

Freebase



- Started in 2005 by <u>Metaweb</u> to create a "open, shared database of the world's knowledge"
- Online in 2007
- Acquired by Google in 2010
- Read-only in 2014
- Original basis for <u>Google Knowledge Graph</u>
- Decommissioned in 2016; 2014 <u>dumps</u> still available as RDF
- Google allowed Wikidata to use the data

Freebase was a Pioneer

- Early examples of graph-based knowledge repositories like <u>Wordnet</u> (1985) and <u>Geonames</u> (2005) were narrow in scope
- Freebase & DBpedia (2007) had general scope
- DBpedia focused on extracting from Wikipedia
- Freebase extracted from Wikipedia and other sources, built a community of contributors, and creaded a very large ontology

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Miley Cyrus

Scroll to:

People

Music

TV

Film

Broadcast Artist

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Book Character

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Miley Ray Cyrus (born Destiny Hope Cyrus; November 23, 1992) is an American actress and pop singer. She achieved wide fame for her role as Miley Stewart/Hannah Montana on the Disney Channel sitcom Hannah Montana. Cyrus recorded music for the soundtracks, Hannah Montana (2006) and Hannah Montana 2/Meet Miley Cyrus (2007), released by Walt Disney Records. With the success of the Hannah Montana franchise she established herself as a teen idol. In 20... More

W Read article at Wikipedia

Date of birth: Nov 23, 1992 (age 18 years)

Place of birth: Nashville, Tennessee, United States of America

Place Musical Career Began: Los Angeles, North America

Active as Musical Artist (start): 2003

Musical Genres: Pop rock, Teen pop. Bubblegum pop. Dance-pop. Pop music. Country pop. Electropop, Southern rock, Adult contemporary music

Also known as: Miley Ray Cyrus, Destiny Hope Cyrus, Hannah Montana, Smiley Miley, Cyrus, Miley, Destiny Cyrus

People

Place of birth: Nashville, Tennessee, United States of America

Miley Cyrus Quotes

¿¿ Pink isn't just a color, it's an attitude! >>

Country of nationality: United States of America

Gender: Female

Profession:

Singer Actor Songwriter Guitarist

Screenshot

These people have edited this topic:











Edit this topic

Last edited Mar 27, 2011 See all topic history a-

Miley Cyrus elsewhere on the web



MusicBrainz.

MusicBrainz.

IMDb profile

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W Wikipedia

Facebook Page

MySpace Page

Daylife Topic Page

TVRage

Chickpedia

celebarchiv.com

Miley Cyrus Videos

Netfix

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Freebase Approach

- Initially populated with Wikipedia data
 - Crowdsourced updates/additions to schema & data, like
 Wikipedias and later Wikidata
 - -Tools to upload structured data, both schema & data
- Focus on data, not text
 - Text (multilingual) for short short descriptions
- Graph based schema, but syntax, semantic, and query language different from RDF
- Open-source data that could be downloaded initially in a custom format, later in RDF
- Business model: sell services using their custom query engine

Freebase Schema

- Statistics
 - ~10,000 types
 - ~3,500 properties
 - ~130M entities
 - ~2B triples
- Modeled many relations a CVTs (compound value type) object to allow more roles, e.g.

```
:bho :spouseOf [a :Marriage with spouse :bho, :mo; :start "1992"; :location :chi]
```

Larger, cleaner & more organized than DBpedia

The Last Picture Show

- A final dump with 1.9B triples in RDF is available from Google
 - See also http://basekb.com/docs/
- Used for <u>DARPA Deft</u> program, <u>NIST TAC</u> and other research efforts as a reference KB
 - Freebase relations still used for some evaluations
- Data transferred to Wikidata and <u>Google</u> <u>Knowledge Graph</u>

Google Knowledge Graph

- Freebase was initial version of Google knowledge Graph, originally called the Google Knowledge Vault
- You can query the current Google Knowledge Graph in a limited way
 - Inputs: query string, types, limit, ...
 - Output: (JSON) ranked list of entities that match, along with types, short description, ID (= freebase ID)
- See simple gkg.py example

