

Webinar

How to Prepare Your Content for Generative AI Search

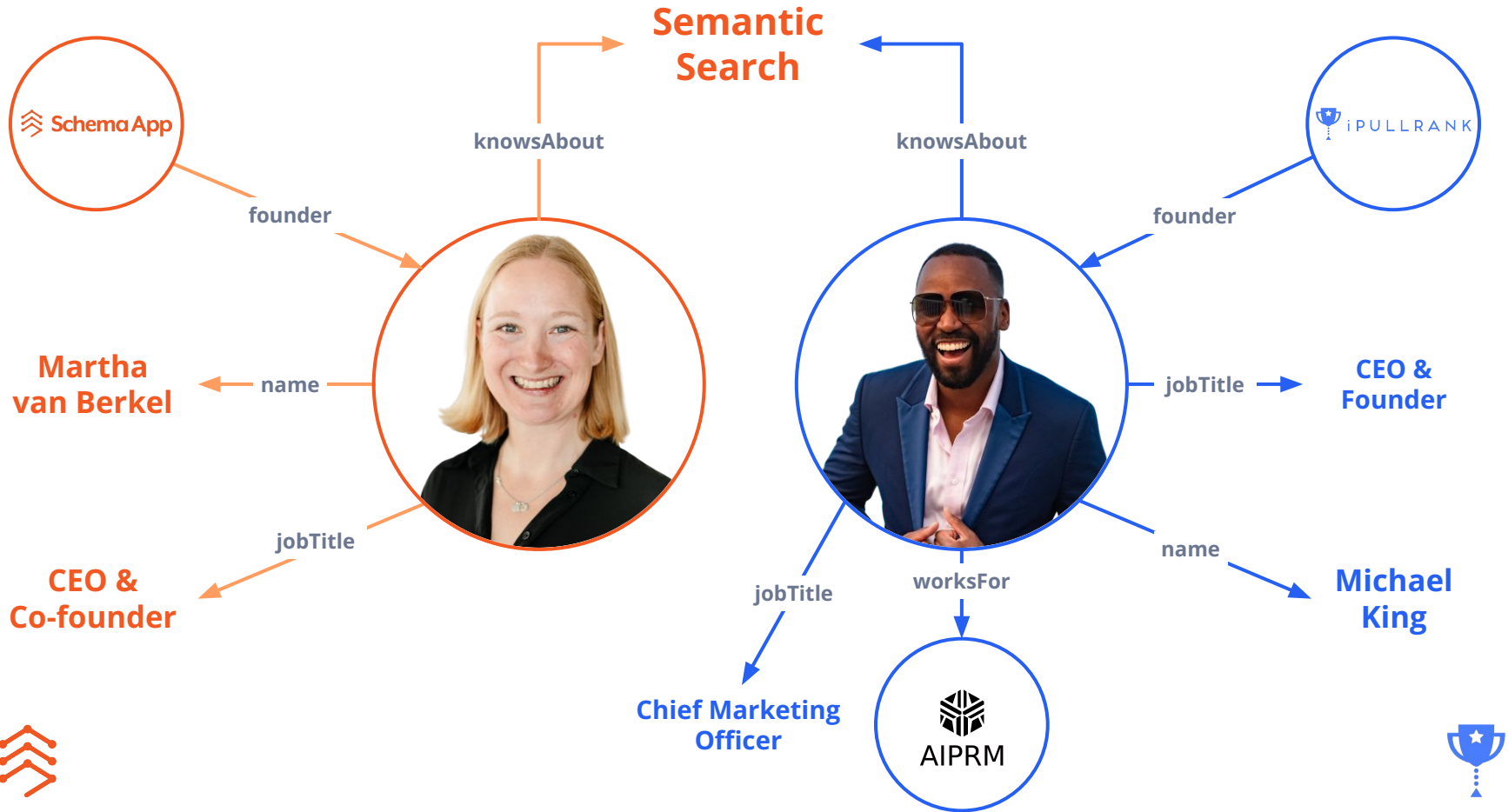


Schema App is a scalable Knowledge Graph Solution for Enterprise SEO teams

We are a semantic technology company that help organizations build their marketing knowledge graph with our Schema Markup solution to accelerate business results and stand out in search.

Trusted by Enterprises Worldwide







iPULLRANK



Complete Small Business Tasks with Prompt Management & 1-Click Prompts for **ChatGPT**

AIPRM is a prompt management tool and community-driven prompt library. Use it to complete marketing, sales, operation, productivity, and customer support tasks in minutes that used to take hours with ready-to-use prompts for ChatGPT, Bard, Midjourney, and DALL-E 2.

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Already have the extension?
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Built for Small Businesses. Trusted by Big Businesses.
(If we showed the Small Business logos, you wouldn't recognize them.)



Outrank Article

SEO / Writing

[AIPRM](#) · 1 month ago

Outrank the competition with an in-depth, SEO-optimized article based on [YOUR COMPETITOR URL]. Be like your competition, just a little better ;-)

846.6K 595.0K 3.5K

Keyword Strategy

SEO / Ideation

[AIPRM](#) · 1 month ago

Create a keyword strategy and SEO content plan from 1 [KEYWORD]

696.9K 504.9K 3.2K

Audit Page Content for SEO [2.1.0]

SEO / Ideation

[@FlorianKluge](#) · 2 weeks ago

Audit and improve your content for E-E-A-T and skyrocket your organic traffic with the perfect H1 and Meta Title - Detailed SEO Analysis Included!

157.6K 96.1K 716

Python Pro

Software Engineering / Backend Development

[AIPRM](#) · 1 month ago

Python giving you trouble? I can help!

