Semantic video annotations in the Topics API

Theory and practice

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Google I/O

We want to help content creators make their content more easily discoverable and help API developers to get the most out of semantic annotations on YouTube.

YouTube Topics API

YouTube associates resources (videos, channels) with Freebase topics.

The Topics API exposes the following functions:

- See the Freebase topics associated with YouTube resources
- Find YouTube resources associated with Freebase topics.

Outline

- Existing consumers of video annotations and the Topics API
- Video annotation example: before and after
- Video annotation process
- Tips for improving annotations
- Walkthrough of a demo application
- Future work

Who uses this

(Hint: cool kids)

YouTube and API users

- Homepage content and clustering
- Video and Channel recommendations
- Search
- YouTube house channels
- YouTube's channel browser

interesante

seevl

Annotations for uploads

What's this video about?

What's this video about: Topics API

https://www.googleapis.com/

What's this video about: Topics API

https://www.googleapis.com/youtube/v3

What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/**videos**?**id=wN7UusS8Hfc**

What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/**videos**?**id=wN7UusS8Hfc**&**part=topicDetails**&key={YOUR_API_KEY}

What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/videos?id=wN7UusS8Hfc&part=topicDetails&key={YOUR_API_KEY}


```
{
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  },
....
```
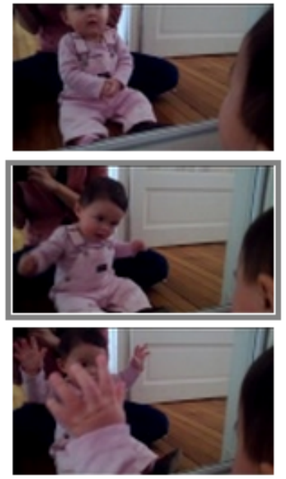

Infant seeing herself while playing in front of a mirror.



VIDEO INFORMATION

Uploaded time: Apr
Duration: 0:1
Raw File: yt-
Views:
Likes:
Dislikes:
Comments:
Video URL: h

Basic Info | Advanced Settings

Title

Infant seeing herself while playing in front of a mirror.

Description

Here is my little cutie pie (then 9-months old baby) was playing in front of our mirror. With her big eyes, she's an especially adorable infant, the attractiveness is inherited! She is so cute when she does a little shake in front of her reflection, she looks like she has her own dance moves. She's in love: the kid looks like she is trying to kiss herself.

Tags

Cuteness (Website Category) ✖ | Playing ✖ | cute ✖ | baby ✖ | funny ✖

Suggested tags: + Infant (Risk Factor) + Website (Industry) + Baby (musical) + Laughing + Toy + Laugh + Guitar + Toys

Privacy Settings

Public

Anyone can search for and view

Post to your subscribers

Customize your message

Category

Entertainment

What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/videos?id=uyK2LOMSH7I&part=topicDetails&key={YOUR_API_KEY}

...

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"/m/04h3kx"

]

What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/videos?id=uyK2LOMSH7I&part=topicDetails&&key={YOUR_API_KEY}

...

{

"id": "uyK2LOMSH7I",

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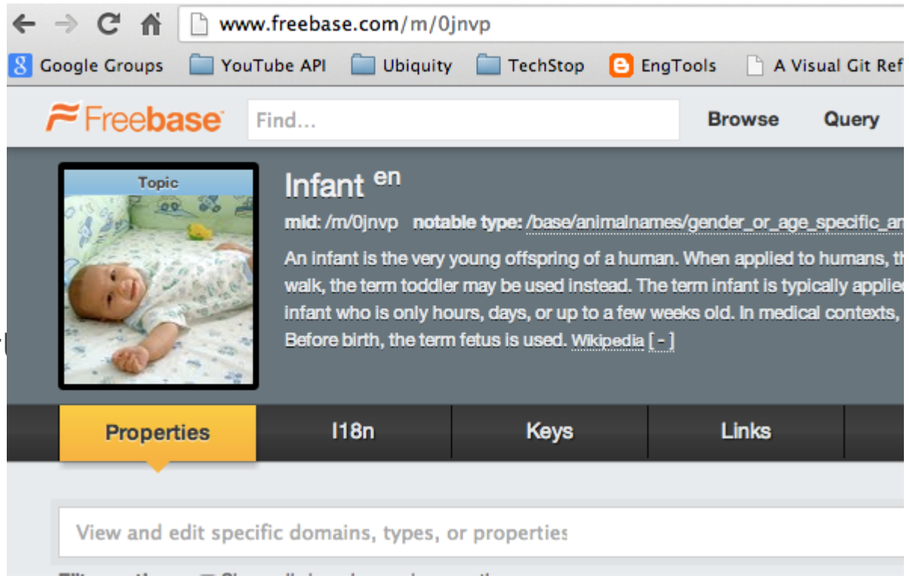
]



What's this video about: Topics API

https://www.googleapis.com/youtube/v3
/videos?id=uyK2LOMSH7I&part=topicDetails&&key={YOUR_API_KEY}

...

{

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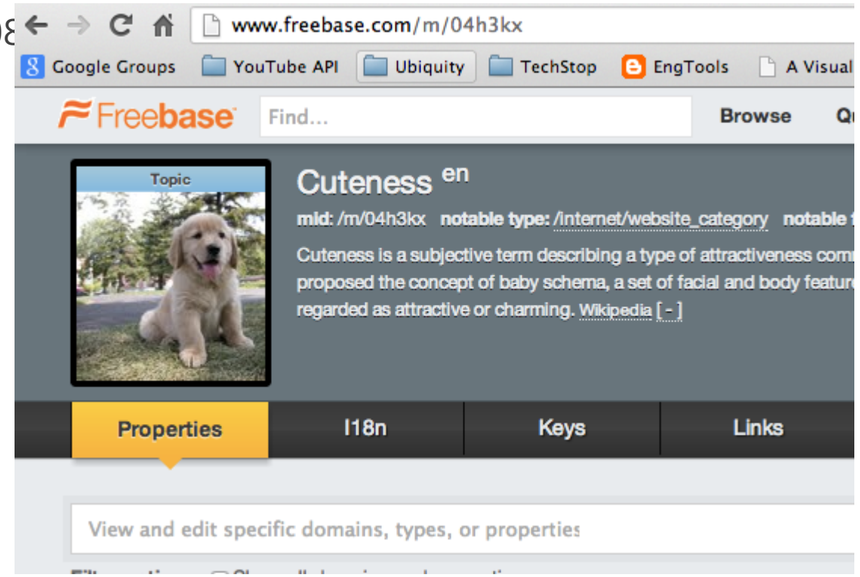
"topicDetails": {

"topicIds": [

"/m/0jnvp",

"/m/04h3kx"

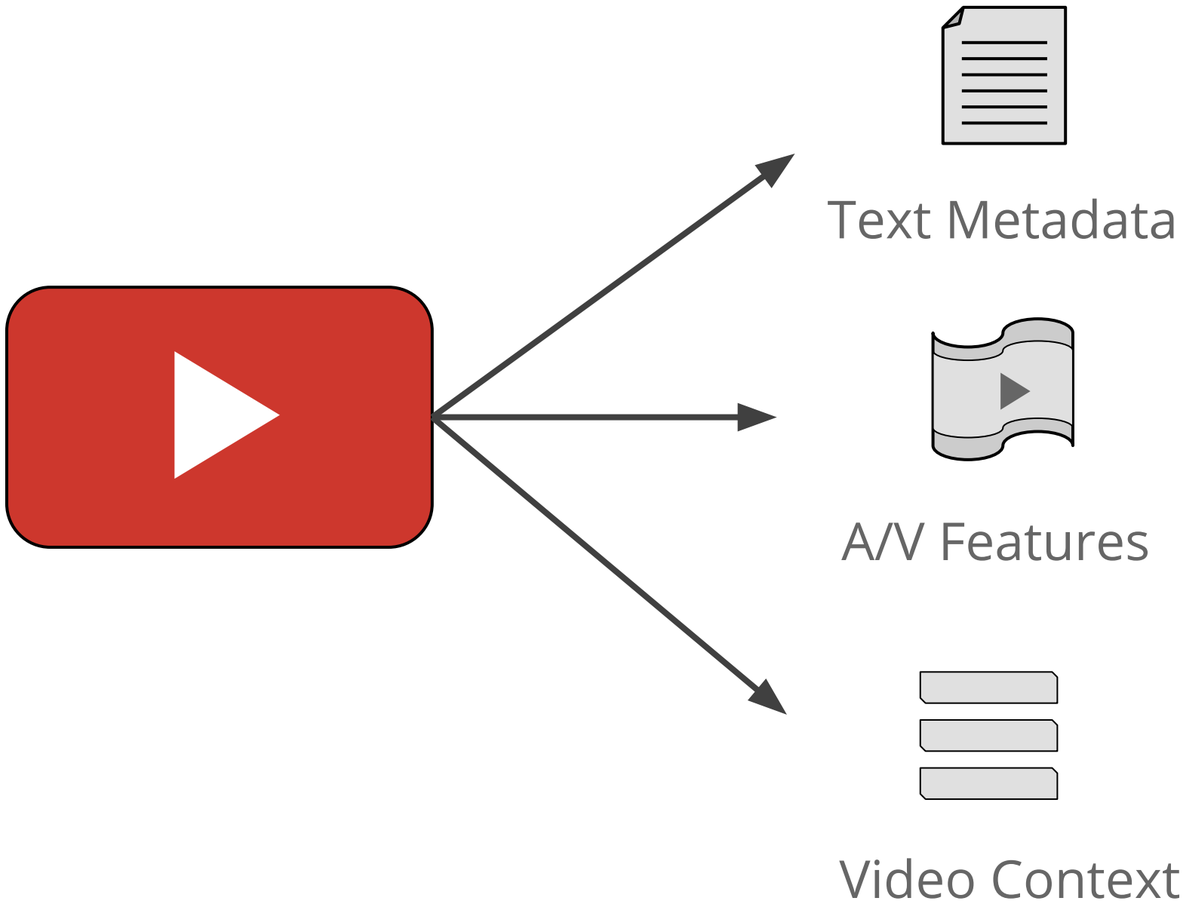
]