Current types

Book **BookSeries** Educational Organization **Fvent** Government Organization LocalBusiness Movie **MovieSeries** MusicAlbum MusicGroup MusicRecording Organization Periodical

Person

Place

SportsTeam

TVEpisode

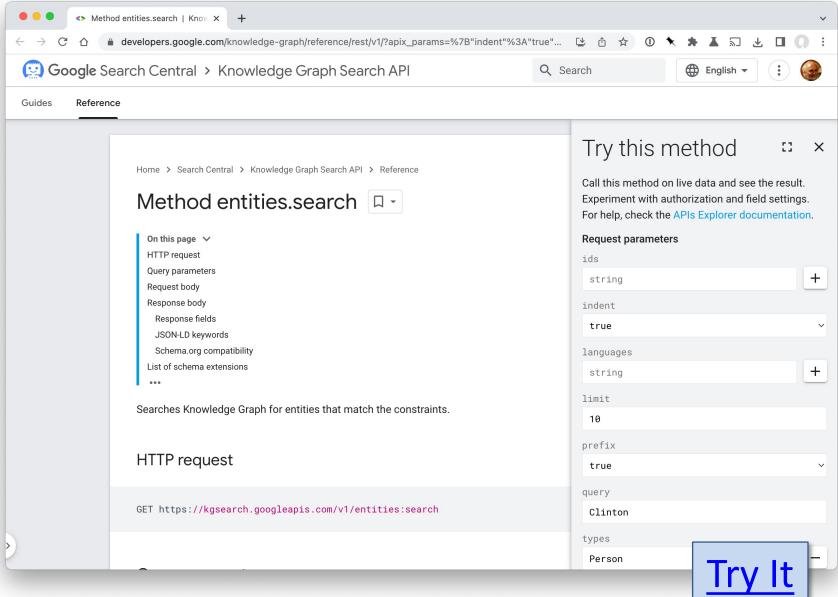
TVSeries

VideoGame

VideoGameSeries

WebSite

Knowledge Graph Search



First you Need a Google API key

- With a google account, you can get a API key
 - You can have different keys for different projects
 - Many services are free with moderate use
 - You can get one <u>here</u>
- You can also authenticate with Google services using <u>OAUTH</u>, which is more convenient
 - See how to do it <u>here</u>

Example

Query about Taylor Swift

https://kgsearch.googleapis.com/v1/entities:search?query=taylor+swift&key=API_KEY&limit=1&indent=True

```
{"@context": { "@vocab": "http://schema.org/",
  "goog": "http://schema.googleapis.com/",
  "resultScore": "goog:resultScore",
  "detailedDescription": "goog:detailedDescription",
  "EntitySearchResult": "goog:EntitySearchResult",
  "kg": "http://g.co/kg"},
"@type": "ItemList",
 "itemListElement": [
  { "@type": "EntitySearchResult",
   "result": { "@id": "kg:/m/0dl567",
    "name": "Taylor Swift",
    "@type": ["Thing", "Person"],
    "description": "Singer-songwriter",
    "image": {"contentUrl": "https://t1.gstatic.com/images?q=tbn:ANd9GcQm...",
     "url": "https://en.wikipedia.org/wiki/Taylor Swift",
     "license": "http://creativecommons.org/licenses/by-sa/2.0"},
    "detailedDescription": {"articleBody": "Taylor Alison Swift is an American singer-songwriter ...",
     "url": "http://en.wikipedia.org/wiki/Taylor Swift",
     "license": "https://en.wikipedia.org/wiki/Wikipedia:Text of Creative ..."},
    "url": "http://taylorswift.com/" },
```

gkg.py

- gkg.py is a simple python program gets one or more matches for a query string
- You can also specify
 - How many to return in a ranked list
 - One or more types (e.g., Person, Book, Place)
 - One or more languages for the name and descriptions

What's it good for?