99.1K 58.4K 695

Blog Post Title Generator

Copywriting / Summarize

[AIPRM](#) · 1 month ago

Generate post titles with a hook

138.0K 107.1K 604

Stable Diffusion Prompt based of your Idea

Generative AI / Stable Diffusion

[Pezhy](#) · 16 hours ago

ChatGpt can now create a Prompt based of your Idea. t it. I try to make it better. Vote if you want, Thank you. nc with universal negative Prompt. !!!

96.3K 63.0K 501

Code Generator

Software Engineering / Web Development

[RealityMoez](#) · 4 hours ago

ay to get your Code answer. His name is

46.6K 452

TLDR - Extract facts and summarize

Productivity / Summarize

[AIPRM](#) · 1 month ago

Extract all facts as emoji bullets and summarize the text given.

57.3K 40.9K 444

Get Automatic YouTube Title and Description for Video

SEO / Writing

Midjourney V5 prompts - 6 different styles

Generative AI / Midjourney

bert

ations / Spreadsheets

month ago

h MS Excel? I've got you covered!

Find Questions

SEO / Ideation

[AIPRM](#) · 1 month ago

Discover the top 10 questions about [keyword] that **target audience** needs answered

- Default
- Academic
- Analytical
- Argumentative
- Conversational
- Creative
- Critical
- Descriptive
- Epigrammatic
- Epistolary
- Expository
- Informative
- Instructive
- Journalistic
- Metaphorical
- Narrative
- Persuasive
- Poetic
- Satirical
- Technical

Output in

English

Tone

Default

Default

How are search engines changing?

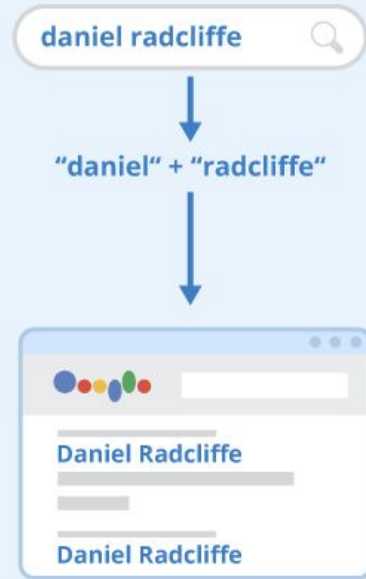
- Lexical to semantic search
- Context changing in SGE
- Knowledge Graphs