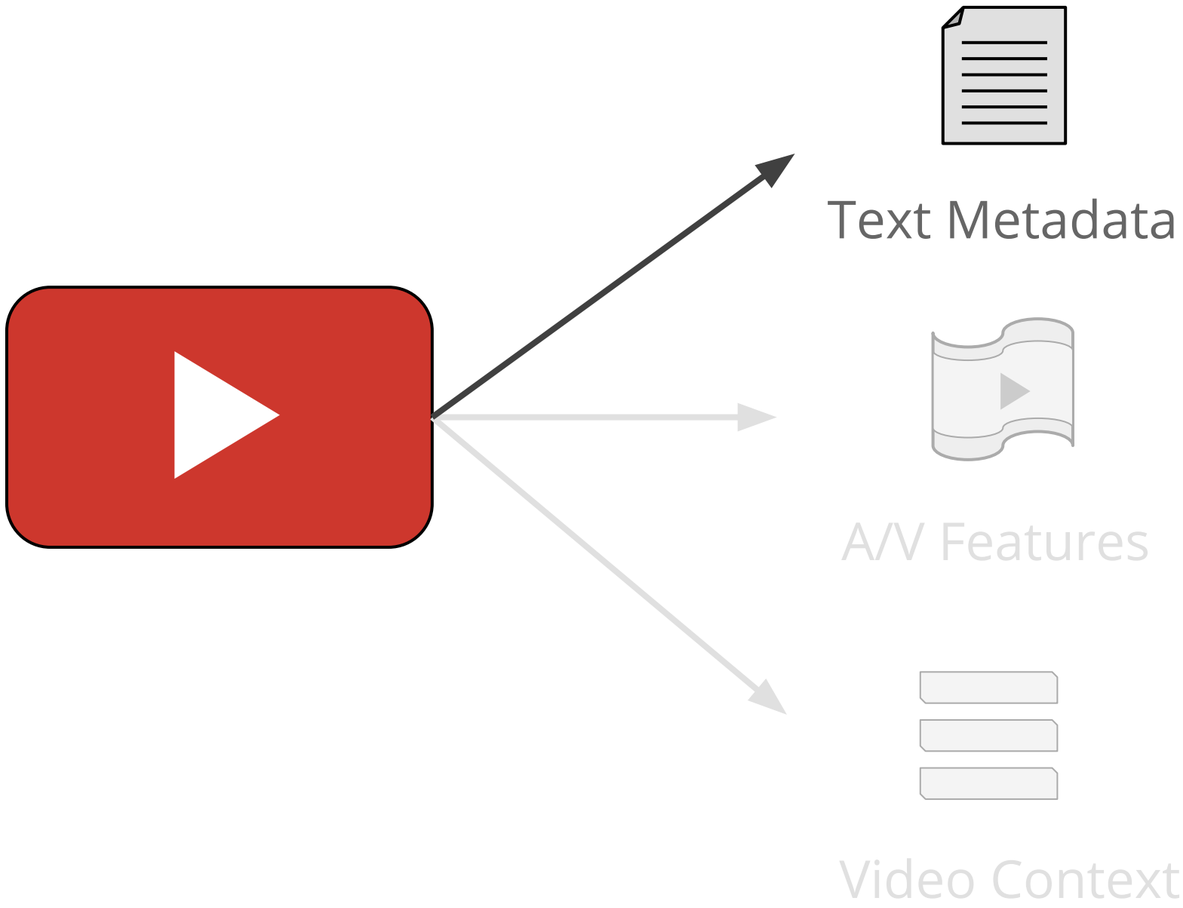
How videos are annotated

Annotation by example

Video Annotation Data Sources



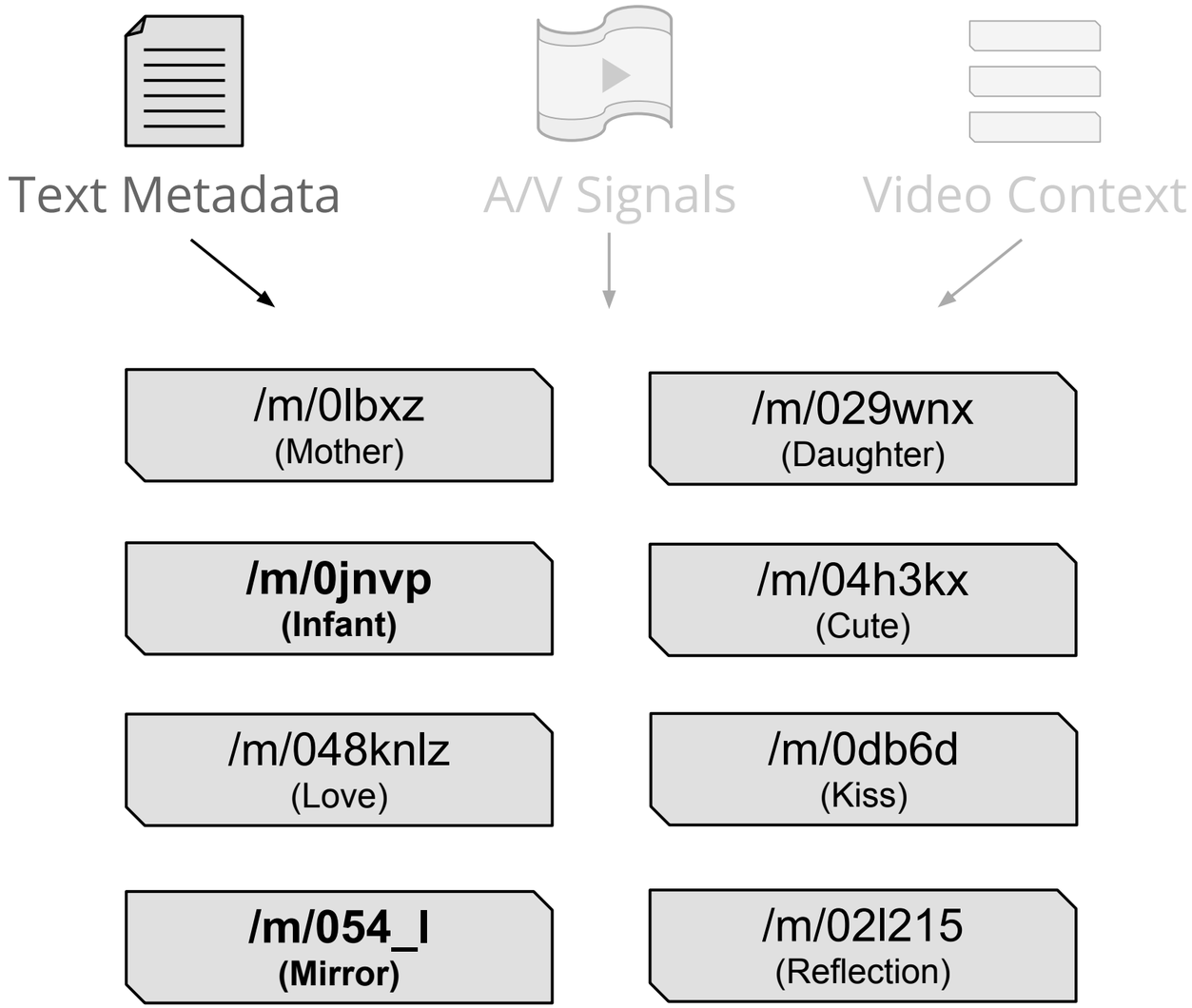
Video Annotation Data Sources: Text Metadata



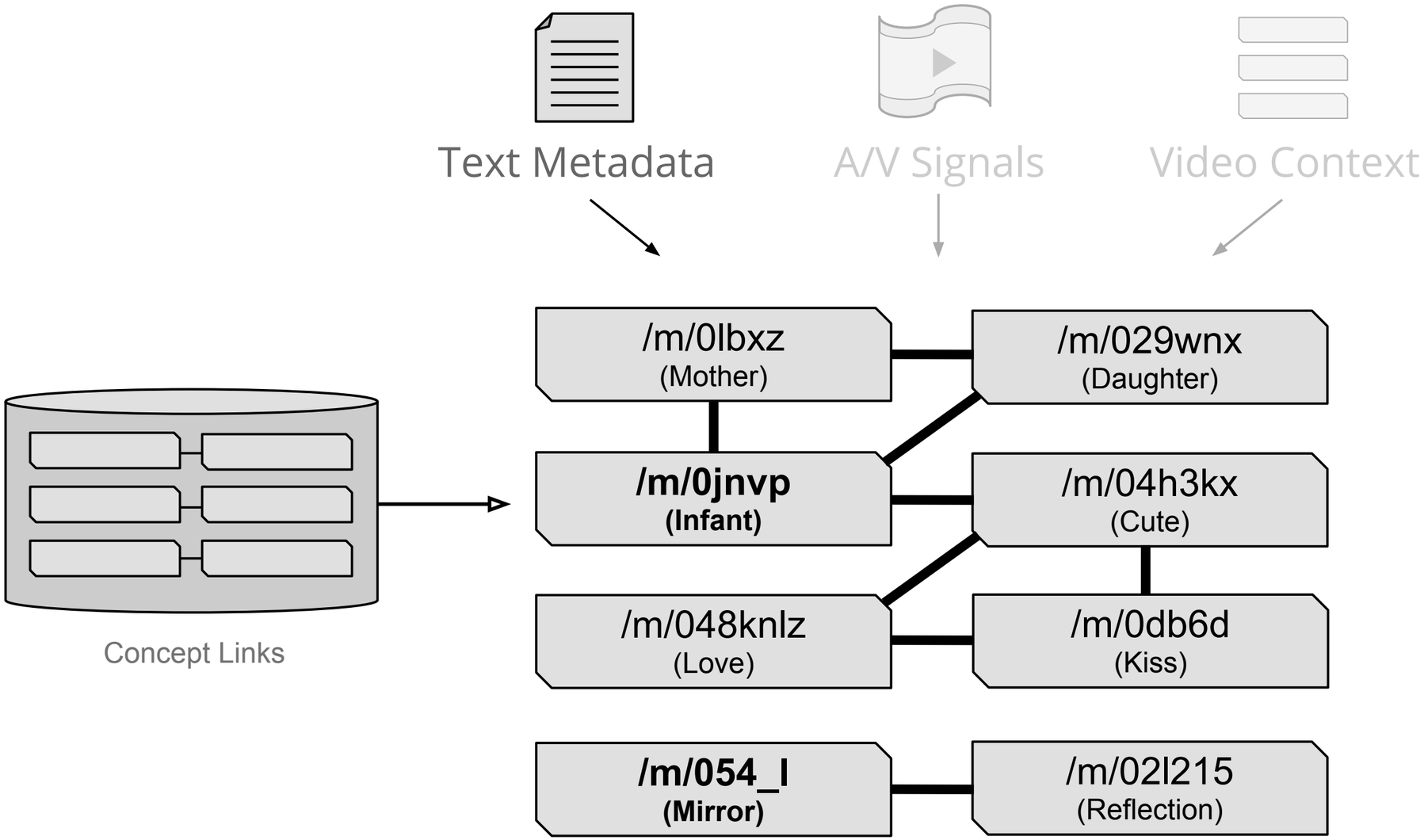
Video Annotation Data Sources: Text Metadata

- Title, Description, Tags
- Many-to-many associations
- Entity extraction from consistent text
- Availability: Immediate