- It's one easy tool for entity linking in text
 - assigning a unique id to entities, e.g., famous individuals, locations, or companies
- Trump was born in Queens, New York
- Gkg will find these and their IDs, which are also often mentioned as Wikidata properties
 - Lets us align an entity in the Google knowledge graph with one in Wikidata and then on to DBpedia

Tyrannosaurus (Q14332)

- m/07hjh: Freebase ID of entity Tyrannosaurus
 - Try http://g.co/kg/m/07hjh
 - Wikidata property (P646) with label Freebase ID
- /g/11r_php4q: Google Knowledge Graph ID
- Wikidata has a property (<u>P2671</u>) with label Google Knowledge Graph ID
 - Try https://g.co/kg/g/11r php4q
- Only 101 Wikidata items have both

What's it not good for?

- We get no relations 😊
- Google's KG has many properties about its entities
- These are not available in the public service
- But are no doubt very useful to Google's search allowing it to do more accurate entity linking and even answer questions

About



donaldjtrump.com

Donald John Trump is an American politician, media personality, and businessman who served as the 45th president of the United States from 2017 to 2021. Trump graduated from the Wharton School of the University of Pennsylvania with a bachelor's degree in 1968. Wikipedia

Born: June 14, 1946 (age 76 years), Jamaica Hospital Medical Center, New York, NY

Spouse: Melania Trump (m. 2005), Marla Maples (m.

1993-1999), Ivana Trump (m. 1977-1992)

Net worth: 3.2 billion USD (2022) Forbes

Children: Ivanka Trump, Donald Trump Jr., Barron

Trump, Eric Trump, Tiffany Trump

Height: 6'3"

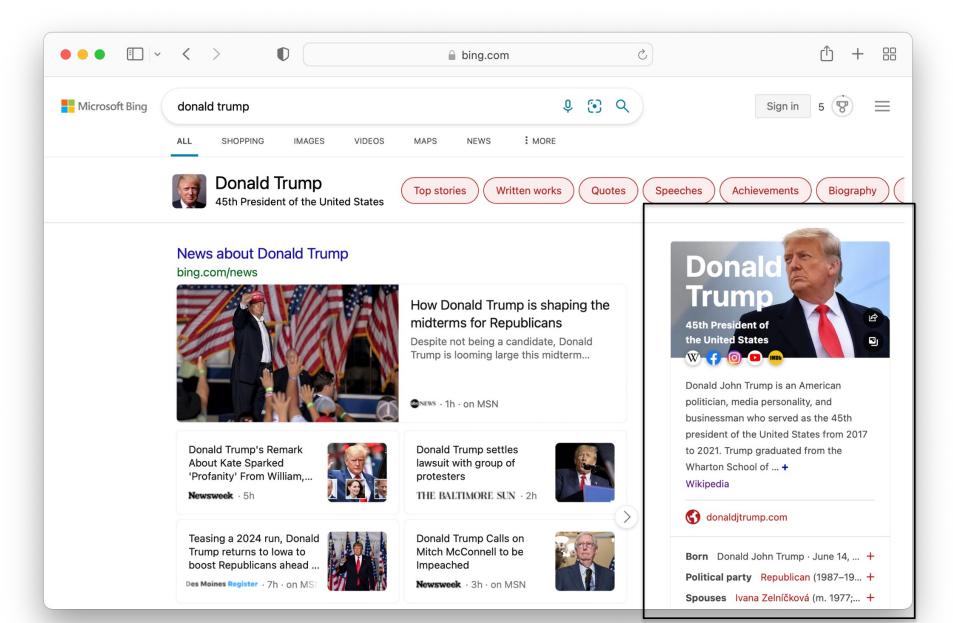
Party: Republican Party

Sources include: Ballotpedia, Wikipedia. Learn more

Feedback

Info box Google shows for **Donald Trump**

Microsoft has a KG, too



Final Thoughts

- Search engines exploit knowledge they gather from the web (schema.org), NLP processing, Wikipedia, Wikidata, and others
- There is an ecology of sorts and all of these are becoming more interlinked and integrated
- I've found it useful to use the Google KG search for entity linking when a Wikidata or DBpedia was not found
- Freebase pioneered many of the features we see in Wikidata today