Two primary search models:
Lexical search vs. Semantic search

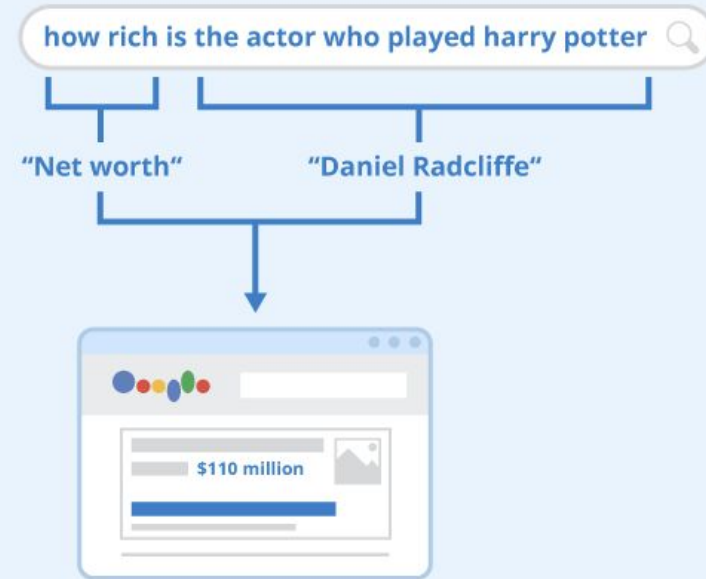


Lexical search



Lexical search is about counting the incidence rate of words

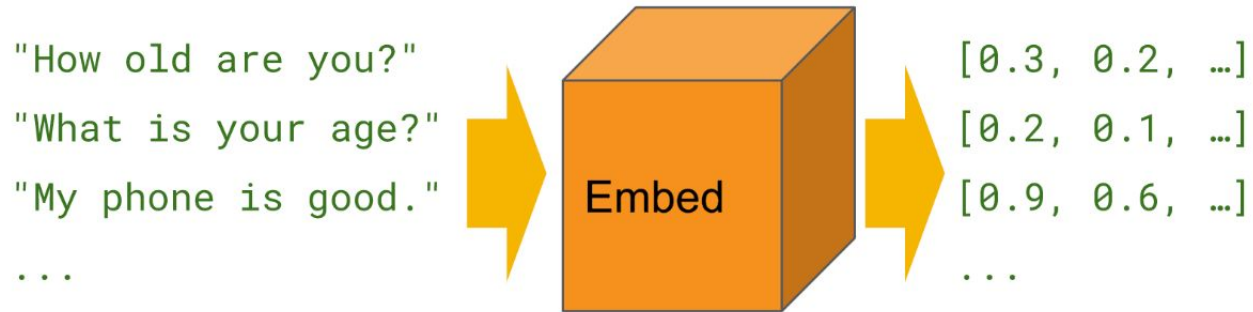
Semantic search



Semantic search about deriving meaning from words and their relationships

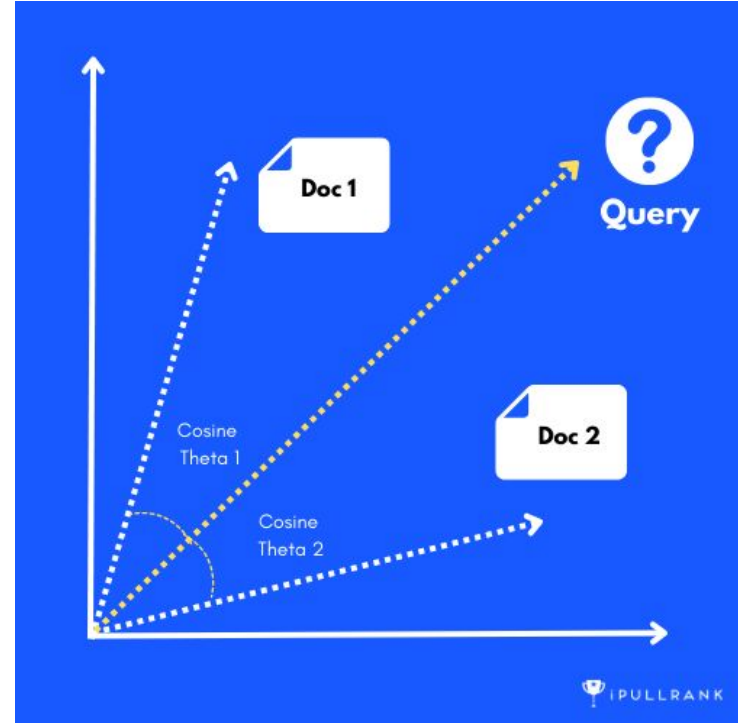


Words are converted to multi-dimensional coordinates in the vector space



Vector Space Model

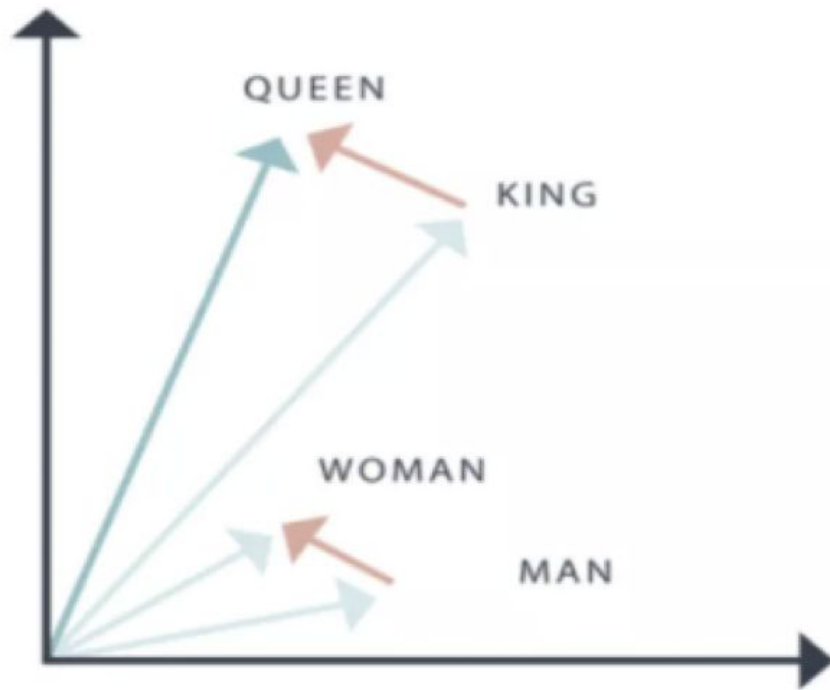
- Documents and queries are converted to vector representations and plotted in multi-dimensional space.
- The query and document vectors are then compared based on cosine similarity and **the ones that are closest to the query are the most relevant.**
- The main takeaway here is that **relevance is a quantitative value.** This is perhaps the most important concept to understand about how search works.



This allows for mathematical operations

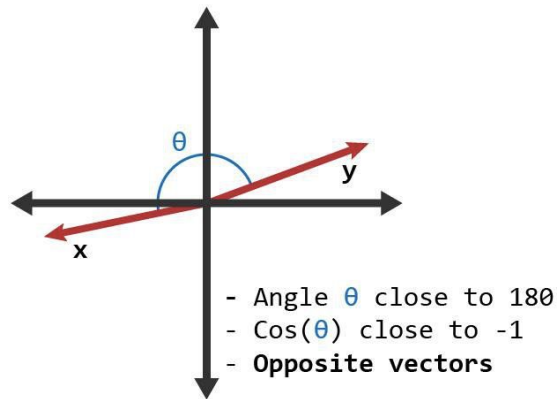
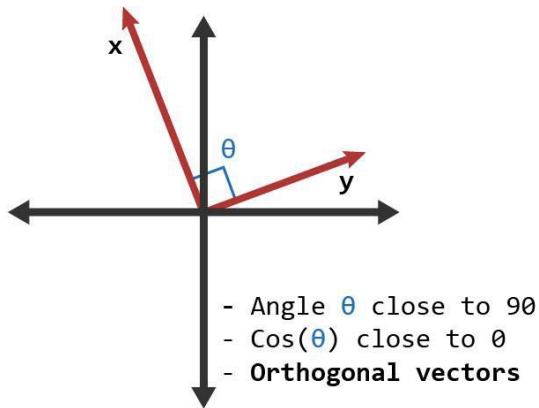
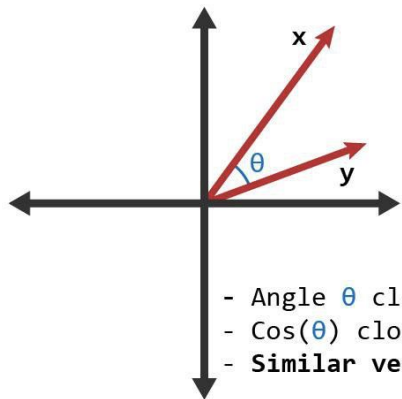
- Comparisons of content and keywords become linear algebraic operations.