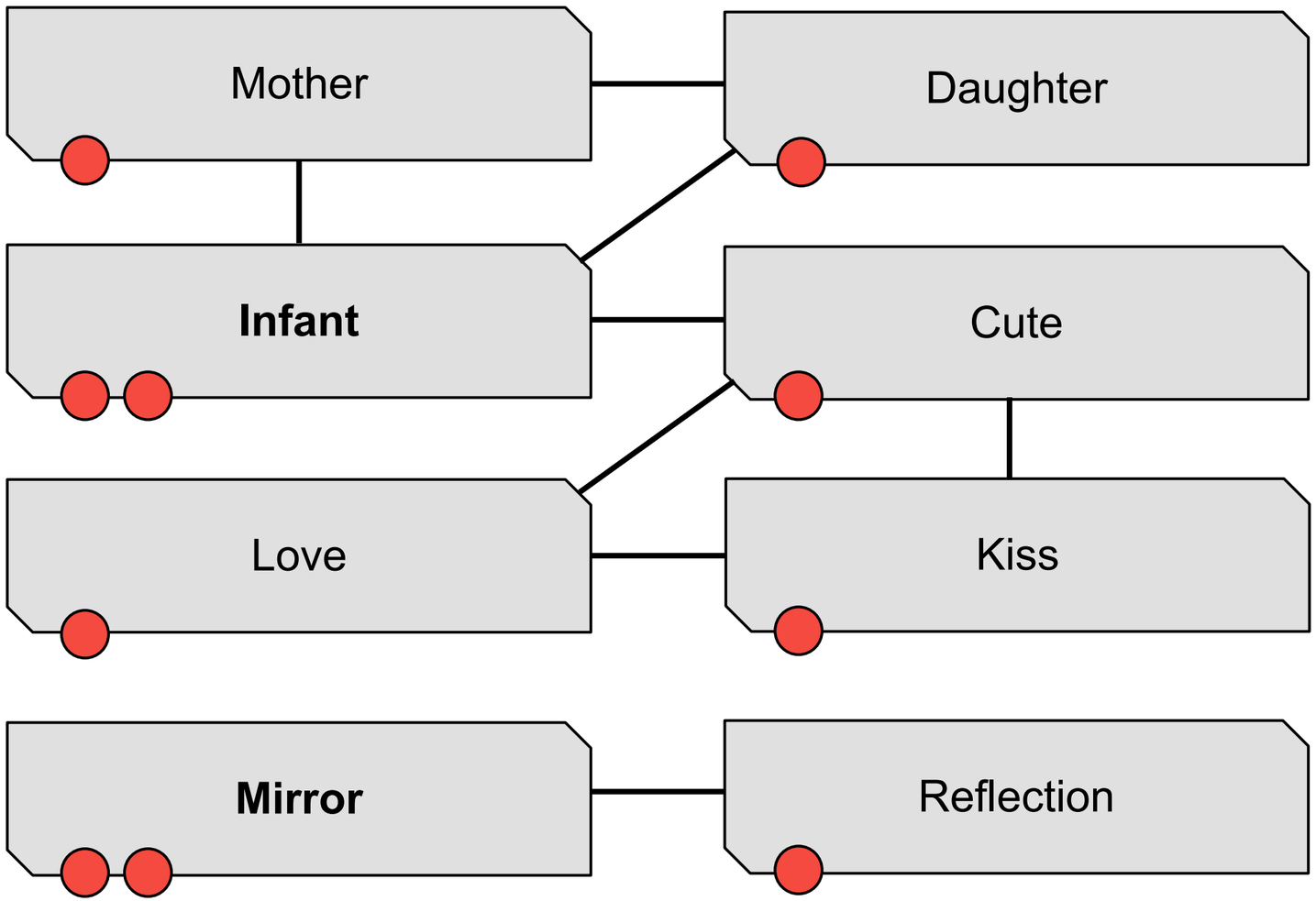
Video Annotation: Graph Building



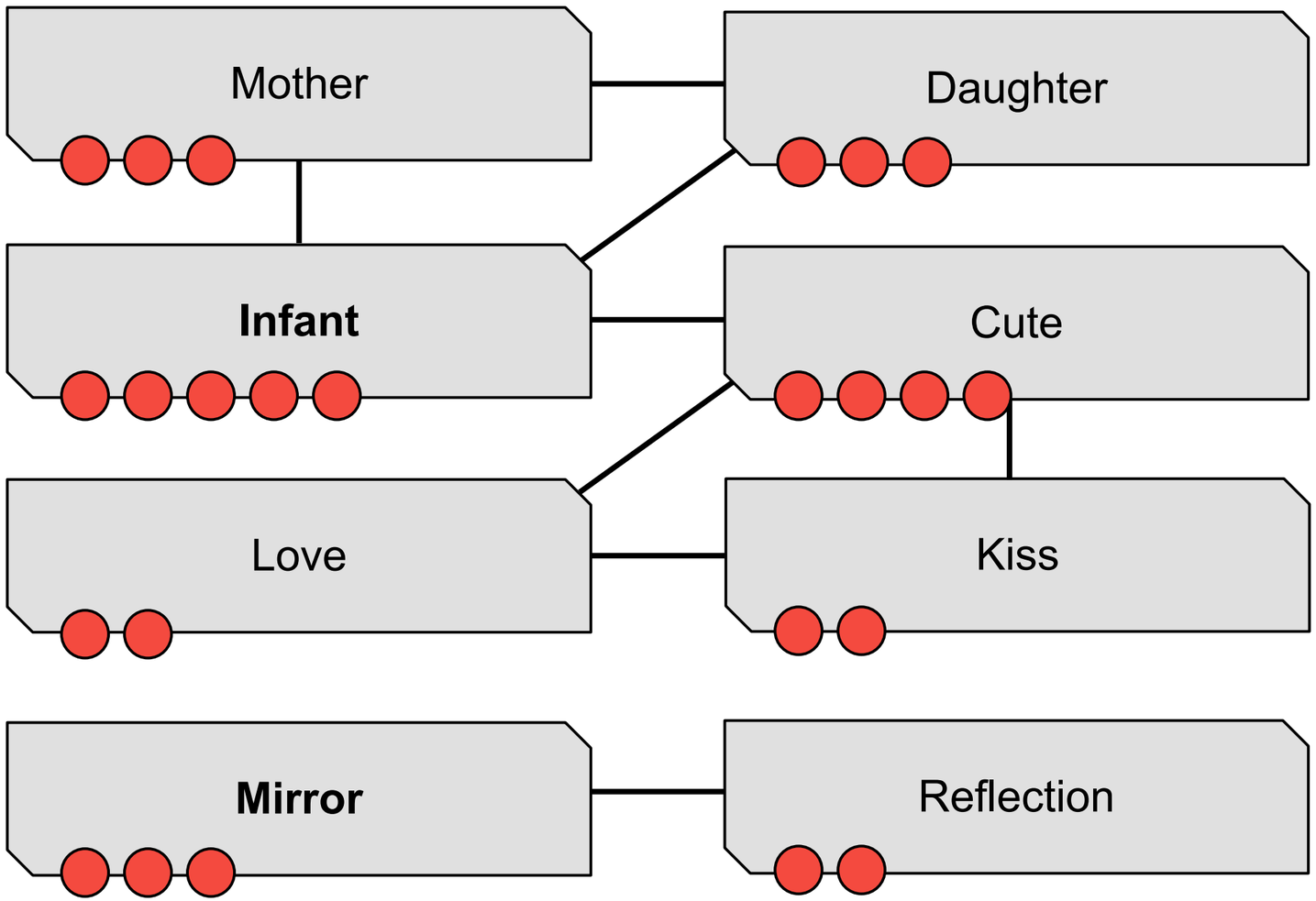
Video Annotation: Graph Building



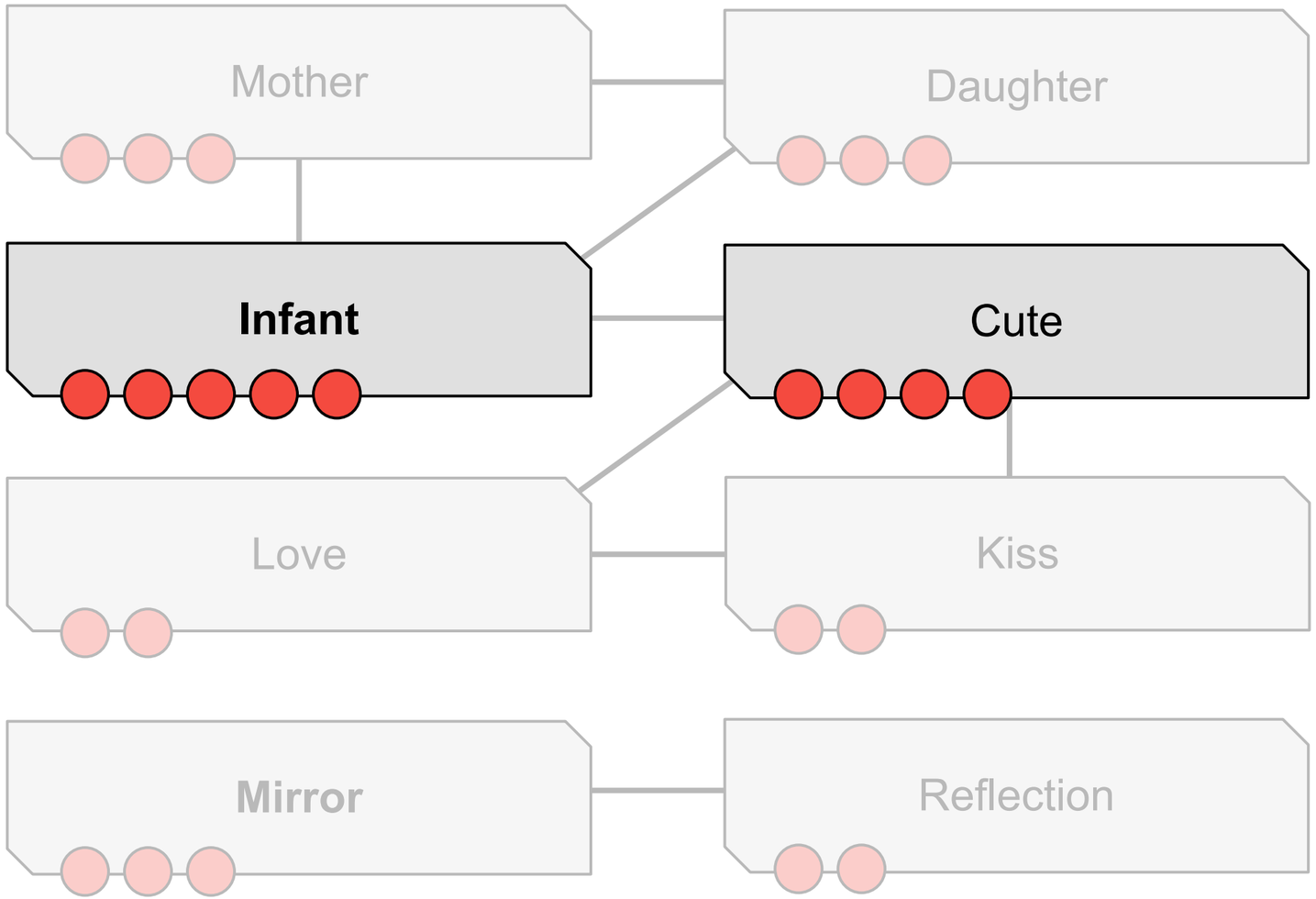
Video Annotation: Scoring and Ranking



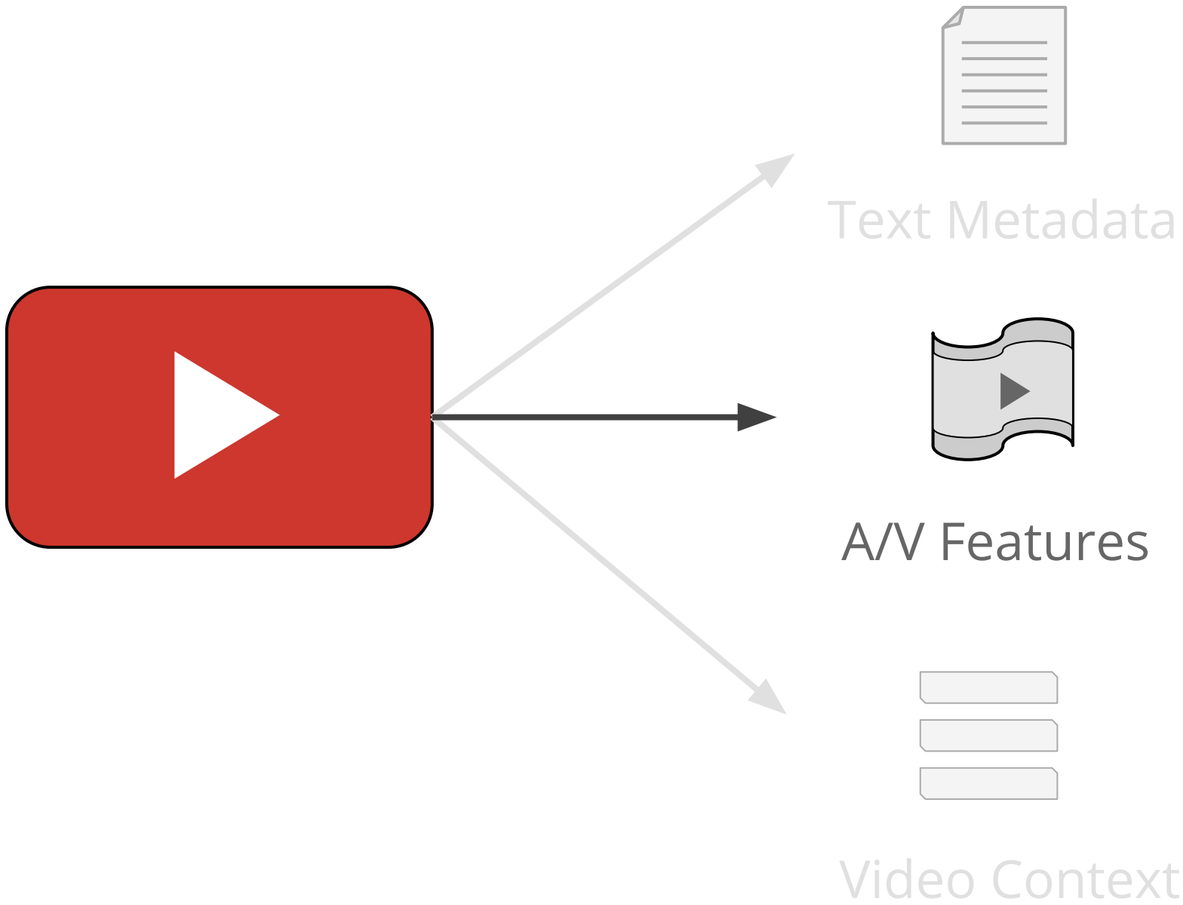
Video Annotation: Scoring and Ranking



Video Annotation: Scoring and Ranking

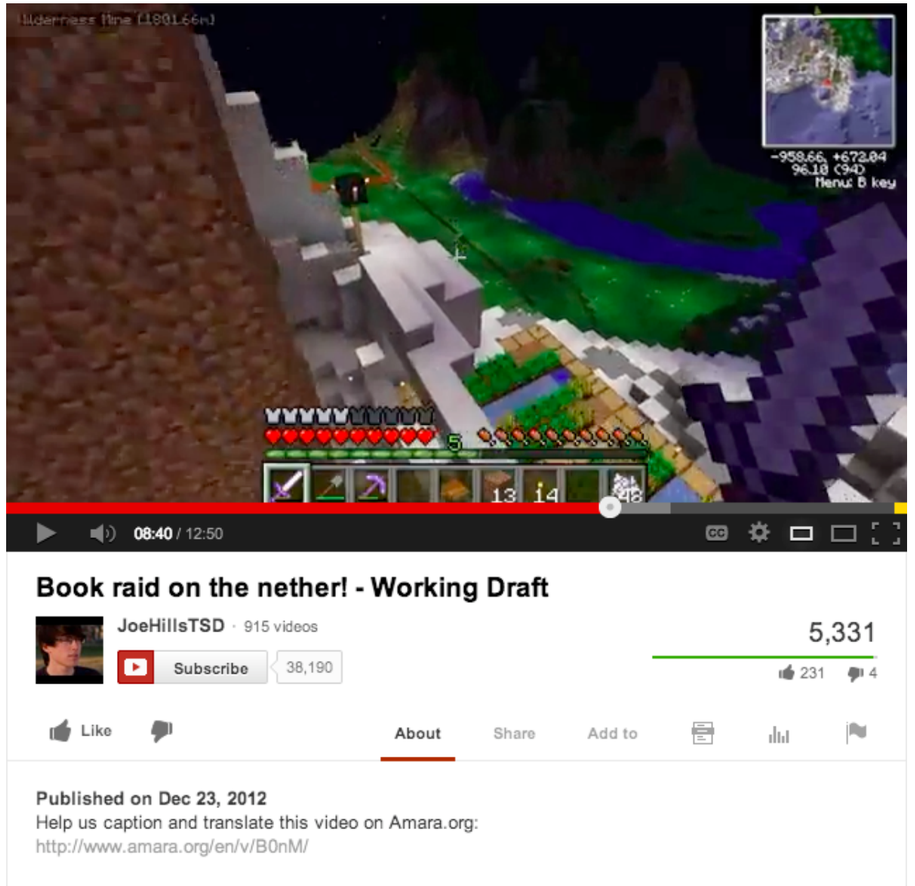


Video Annotation Data Sources: A/V Features

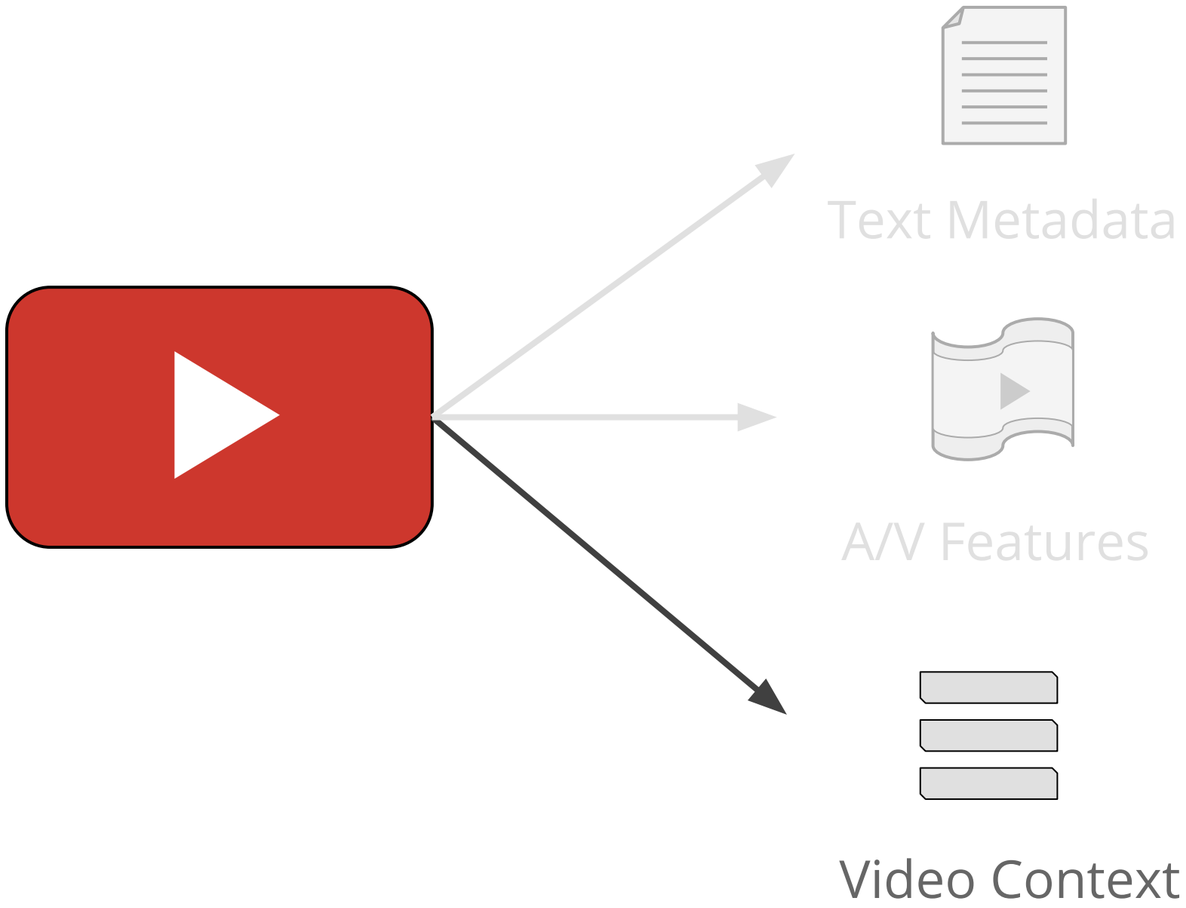


Video Annotation Data Sources: A/V Features

- Audio and Video signal classification
  - Ideal for games
  - Less ideal for general content
  - Active development
- Availability: Minutes after upload

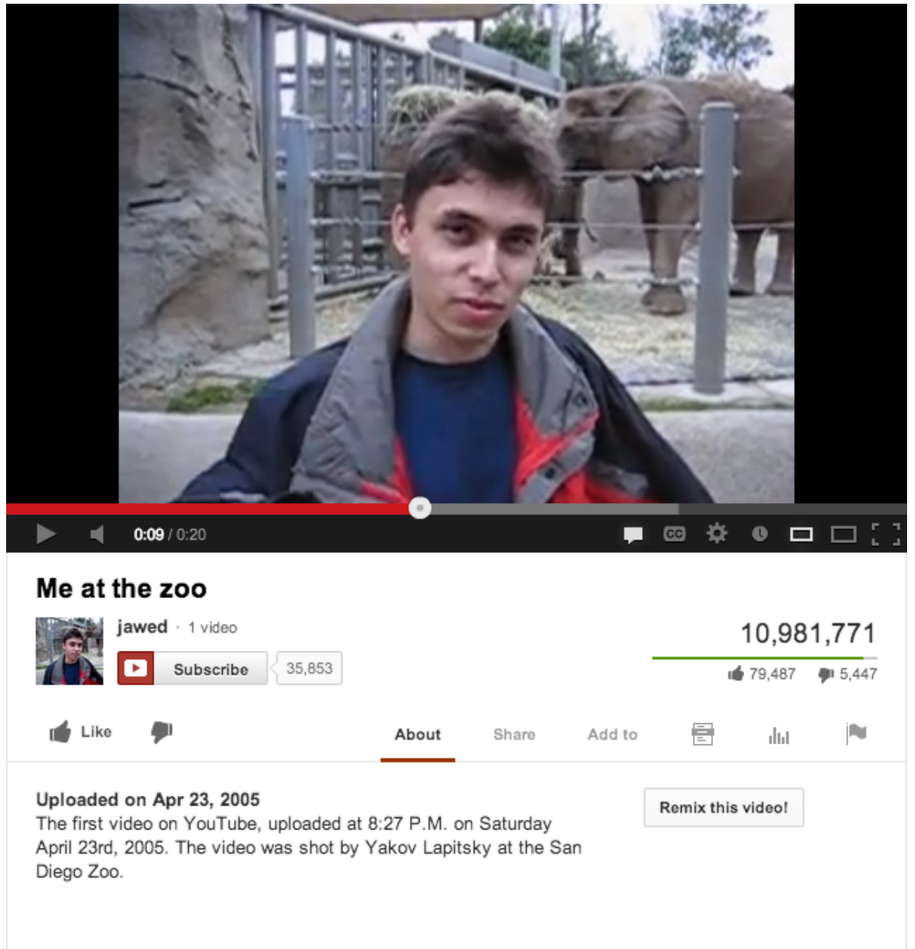


Video Annotation Data Sources: Video Context



Video Annotation Data Sources: Video Context

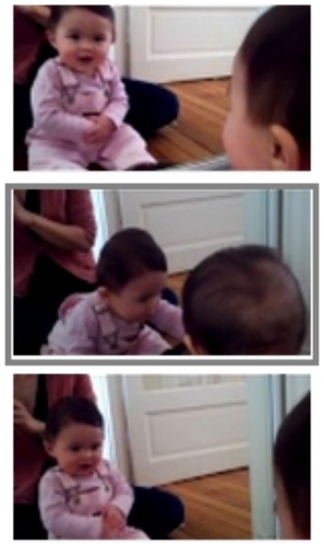
- Entities from context
  - Comments
  - Web embeds
  - User engagement
- Noisy but useful signals
  - "Jawed Karim"
  - Web embeds and comments agree
- Availability: Function of popularity



Annotations in Practice

Playing in front of the mirror

Cancel | Saved



VIDEO INFORMATION

Uploaded time:	November 13, 2012 8:37 PM
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Raw File:	VID_20120314_135602.mp4
Views:	15
Likes:	0
Dislikes:	0
Comments:	0
Video URL:	

Annotations are only on public videos

Basic Info | Advanced Settings

Title

Playing in front of the mirror

Title does not accurately describe content.

Description

No tags nor description

Tags

Separate tags with commas

Privacy Settings

Unlisted

Anyone with the link can view

