsk Lech Wałęsa Airport → Airbus A320 at Gdańsk Lech Wałęsa Airport → Airbus A320 of Wizz Air at Gdańsk Lech Wałęsa Airport

A metric to weigh intersection results:

Path lengths in the graph

Subcategory depth

How many categories do we have on commons with 1,2,3,...n levels below?









Ye olde intersection (The SQL way) = recursive queries = painfully slow!

FastCCI

Category intersection needs...

- ...to be **fast**
- ...an easy interface
 - shallow learning curve
 - powerful options available

FastCCI's Killer Application

- Parallel category trees for  FP,  QI,  VI
 -  Category:Featured picture
640 × Category:Featured pictures of...
 -  Category:Quality image
1825 × Category:Quality images of...
 -  Category:Valued image
578 × Category:Valued Images of...
- Ideal target for intersection
- Easy interface → one button!

FastCCI Interface

Category:Idaho - Wikimed

https://commons.wikimedia.org/wiki/Category:Idaho

Create account Log in

Category Discussion View Edit History Search

Category:Idaho

From Wikimedia Commons, the free media repository

States of the United States: Alabama · Alaska · Arizona · Arkansas · California · Colorado · Connecticut · Delaware · Florida · Georgia · Hawaii · **Idaho** · Illinois · Indiana · Iowa · Kansas · Kentucky · Louisiana · Maine · Maryland · Massachusetts · Michigan · Minnesota · Mississippi · Missouri · Montana · Nebraska · Nevada · New Hampshire · New Jersey · New Mexico · New York · North Carolina · North Dakota · Ohio · Oklahoma · Oregon · Pennsylvania · Rhode Island · South Carolina · South Dakota · Tennessee · Texas · Utah · Vermont · Virginia · Washington · West Virginia · Wisconsin · Wyoming

District of Columbia: Washington, D.C.

Insular areas: American Samoa · Guam · Northern Mariana Islands · Puerto Rico · Panama Canal Zone · United States Virgin Islands ·

(Idaho) (USA)

English: Idaho is a state in the northwestern United States.

Subcategories

This category has the following 28 subcategories, out of 28 total.

<p>A</p> <ul style="list-style-type: none"> ▶ Architecture of Idaho (7 C) <p>B</p> <ul style="list-style-type: none"> ▶ Buildings in Idaho (32 C, 48 F) <p>C</p> <ul style="list-style-type: none"> ▶ Cities in Idaho (52 C, 2 P) ▶ Counties in Idaho (48 C) ▶ Culture of Idaho (10 C, 5 F) 	<p>G</p> <ul style="list-style-type: none"> ▶ Gardens and parks in Idaho (1 C) ▶ Geography of Idaho (16 C, 38 F) ▶ Geology of Idaho (9 C, 17 F) ▶ Government of Idaho (7 C, 3 F) <p>H</p> <ul style="list-style-type: none"> ▶ History of Idaho (21 C, 27 F) <p>M</p>	<p>P cont.</p> <ul style="list-style-type: none"> ▶ Photographs of Idaho (4 C, 1 F) ▶ Populated places in Idaho (4 C) ▶ Postcards of Idaho (1 F) ▶ Pronunciation of Idaho (2 F) <p>S</p> <ul style="list-style-type: none"> ▶ Sports in Idaho (7 C, 4 F) ▶ Stereo cards of Idaho (57 F) ▶ Symbols of Idaho (2 C, 3 F)
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FastCCI Interface

The screenshot shows the Wikimedia Commons interface for the category "Idaho". The page title is "Category:Idaho" and the URL is "https://commons.wikimedia.org/wiki/Category:Idaho". The page features a grid of six images, each with a quality filter icon in the top-left corner. A dropdown menu is open over the top-right image, showing the following options:

- Good pictures (selected)
- All images
- Featured pictures
- Quality images
- Valued images
- In this category and in...
- In this category but not in...

The left sidebar contains the Wikimedia Commons logo, navigation links (Main page, Welcome, Community portal, Village pump), a language select dropdown (English), and a "Participate" section with links for Upload file, Recent changes, Latest files, Random file, Help, Contact us, and Donate. Below that is a "Tools" section and a list of languages available in Wikipedia.