KING - MAN + WOMAN = QUEEN



Relevance is a Function of Cosine Similarity

- When we talk about relevance, the question of similar is determined by how similar the vectors are between documents and queries. This is a quantitative measure, not the qualitative idea of how we typically think of relevance.



Vector Density Has Improved Through Transformers (the T in GPT)

- Search engines have improved their ability to understand content by increasing the amount of information captured in their vectors.

s p a r s e

	7					6
	7	6	3		4	
	4	3				
4	2					
			3	2	4	

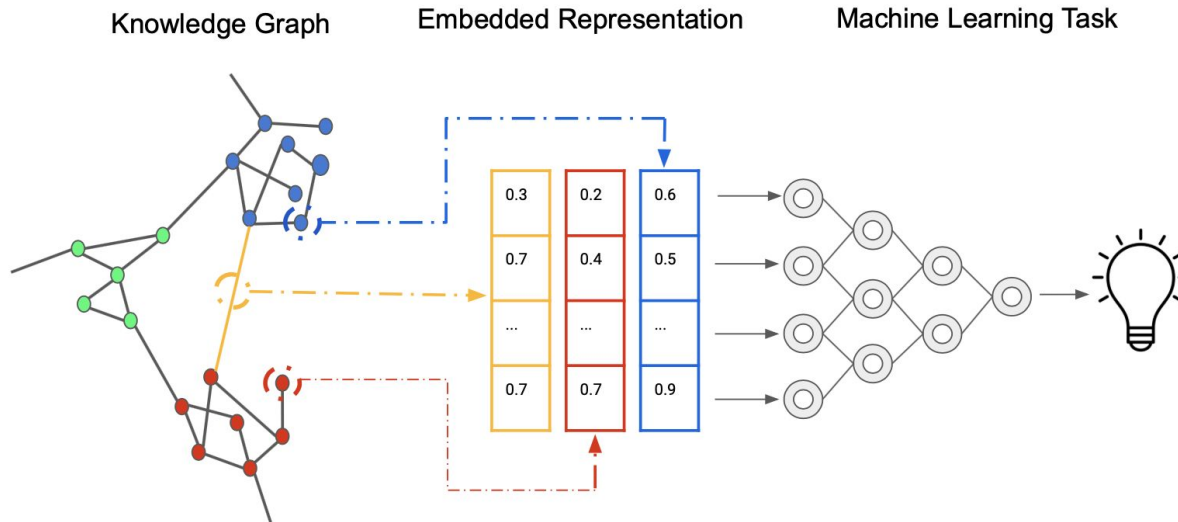
DENSE

0	7	0	0	0	0	6
0	7	6	3	0	4	0
0	4	3	0	0	0	0
4	2	0	0	0	0	0
0	0	0	0	3	2	4



Entities Have Vector Representations

- Information from knowledge graphs are converted to vector representations and used in a variety of tasks that inform search engine use cases.



Content & SEO teams must now
prioritize crafting **comprehensive,
holistic content** over narrow
keyword-focused pieces.

Context changing in SGE & the New Bing

Google

what is Schema?

Generative AI is experimental. Info quality may vary.

In psychology, a schema is a cognitive framework or concept that helps organize and interpret information. It describes patterns of thinking and behavior that people use to interpret the world. Schemas are developed and based on life experiences and provide a guide to one's cognitive processes and behavior.

Schemas are also used to describe the specific actions or behaviors that babies, toddlers, and young children engage in as they explore the world around them and try to find out how things work.

What is schema and an example? What is an example of a schema? What is schema in SQL?

Reset Ask a follow up

Search results for 'what is Schema?':

- Schema: Learning through play ... education.g...
- Schema in Psychology: Definition, ... Mar 12, 2023 Verywell Mind
- What is a schema? - TechTarget

Microsoft Bing SEARCH CHAT Sign in 5

More Creative More Balanced More Precise

Sign in to ask more questions and have longer conversations

Hello, this is Bing! I'm the new AI-powered chat mode of Microsoft Bing that can help you quickly get **summarized answers and creative inspiration**.

- **Got a question?** Ask me anything - short, long, or anything in between.
- **Dive deeper.** Simply ask follow-up questions to refine your results.
- **Looking for things to do?** I can help you plan trips or find new things to do where you live.
- **Feeling stuck?** Ask me to help with any project from meal planning to gift ideas.
- **Need Inspiration?** I can help you create a story, poem, essay, song, or picture.

Try clicking on some of these ideas below to find out why the new Bing is a smarter way to search.

How does Bing work? How can I improve my sleep quality? Write a cute story about a puppy and a kitten

New topic Ask me anything...



Queries are Longer and the Featured Snippet is Bigger

1. The query is more natural language and no longer Orwellian Newspeak. It can be much longer than the 32 words that it has been historically in order
2. The Featured Snippet has become the “AI snapshot” which takes 3 results and builds a summary.
3. Users can also ask follow up questions in conversational mode.

1 what's better for a family with kids under 3 and a dog, bryce canyon or X

2

Generative AI is experimental

Both Bryce Canyon and Arches National Parks are family-friendly. Although both parks prohibit dogs on unpaved trails, Bryce Canyon has two paved trails that allow dogs.

Bryce Canyon has distinctive features like hoodoos, natural bridges, and waterfalls. At the visitor center's interactive exhibits, children can learn about the geology, wildlife, and people of the area. You can bring your dog on the paved sections of both the Rim Trail and the Shared Use Path, both of which are also stroller-friendly.