Category

People & Blogs

Infant seeing herself while playing in front of a mirror.

VIDEO INFORMATION

Uploaded time: Apr
Duration: 0:1
Raw File: yt-
Views:
Likes:
Dislikes:
Comments:
Video URL:

Annotations are only on public videos

Basic Info | Advanced Settings

Title includes subject

Title

Infant seeing herself while playing in front of a mirror.

Privacy Settings

Public

Anyone can search for and view

Description

Here is my little cutie pie (then 9-months old baby) was playing in front of our mirror.
With her big eyes, she's an especially adorable infant, the attractiveness is inherited!
She is so cute when she does a little shak
has her own dance moves. She's in love

Tags, description reinforce title

Post to your subscribers

Customize your message

Tags

Cuteness (Website Category) ✖ | Playing ✖ | cute ✖ | baby ✖ | funny ✖

Entertainment

Understanding centrality

- Central: complete, specific, compact
- Ex: Semantic Video Annotations in the YouTube Topics API: Theory and Applications
  - [Semantic Annotation], [Google IO 2013], [Youtube API]
  - [Semantic Annotations in the Youtube API at Google IO 2013]
- Would you include it...
  - ...in your summary of this video
  - ...on a channel about this topic
- Relevant is not central
- Related is not central

What to expect with annotations

- 1-3 specific annotations
- Annotation consumers can use canonical types, freebase data dumps
- Annotation quality increases with video popularity
- Uploaders can bootstrap annotations
  - Precise titles
  - Cohesive descriptions
  - NOT: song lyrics, video production details, etc.