FastCCI Interface

The screenshot shows a web browser window displaying a Wikimedia Commons file page. The address bar shows the URL: https://commons.wikimedia.org/wiki/File:Glacier_Point_at_Sunset,_Yosemite_NP,_CA,_US_-_Diliff.jpg. The page features the Wikimedia Commons logo and navigation links such as 'Main page', 'Welcome', 'Community portal', and 'Village pump'. The main content area displays the file title 'File:Glacier Point at Sunset, Yosemite NP, CA, US - Diliff.jpg' and a breadcrumb trail: [Idaho](#) → [Geography of Idaho](#) → [Great Basin \(USA\)](#) → [Mountain ranges of the Great Basin](#) → [Sierra Nevada \(United States\)](#) → [Mountains of the Sierra Nevada \(U.S.\)](#) → [Mountains in Yosemite National Park](#) → [Half Dome](#). Below the breadcrumb trail, there is a search bar and a 'View' menu with options for 'Edit', 'History', 'Fave', and 'Discussion'. A large image of Half Dome at sunset is displayed at the bottom of the page.

"Glacier Point at Sunset, Yosemite NP, CA, US - Diliff" by Diliff - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons.

FastCCI Advanced Interface

The screenshot shows the Wikimedia Commons interface for the 'Category:Wyoming' page. The browser address bar shows the URL <https://commons.wikimedia.org/wiki/Category:Wyoming>. The page title is 'Category:Wyoming' and it is part of the 'Discussion' category. The main content area lists 'States of the United States' with a link to 'Wyoming' and includes images of the Wyoming state flag and the USA flag. A dropdown menu is open over the 'Good pictures' filter, showing options like 'All images', 'Featured pictures', 'Quality images', 'Valued images', 'In this category and in...', and 'In this category but not in...'. Below the main content, there is a 'Subcategories' section listing 36 subcategories, including 'Valued images of Wyoming (3 F)', 'Quality images of Wyoming (7 F)', 'Architecture of Wyoming (5 C, 2 F)', 'Cities in Wyoming (20 C, 4 F)', 'Counties in Wyoming (27 C)', 'Culture of Wyoming (6 C, 1 F)', 'Geology of Wyoming (11 C, 10 F)', 'Government of Wyoming (3 C)', 'Gravestones in Wyoming (5 F)', 'History of Wyoming (29 C, 18 F)', 'Landmarks in Wyoming (1 C, 2 F)', 'Luke Reiner (1 F)', 'Nature of Wyoming (9 C, 17 F)', 'Newspapers of Wyoming (7 F)', 'Parks in Wyoming (9 C, 4 F)', 'People of Wyoming (9 C, 19 F)', 'Photographs of Wyoming (11 C)', 'Populated places in Wyoming (4 C)', 'Postcards of Wyoming (1 C, 5 F)', and 'Pronunciation of Wyoming (2 F)'. The left sidebar contains navigation links like 'Main page', 'Welcome', 'Community portal', 'Village pump', 'Language select', 'Participate', 'Tools', and 'In Wikipedia'.

FastCCI Advanced Interface

The screenshot shows the Wikimedia Commons interface for the 'Category:Wyoming' page. The browser address bar displays 'https://commons.wikimedia.org/wiki/Category:Wyoming'. The page header includes 'Category:Wyoming' and navigation options like 'View', 'Edit', and 'History'. A search bar is visible in the top right. The main content area features a map of Wyoming and a list of subcategories. A search dialog box is open in the center, titled 'In this category and in...', with 'Bison' entered in the search field. The dialog lists several suggestions: 'Bison', 'Bison, South Dakota', 'Bison (clothing)', 'Bison (clothing) in art', 'Bison (ship, 1975)', 'Bison B.C.', 'Bison Stematec', 'Bison anatomy', 'Bison antiquus', and 'Bison as symbol of Manitoba'. The background page shows the 'Subcategories' section with a list of 36 subcategories, including 'Valued images of Wyoming (3 F)', 'Quality images of Wyoming (7 F)', 'Architecture of Wyoming (5 C, 2 F)', 'History of Wyoming (29 C, 18 F)', 'Landmarks in Wyoming (1 C, 2 F)', and 'Luke Reiner (1 F)'. The 'N cont.' section lists 'Nature of Wyoming (9 C, 17 F)' and 'Newspapers of Wyoming (7 F)'. The 'P' section lists 'Parks in Wyoming (9 C, 4 F)', 'People of Wyoming (9 C, 19 F)', 'Photographs of Wyoming (11 C)', 'Populated places in Wyoming (4 C)', 'Postcards of Wyoming (1 C, 5 F)', and 'Pronunciation of Wyoming (2 F)'. The left sidebar contains navigation links such as 'Main page', 'Welcome', 'Community portal', 'Village pump', 'Language select', 'Participate', 'Upload file', 'Recent changes', 'Latest files', 'Random file', 'Help', 'Contact us', 'Donate', 'Tools', and 'In Wikipedia'.