At Arches, children may enjoy the rock formations, and some say that Arches has more variety than Bryce Canyon. Pets aren't allowed on any trails, though they are allowed at campgrounds, pullouts, roads, and parking lots.

Both parks offer guided tours, ranger-led programs, picnic areas, and restrooms, and both parks require pets to be leashed.

3

Ask a follow up

How long to spend at Bryce Canyon with kids?

How many days do you need in Arches National Park for kids?

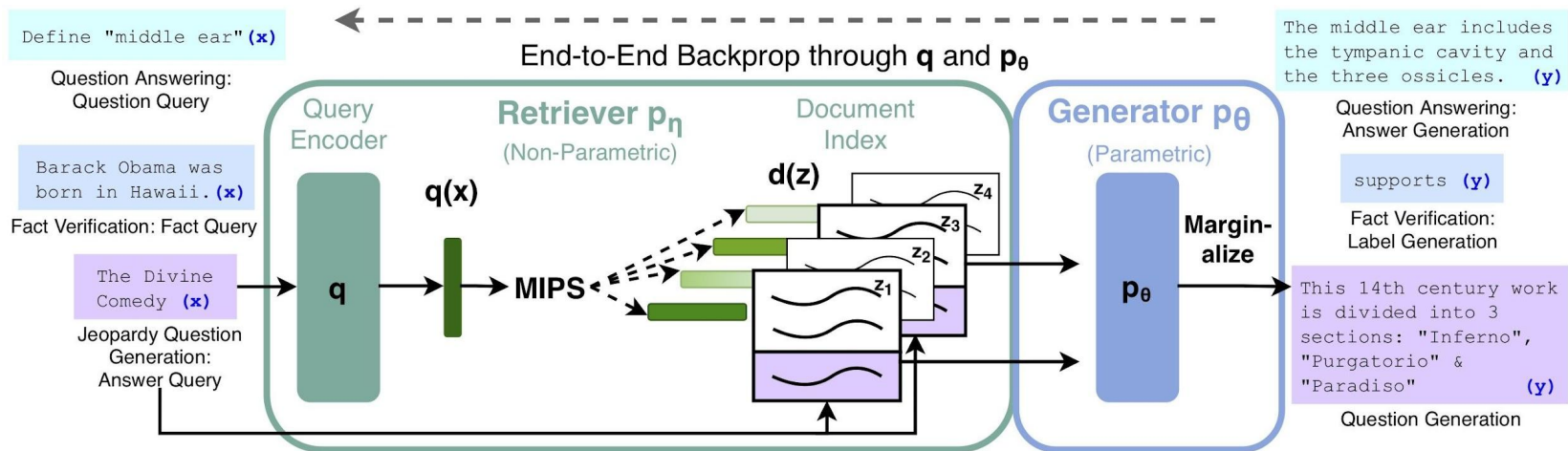
Action Tour Guide
Feb 17, 2022 — Arches only allow dogs at campgrounds, parking lots, and along established roads, making it a lot harder to experience the park with your dog.

The MOM Trotter
A Guide To Planning A Trip To Bryce Canyon National ...

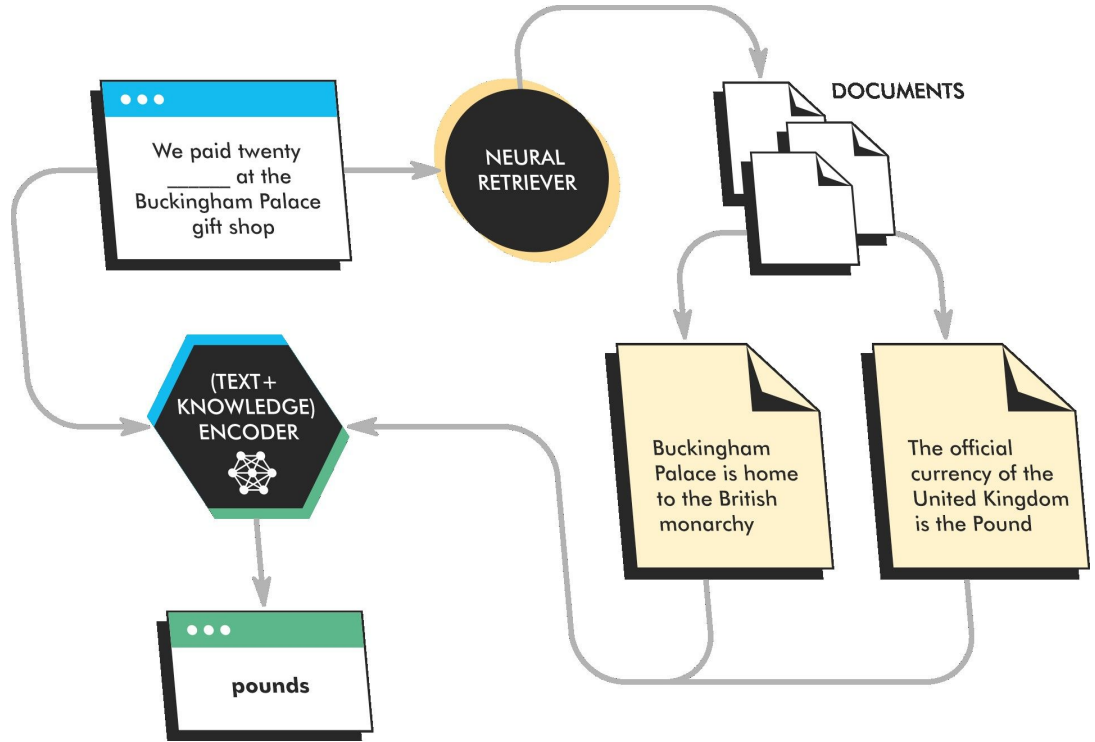


This is Called "Retrieval Augmented Generation"

- Neeva (RIP), Bing, and now Google's Search Generative Experience all use pull documents based on search queries and feed them to a language model to generate a response.