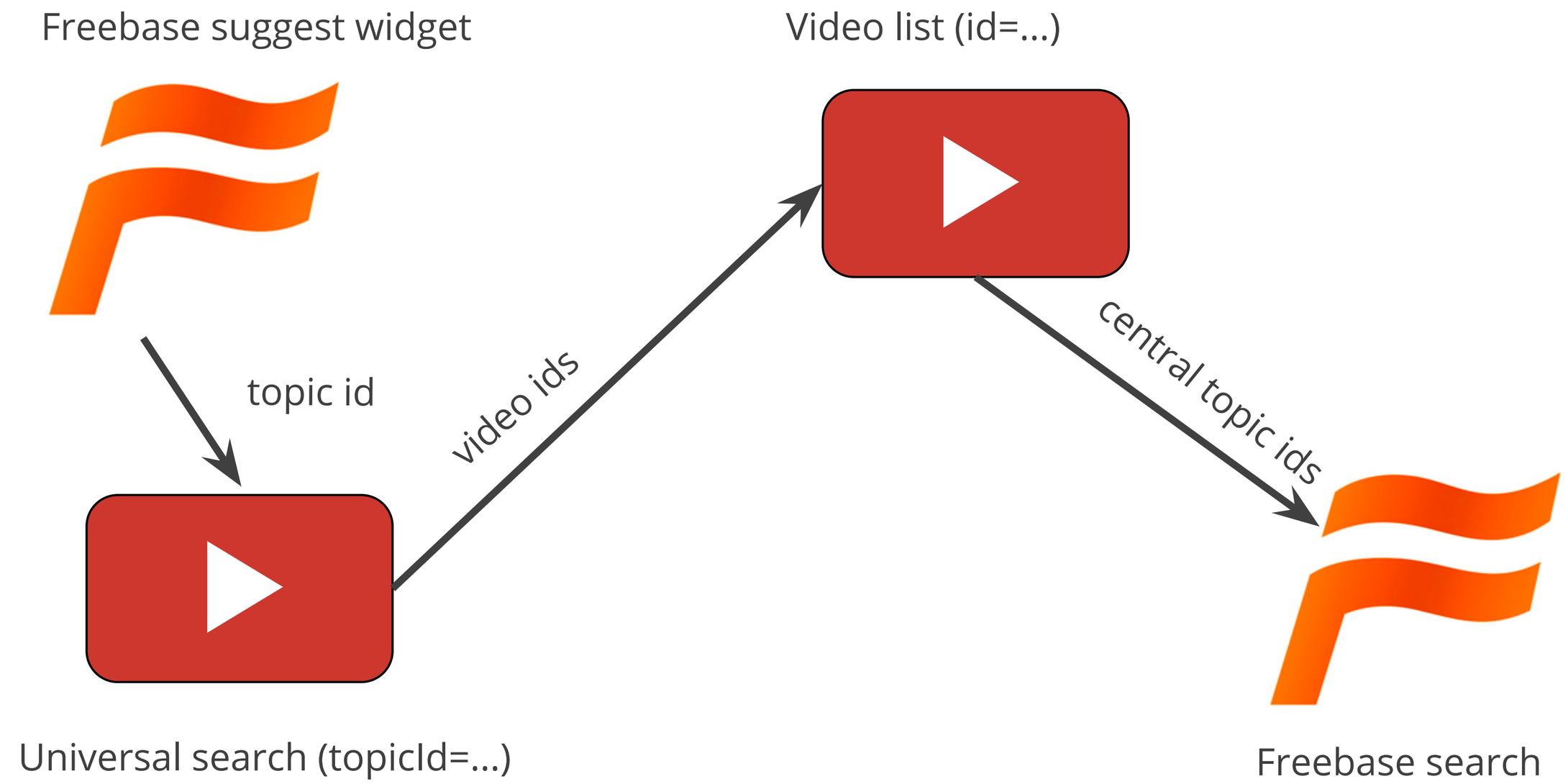
Demo

Grouping videos by canonical type

What just happened?

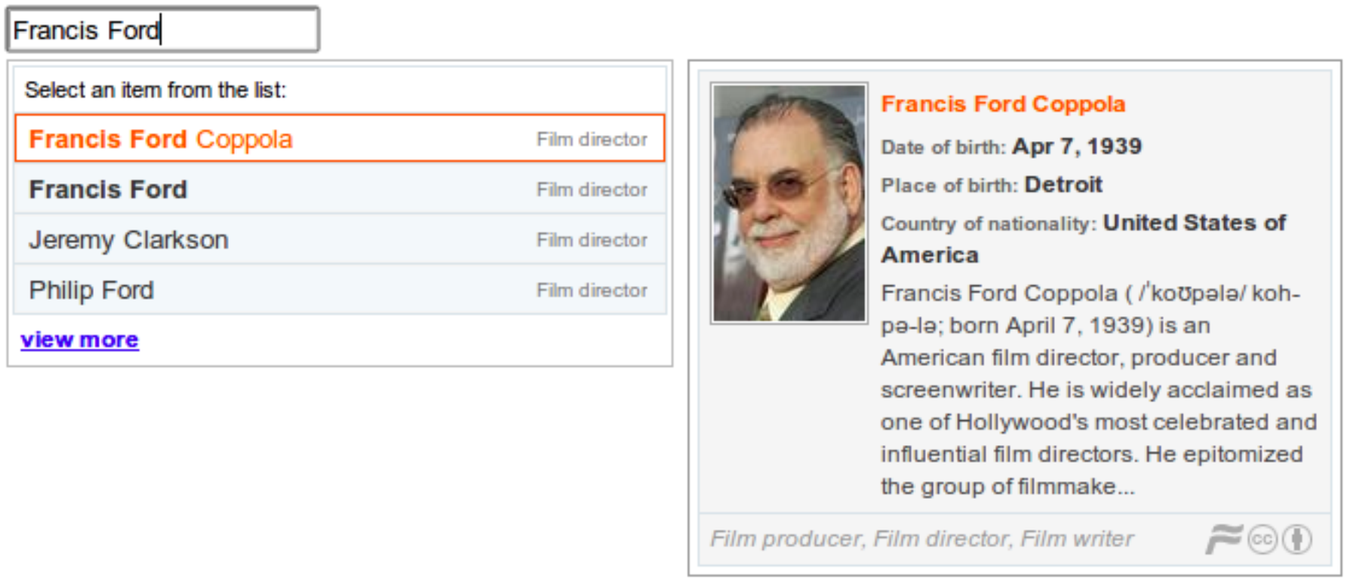
- Search for 100 videos that were annotated with Origami
- Look up the notable types of each video-entity annotation
- Cluster entities by notable types (ex: Cat, Bat, etc. in Organism)
- Show videos with Organism-type entities grouped by entity

Demo API calls



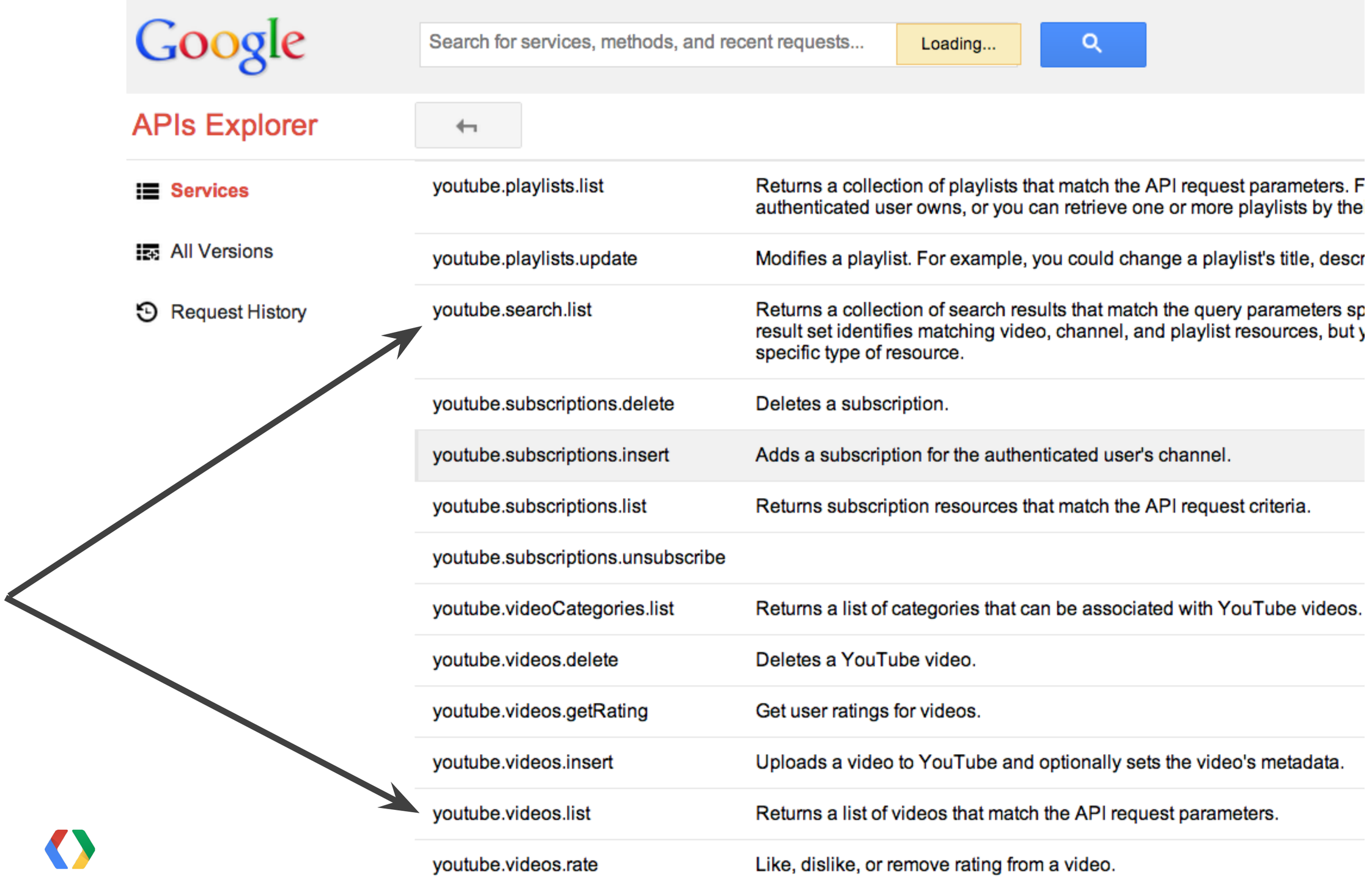
Freebase suggestion widget

https://developers.google.com/freebase/v1/search-widget

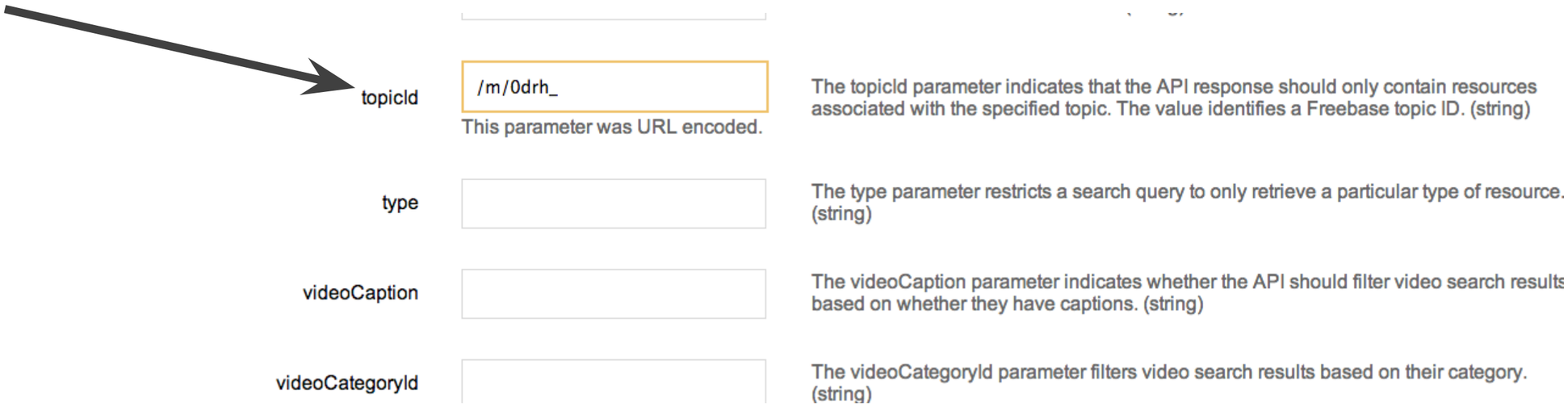


Demo functionality

- Generalize from specific annotations
- Leverage domain-specific knowledge
- Ex: Movie site, look for trailers, interviews with actors, etc.