FastCCI Advanced Interface

The screenshot displays the Wikimedia Commons interface for the 'Category:Wyoming' page. The browser address bar shows the URL <https://commons.wikimedia.org/wiki/Category:Wyoming>. The page features a sidebar on the left with the Wikimedia Commons logo and navigation links such as 'Main page', 'Welcome', 'Community portal', 'Village pump', 'Language select' (set to English), 'Participate' (with options like 'Upload file', 'Recent changes', 'Latest files', 'Random file', 'Help', 'Contact us', 'Donate'), and 'Tools'. The main content area is titled 'Category:Wyoming' and includes a search bar, a 'Good pictures' filter, and a 'Strong match' / 'Weak match' toggle. A grid of six images is displayed, showing various scenes of Wyoming, including bison on a road, bison in a field, and a bison near a log cabin.

Work with Page IDs

- Unique across namespaces
- Just integers (small storage requirement)
 - 15 million files → 60Mb
 - 300 million **category relations** → 1.5GB
 - Fits into RAM
- Use the API to look up the names (client side)

...		
2729056	Category:	Nikola_Šubić_Zrinski
2729058	File:	BA_roof.jpg
2729059	Category:	Zrinski_family
2729060	File:	BlenderExtrusion3ErrCor.jpg
2729061	Category:	Nobility_of_Croatia
2729062	File:	Hadik_Janos.jpg
2729063	File:	Ordine_di_consegna_a_d'Annunzio.JPG
2729064	File:	Teherannosign.jpg
2729065	File:	Perperikon_Bulgaria_1994_CIA_map.jpg
2729066	File:	Emblema_SKVO.jpg
...		

Servers

FastCCI uses two labs instances

- Master to re-build the FastCCI database
- Worker to perform the queries

Master

- DB Format
- Two tables
 - `fastcci.tree` (category relations)

0	<code>cend</code>	Pointer to end of Subcategories	Category
1	<code>cfile</code>	Pointer to end of File list	
2	<code>page_id</code>	1st Subcategory	
2	<code>page_id</code>	2nd Subcategory	
...			
cend-1	<code>page_id</code>	Last Subcategory	
cend	<code>page_id</code>	1st File	
cend+1	<code>page_id</code>	2nd File	
...			
cfile	<code>page_id</code>	Last Subcategory	

- `fastcci.cat` (index into the tree)

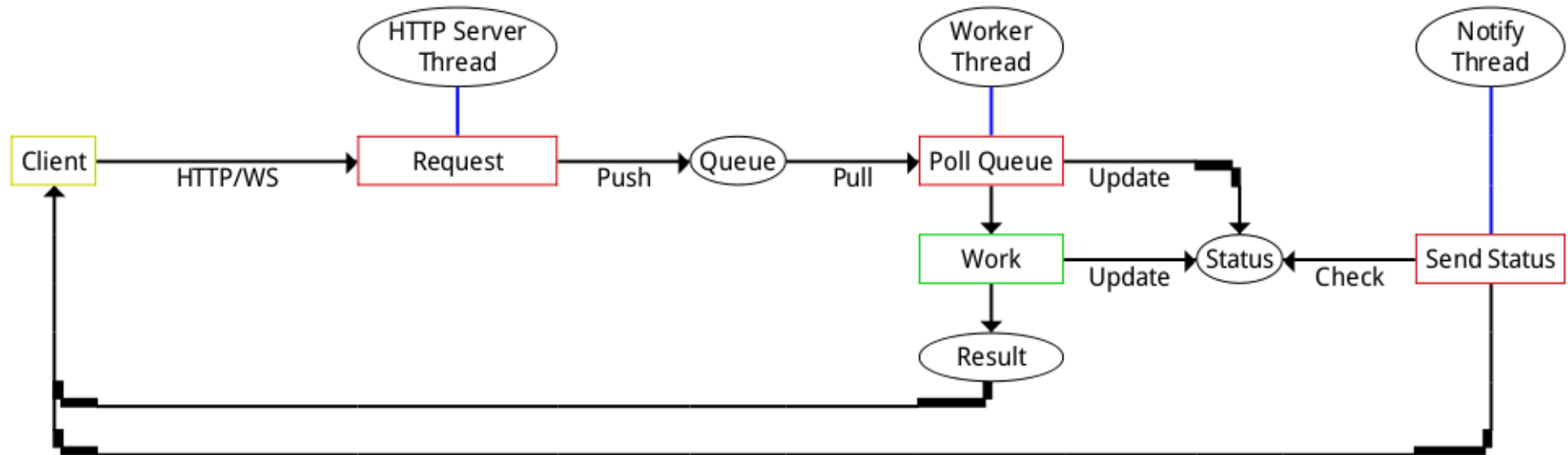
Queries on the category graph

- Generating a category subgraph
 - Walk the graph breadth first
 - Maintain a visitation map
(one byte per page_id, avoids loops, set to depth)
 - Maintain a list of categories in the subgraph
(and store depth with each category)
- Intesect by:
 - Intersect by taking two subgraphs