Google's Version of this
is called
Retrieval-Augmented
Language Model
Pre-Training (REALM)

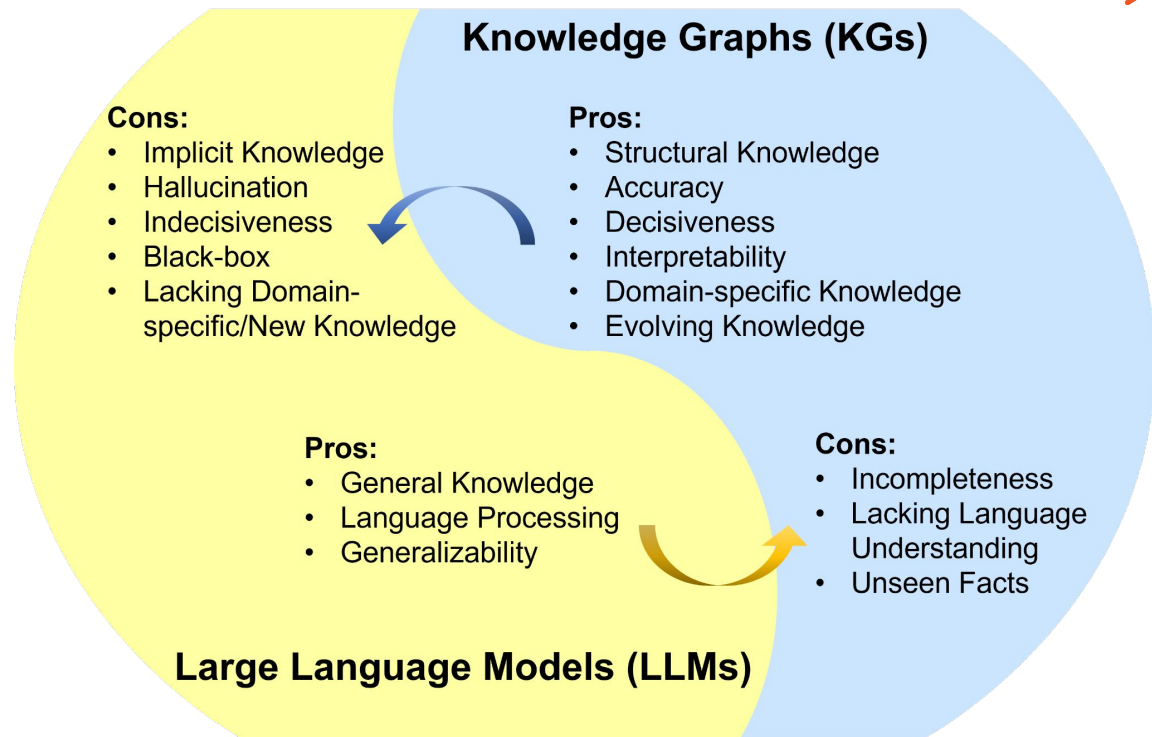


There's a Lot of Synergy Between KGs and LLMs

There are three models gaining popularity:

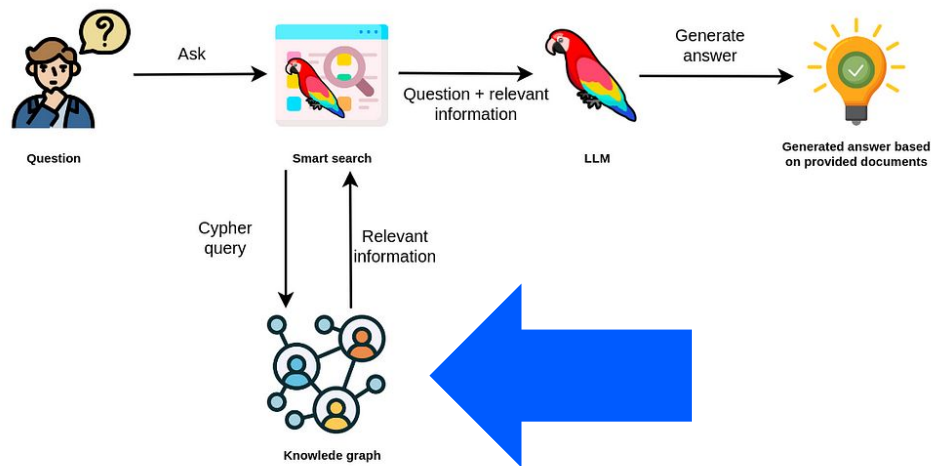
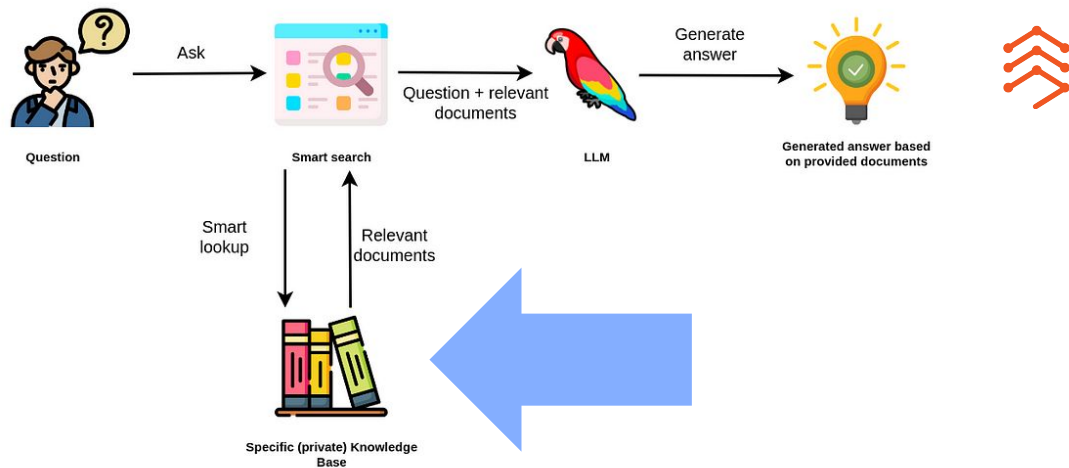
1. **KG-enhanced LLMs** - Language Model uses KG during pre-training and inference
2. **LLM-augmented KGs** - LLMs do reasoning and completion on KG data
3. **Synergized LLMs + KGs** - Multilayer system using both at the same time