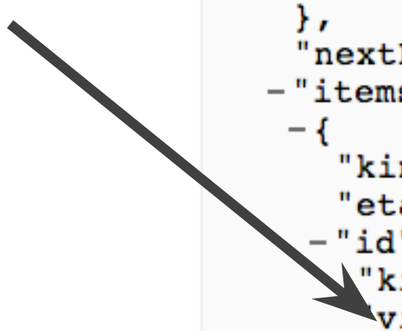

Google
Search for services, methods, and recent requests...
Loading...
APIs Explorer
Services
All Versions
Request History
youtube.playlists.list
Returns a collection of playlists that match the API request parameters. F
authenticated user owns, or you can retrieve one or more playlists by the
youtube.playlists.update
Modifies a playlist. For example, you could change a playlist's title, descr
youtube.search.list
Returns a collection of search results that match the query parameters sp
result set identifies matching video, channel, and playlist resources, but y
specific type of resource.
youtube.subscriptions.delete
Deletes a subscription.
youtube.subscriptions.insert
Adds a subscription for the authenticated user's channel.
youtube.subscriptions.list
Returns subscription resources that match the API request criteria.
youtube.subscriptions.unsubscribe
youtube.videoCategories.list
Returns a list of categories that can be associated with YouTube videos.
youtube.videos.delete
Deletes a YouTube video.
youtube.videos.getRating
Get user ratings for videos.
youtube.videos.insert
Uploads a video to YouTube and optionally sets the video's metadata.
youtube.videos.list
Returns a list of videos that match the API request parameters.
youtube.videos.rate
Like, dislike, or remove rating from a video.

Find YouTube resources by a Freebase topic



https://developers.google.com/apis-explorer/#p/youtube/v3/youtube.search.list?part=id%252Csnippet&topicId=%252Fm%252F0drh_&_h=2&

Response



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200 OK

- Show headers -

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 out of a sheet of printer paper. We must first make the paper squa...",
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      -"default": {
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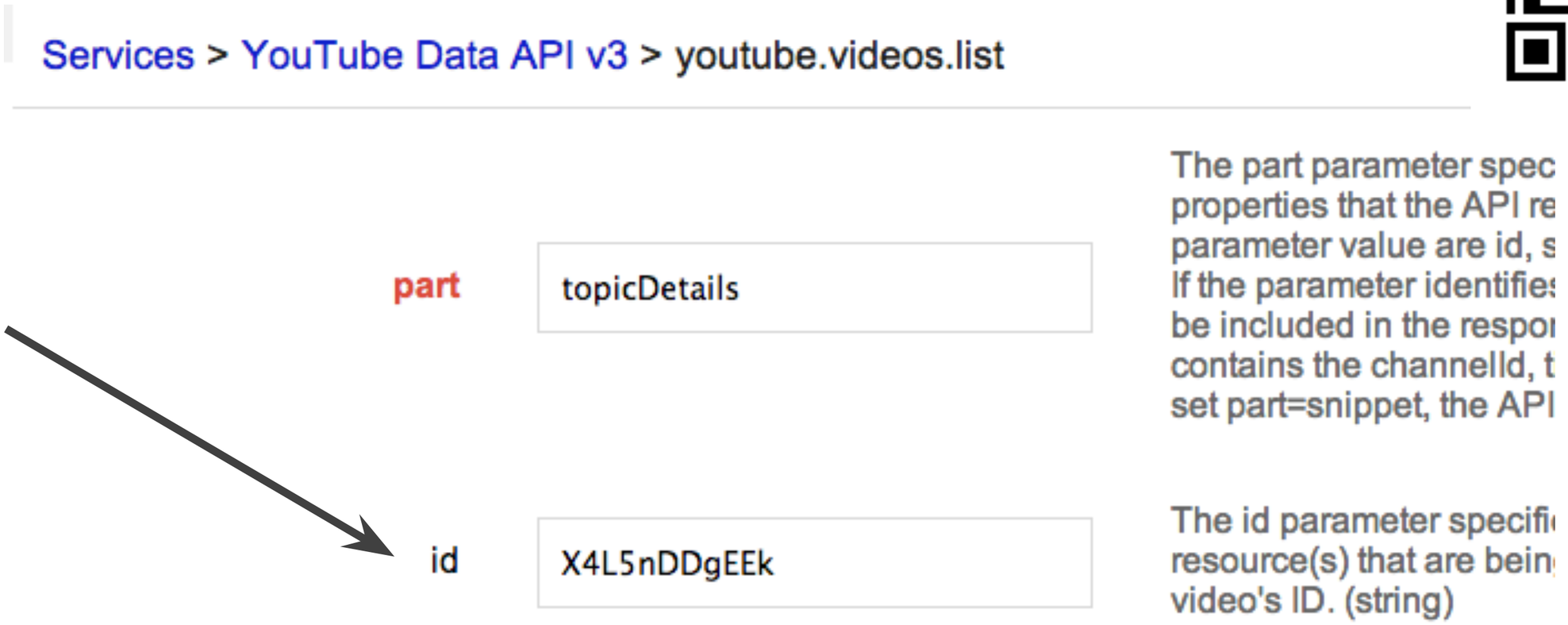
Video annotations

See what Freebase topics are associated with a video



https://developers.google.com/apis-explorer/#p
/youtube/v3/youtube.videos.list?part=topicDetails&id=X4L5nDDgEEk&_h=3&

Response

```
200 OK

- Show headers -

-{
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 -"items": [
  -{
    "id": "X4L5nDDgEEk",
    "kind": "youtube#video",
    "etag": "\"RNBPvJz2tqU7ewUf9qwA7GjgO78/jCFZtpp0zk7NixmuYCCutFo18Sc\"",
   -"topicDetails": {
    -"topicIds": [
      "/m/0drh_"
     ]
    }
   }
  ]
}
```
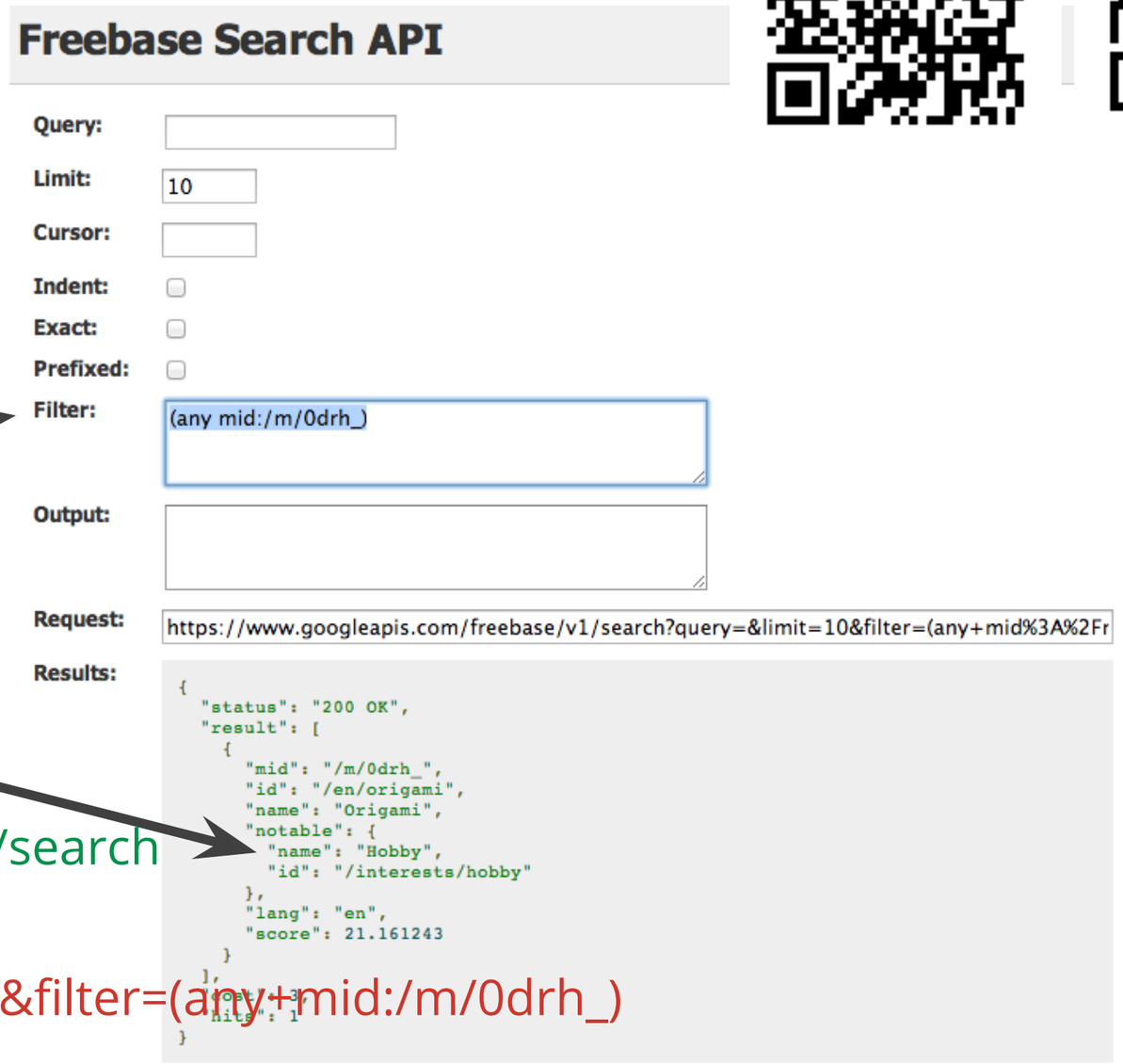

Notable names for Freebase topics

Filter: (any mid:<topic id>)



http://api-examples.freebaseapps.com/search

https://www.googleapis.com
/freebase/v1/search?query=&limit=10&filter=(any+mid:/m/0drh_)

Want more code? Codelab! Friday

YouTube Topics API + Freebase API

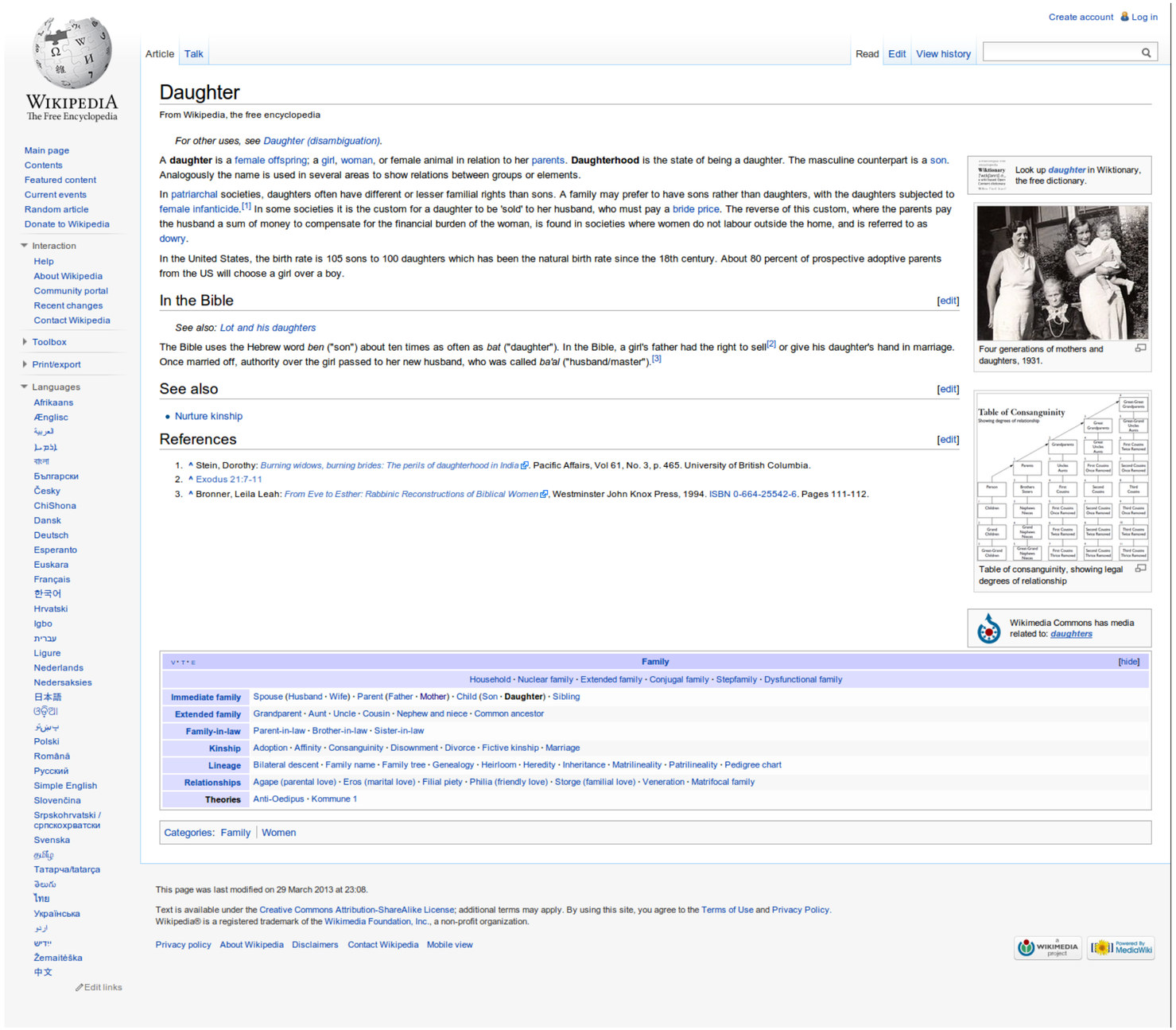
Open Issues and Future Work

Quality

- Human Evaluations
  - Video-Entity pairs
  - Off-topic, Relevant, Central per language
- Feedback
  - @YouTubeDev
  - https://code.google.com/p/gdata-issues
- Work in progress
  - Reducing off-topic
  - Maintaining coverage