Queries on the category graph

- Pregenerate a union subgraph for FP/QI/VI at server start
- Store bitmask for awards (FP/QI/VI) for each image

FastCCI Server Internals



- <https://github.com/Commonists/fastcci>
- Stream updates and results via websockets (immediate feedback: waiting, working, result)
- <http://fastccil.wmflabs.org/status>
- <https://github.com/davidmoreno/onion>

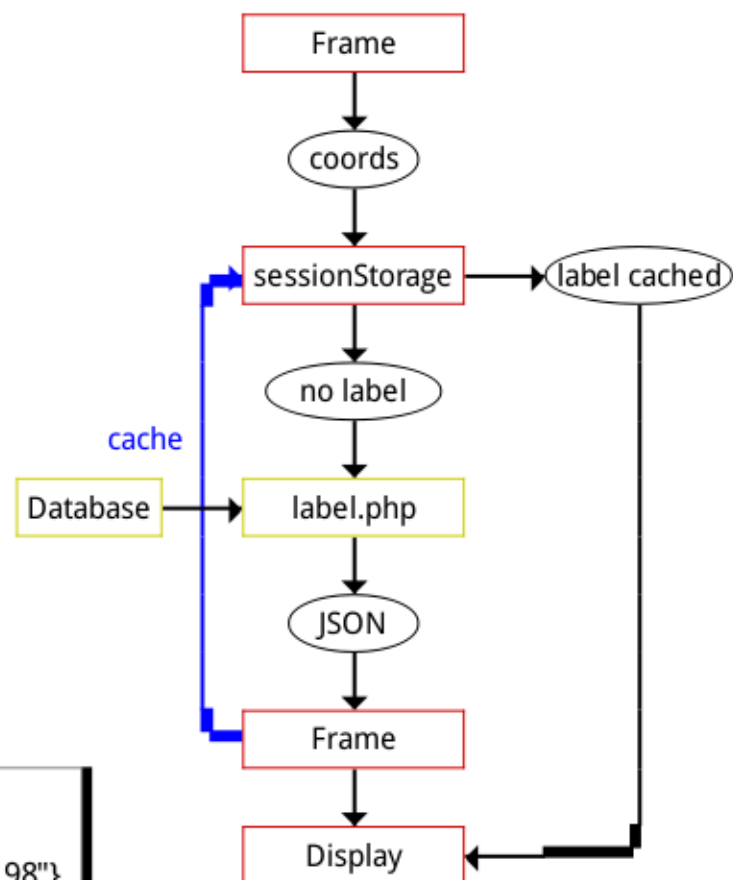
Strength of match slider

Getting the Label Data

- F** When a new tile comes into view the *Frame script* looks in the `sessionStorage` for cached label data.
- F** If found it is immediately displayed.
- TS** Otherwise an Ajax request is made to the label server script on the toolserver.
- TS** A local database is queried for the label data.
- TS** The label data is encoded as a JSON string.
- F** Label data is received, cached in `sessionStorage`, and displayed.

```
{
  "label": [
    {
      "style": "7",
      "lang": "en",
      "page": "Alexandria%2C_Virginia",
      "tx": 8,
      "ty": 93,
      "name": "Alexandria",
      "dx": "4829",
      "dy": "2198"
    },
    {
      "style": "0",
      "lang": "en",
      "page": "Fort_Greble",
      "tx": 78,
      "ty": 44,
      "name": "Fort Greble",
      "dx": "4829",
      "dy": "2198"
    },
    {
      "style": "5",
      "lang": "en",
      "page": "Forest_Heights%2C_Maryland",
      "tx": 117,
      "ty": 78,
      "name": "Forest Heights",
      "dx": "4829",
      "dy": "2198"
    },
    {
      "style": "0",
      "lang": "en",
      "page": "United_States_Naval_Research_Laboratory",
      "tx": 62,
      "ty": 51,
      "name": "United States Naval Research Laboratory",
      "dx": "4829",
      "dy": "2198"
    }
  ],
  "z": 10
}
```

```
{
  "style": "7",
  "lang": "en",
  "page": "Alexandria%2C_Virginia",
  "tx": 8,
  "ty": 93,
  "name": "Alexandria",
  "dx": "4829",
  "dy": "2198"
}
```



Thank you!

Contact [[User:Dschwen]] with suggestions,
<https://github.com/Commonists/fastcci>