<https://arxiv.org/pdf/2306.08302.pdf>



Organizations are doing RAG with Knowledge Graphs

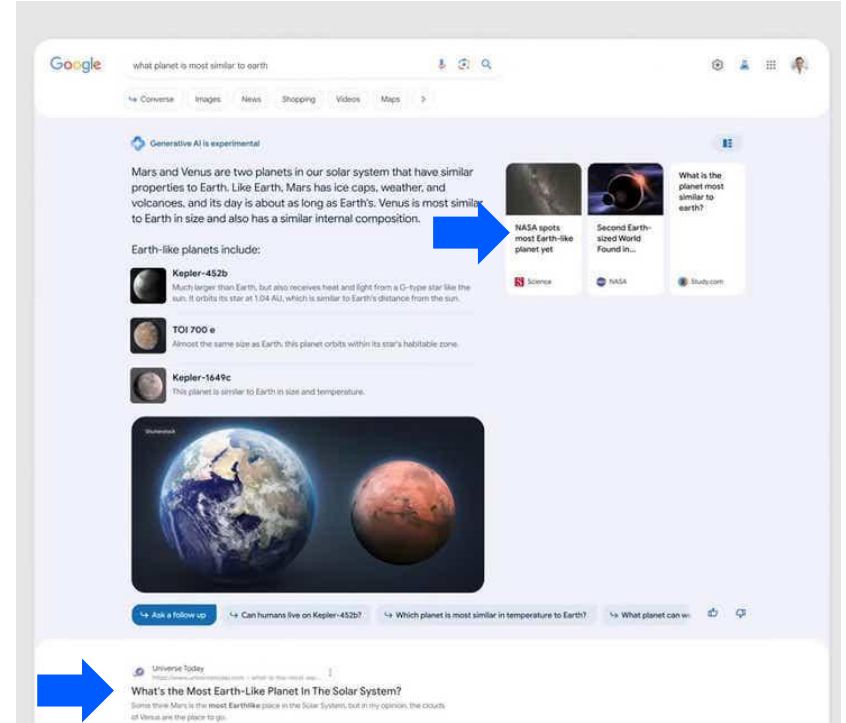
- Anyone can feed their data into an LLM as a fine-tuning measure to improve the output.
- People are currently using their knowledge graphs to support this.





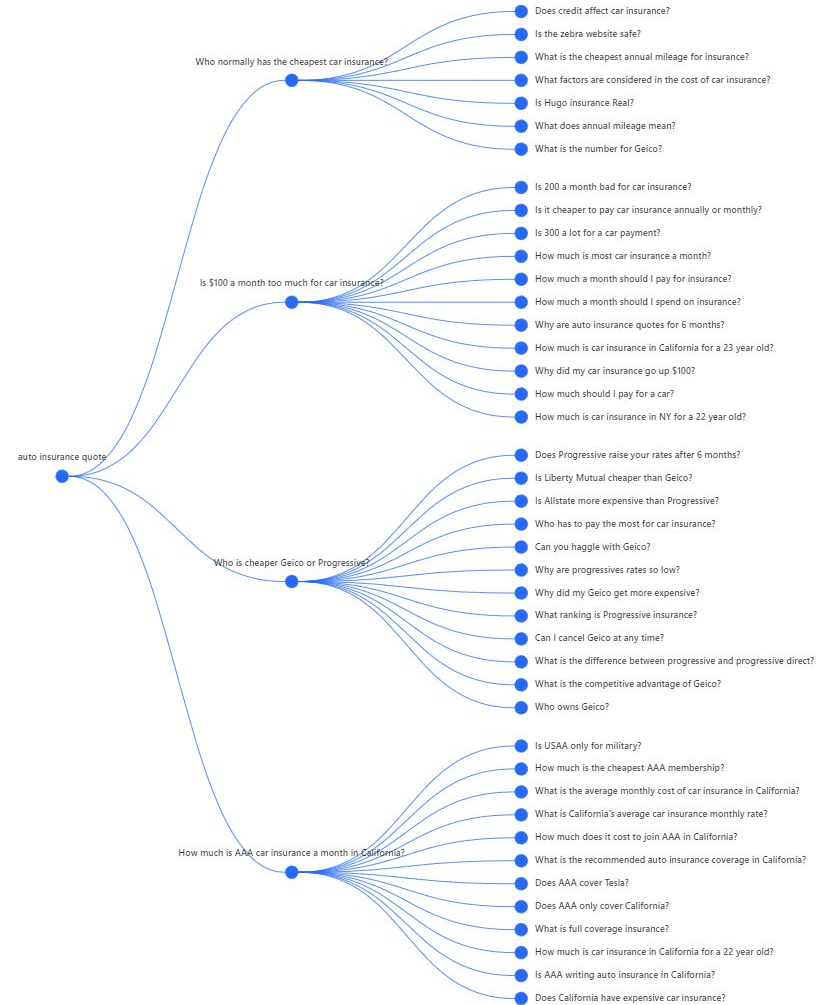
Rank Tracking Will Be More Complex

- As an industry, we'll need to decide what is considered the #1 result.
- Based on this screenshot positions 1-3 are now the citations for the AI snapshot and #4 is below it.
- However, the AI snapshot loads on the client side, so rank tracking tools will need to change their approach.