Open Issues

- Common Knowledge
  - Rarely linked
  - Assumed well-known
- New Topics
- Local facts
- Overlapping names



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العربية
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বাংলা
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Česky
ChiShona
Dansk
Deutsch
Esperanto
Euskara
Français
한국어
Hrvatski
Igbo
עברית
Ligure
Nederlands
Nedersaksies
日本語
ଓଡ଼ିଆ
پښتو
Polski
Română
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Slovenčina
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Svenska
தமிழ்
Татарча/tatarça
తెలుగు
ไทย
Українська
اردو
ייִדיש
Žemaitėška
中文

Edit links

Daughter

From Wikipedia, the free encyclopedia

For other uses, see Daughter (disambiguation).

A **daughter** is a female offspring; a girl, woman, or female animal in relation to her parents. **Daughterhood** is the state of being a daughter. The masculine counterpart is a son. Analogously the name is used in several areas to show relations between groups or elements.

In patriarchal societies, daughters often have different or lesser familial rights than sons. A family may prefer to have sons rather than daughters, with the daughters subjected to female infanticide.[1] In some societies it is the custom for a daughter to be 'sold' to her husband, who must pay a bride price. The reverse of this custom, where the parents pay the husband a sum of money to compensate for the financial burden of the woman, is found in societies where women do not labour outside the home, and is referred to as dowry.

In the United States, the birth rate is 105 sons to 100 daughters which has been the natural birth rate since the 18th century. About 80 percent of prospective adoptive parents from the US will choose a girl over a boy.

In the Bible [edit]

See also: Lot and his daughters

The Bible uses the Hebrew word *ben* ("son") about ten times as often as *bat* ("daughter"). In the Bible, a girl's father had the right to sell[2] or give his daughter's hand in marriage. Once married off, authority over the girl passed to her new husband, who was called *ba'al* ("husband/master").[3]

See also [edit]

- Nurture kinship

References [edit]

1. ^ Stein, Dorothy: *Burning widows, burning brides: The perils of daughterhood in India*. Pacific Affairs, Vol 61, No. 3, p. 465. University of British Columbia.
2. ^ Exodus 21:7-11
3. ^ Bronner, Leila Leah: *From Eve to Esther: Rabbinic Reconstructions of Biblical Women*, Westminster John Knox Press, 1994. ISBN 0-664-25542-6. Pages 111-112.

Look up *daughter* in Wiktionary, the free dictionary.

Four generations of mothers and daughters, 1931.

Table of consanguinity, showing legal degrees of relationship

Wikimedia Commons has media related to: *daughters*

v • t • e	Family	[hide]
	Household · Nuclear family · Extended family · Conjugal family · Stepfamily · Dysfunctional family	
Immediate family	Spouse (Husband · Wife) · Parent (Father · Mother) · Child (Son · **Daughter**) · Sibling	
Extended family	Grandparent · Aunt · Uncle · Cousin · Nephew and niece · Common ancestor	
Family-in-law	Parent-in-law · Brother-in-law · Sister-in-law	
Kinship	Adoption · Affinity · Consanguinity · Disownment · Divorce · Fictive kinship · Marriage	
Lineage	Bilateral descent · Family name · Family tree · Genealogy · Heirloom · Heredity · Inheritance · Matrilineality · Patrilineality · Pedigree chart	
Relationships	Agape (parental love) · Eros (marital love) · Filial piety · Philia (friendly love) · Storge (familial love) · Veneration · Matrifocal family	
Theories	Anti-Oedipus · Kommune 1	

Categories: Family | Women

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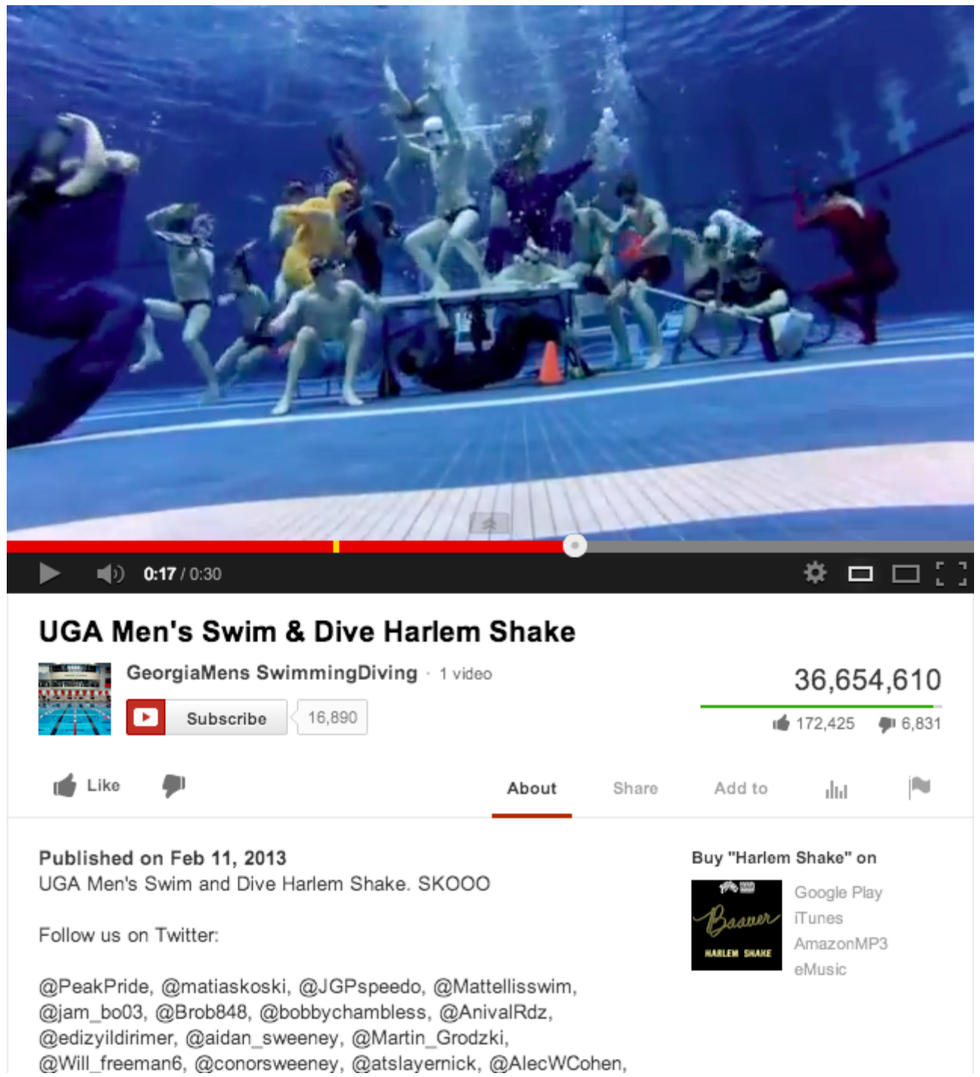
Open Issues

- Common Knowledge
- New Topics
  - Not in Freebase / KG
  - Weak supports
- Local facts
- Overlapping names



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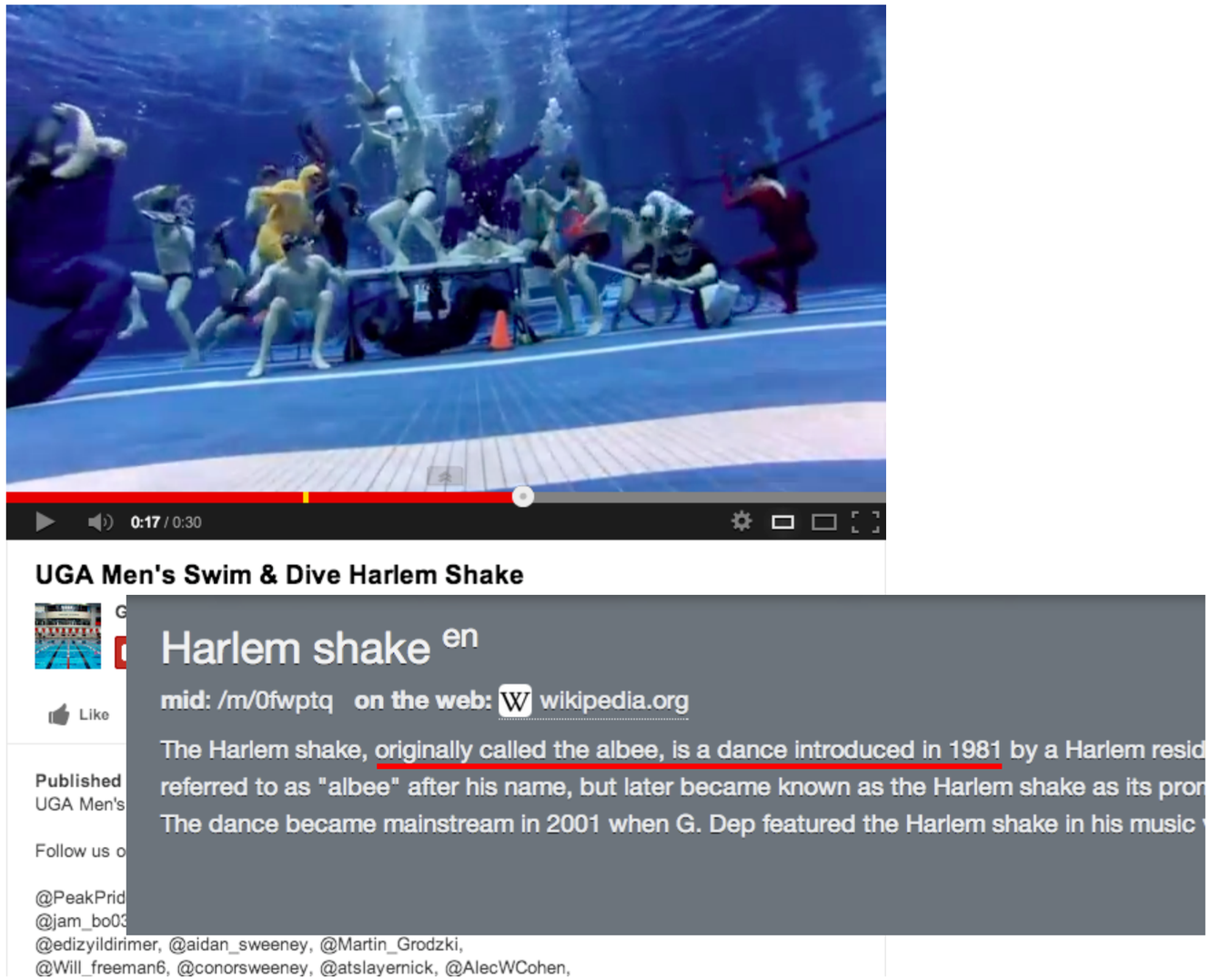

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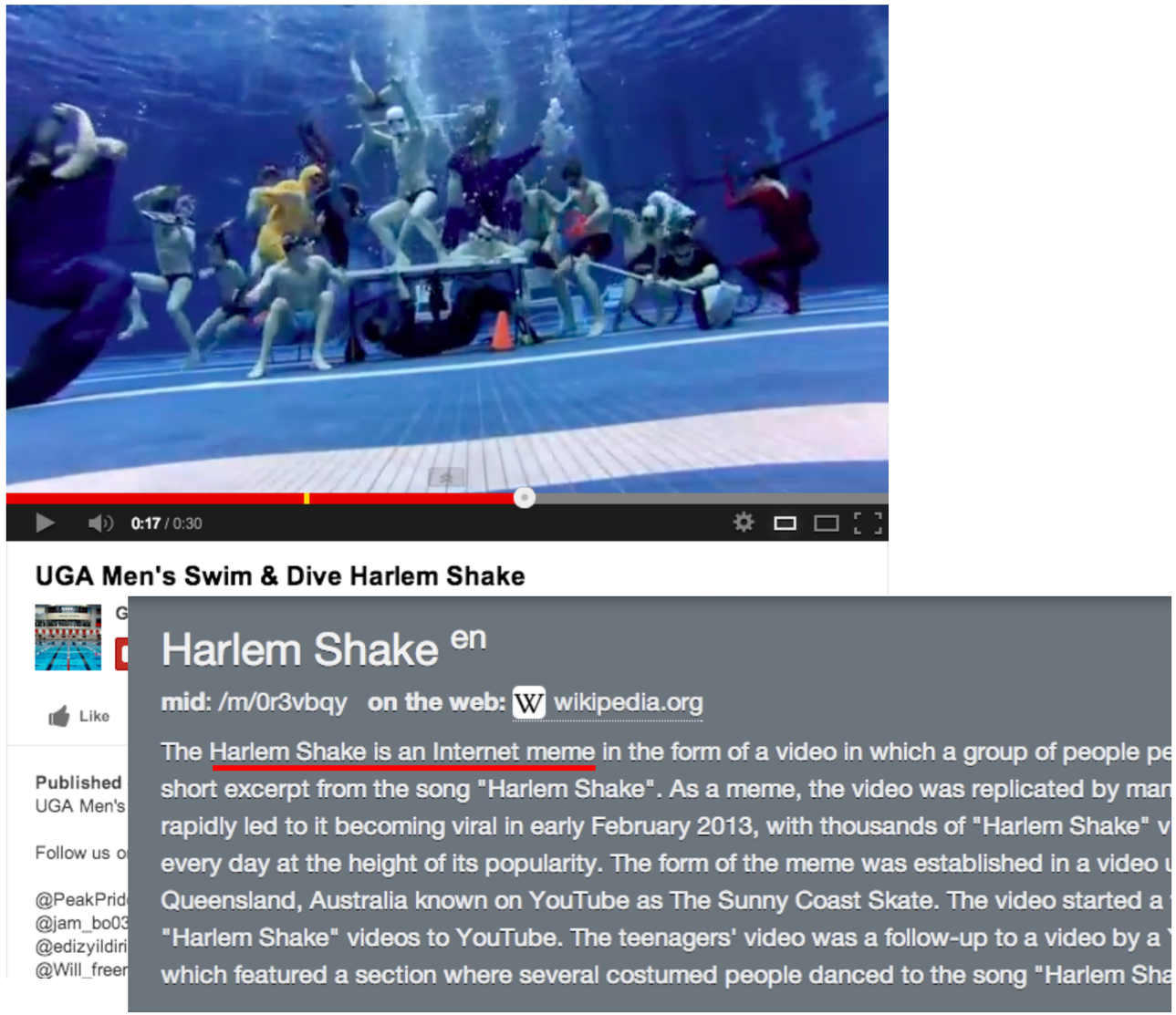
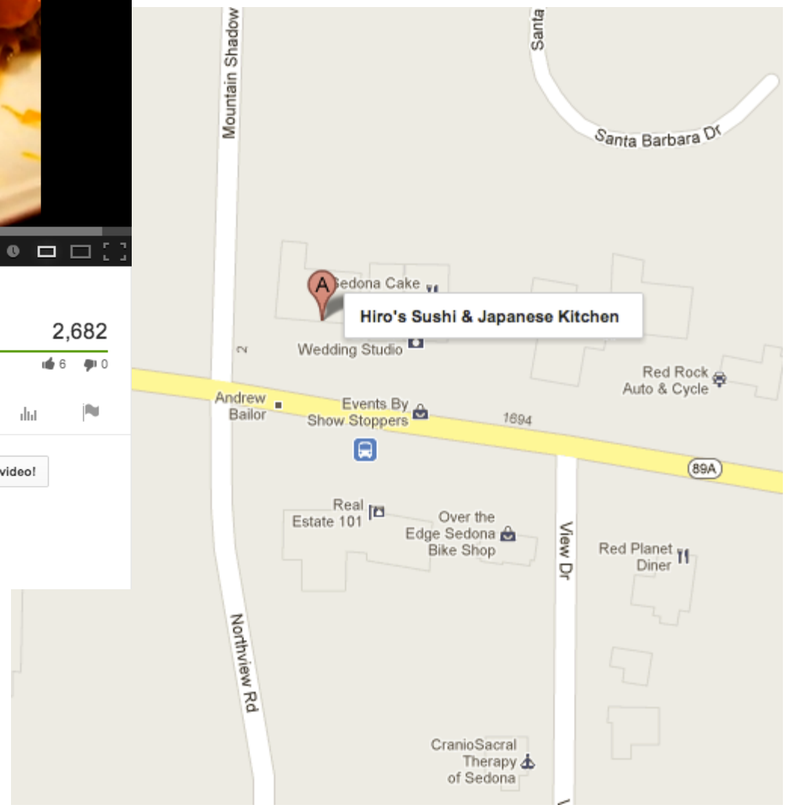


Open Issues

- Common Knowledge
- New Topics
- Local facts
  - Limited supports
  - Increased ambiguity
- Overlapping names



Open Issues

- Common Knowledge
- New Topics
- Local facts
- Overlapping names
  - Synonymous entities
  - Same concept space
  - Ex: Nirvana

Future Work

- Relevant annotations
  - Ex: Location of a live event, band members
  - Relevant is NOT low-confidence central
  - Relevant is NOT related
- Taxonomy annotations
  - Multi-tier taxonomy
  - Ex: Tennis, Racket Sports, Sports

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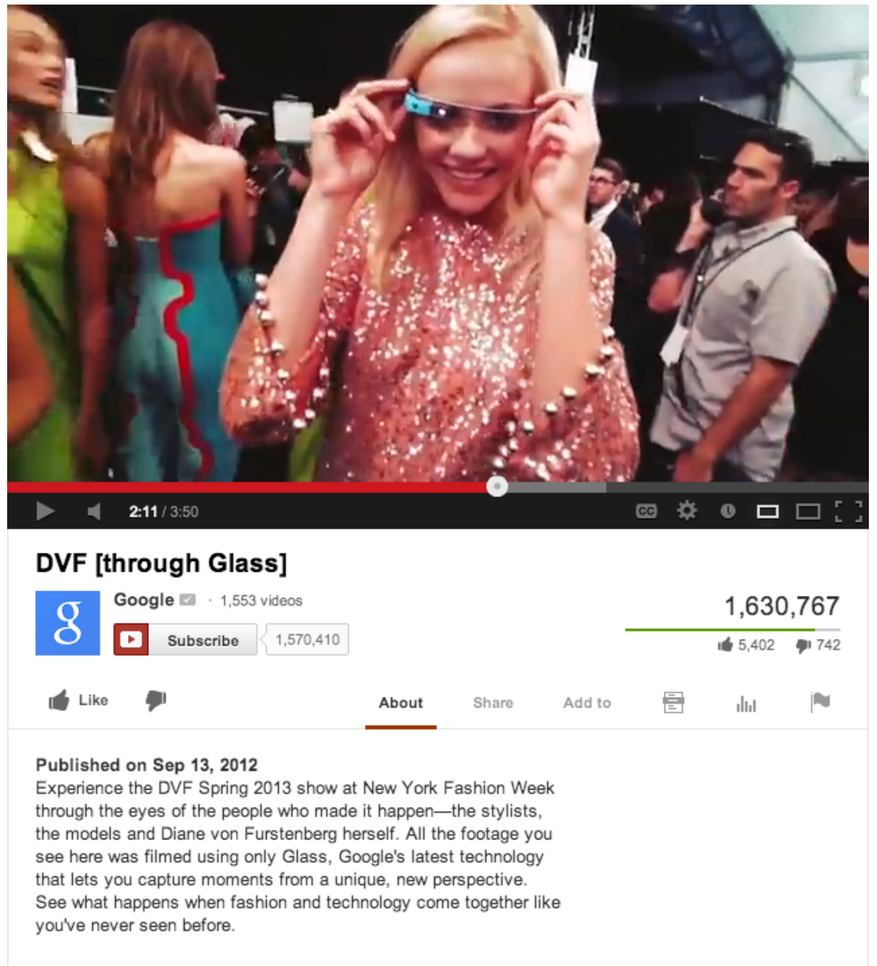
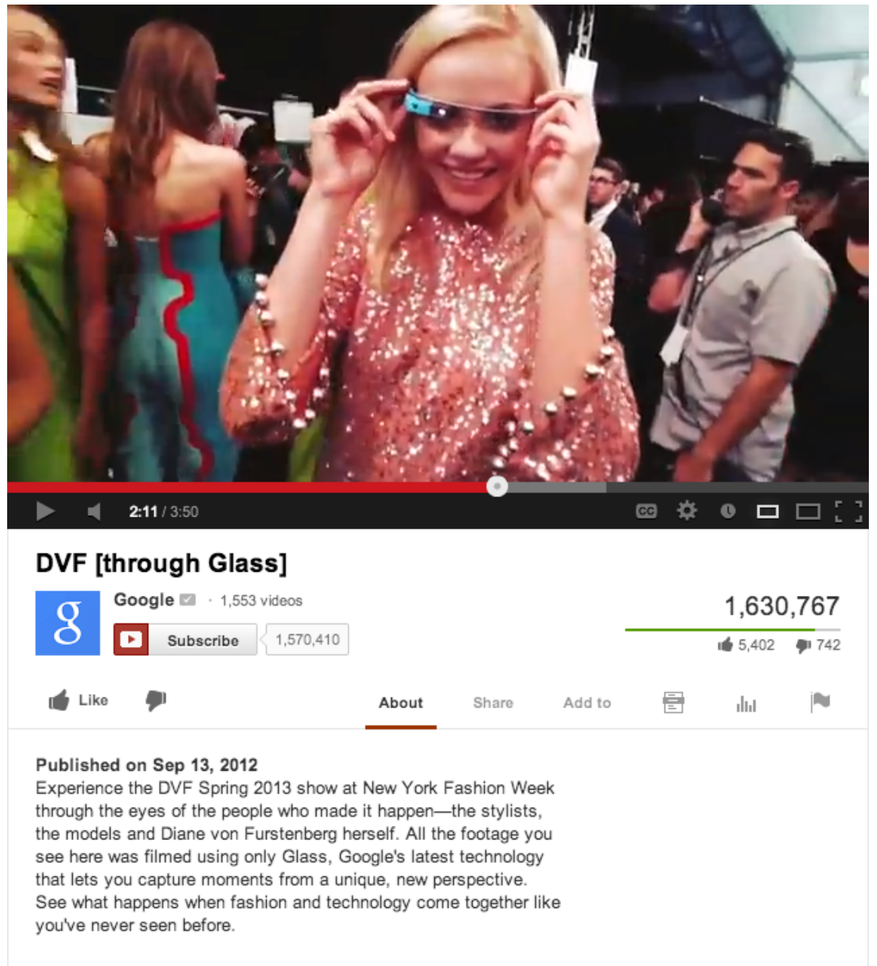


Future Work

- Central
  - Google Glass
  - Diane von Furstenberg
- Relevant
  - New York Fashion Week
- Taxonomy
  - Gadgets
  - Technology



Thank You!

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