Context Windows Will Yield More Personalized Results

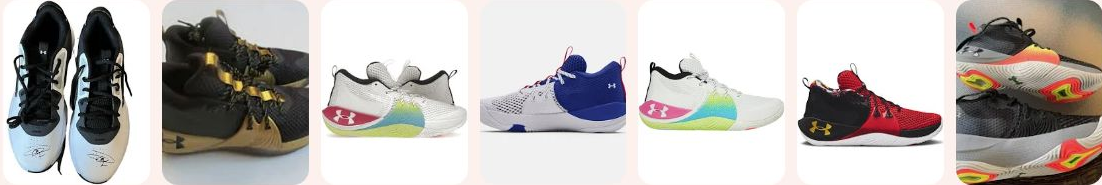
- SGE maintains the context window of the previous search in the journey as the user goes through predefined follow questions.
- This will need to drive the composition of pages to ensure they remain in the consideration set for subsequent results.



But, the Follow Up Questions Are Different From the PAA

- There is some overlap, but the follow up questions featured in the AI Snapshot typically differ from those in the PAAs.
- So, we'll need to find another way to get this data.

joel embiid shoes



Product Name	Price	Source
Under Armour Joel Embiid Signed...	\$178.00	Grailed
Under Armour Shoes Under...	\$110.00	Postmark
Under Armour Embiid One White...	\$207.00	StockX, + more
Under Armour Embiid One...	\$119.95	eBay - sportshack1971
Men's Under Armour Embiid O...	\$188.00	GOAT, + more
Men's Under Armour Embiid O...	\$158.00	Flight Club
Under Armour Embiid One Men's...	\$89.00	Mercari


Show more

Ask a follow up Under Armour Embiid 2 Joel Embiid shoes 2023

Under Armour
<https://about.underarmour.com/stories/2020/08/t...>

THE UA EMBIID ONE RELEASES SEPTEMBER 18

Joel Embiid has officially picked up the process in Orlando, Fla. The versatile 7-footer has returned to the hardwood in his first signature shoe, the UA ...



People also ask :

- What shoe brand does Joel Embiid wear?
- Does Joel Embiid have basketball shoes?
- Does Joel Embiid have a shoe deal?
- Is Joel Embiid signed with Under Armour?

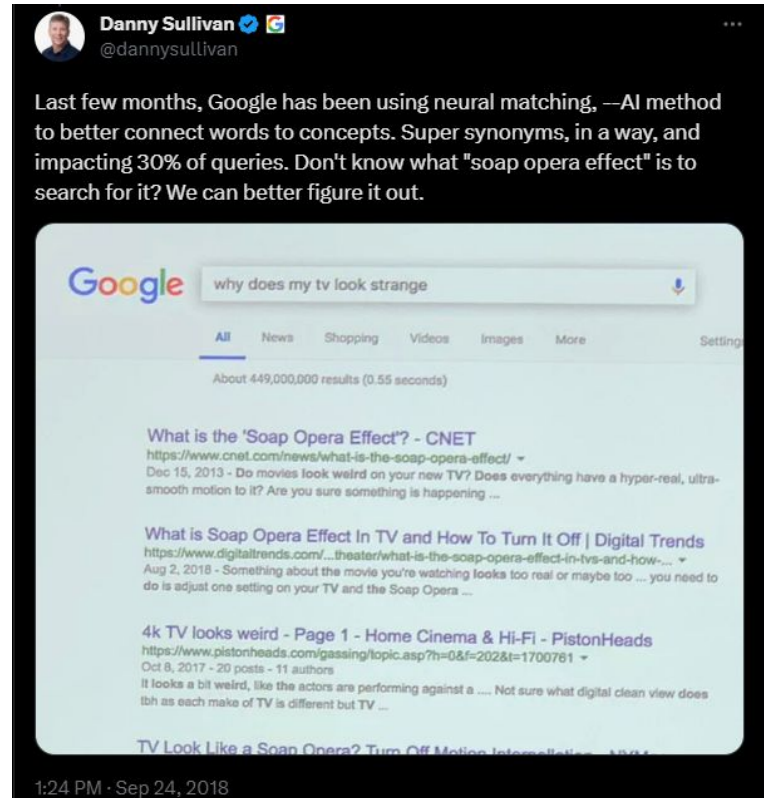
Feedback

Images for joel embiid shoes :

kobe bryant kobe shoes bryant shoes embiid signature nba

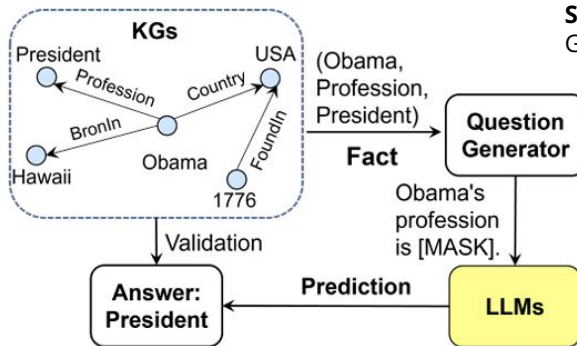
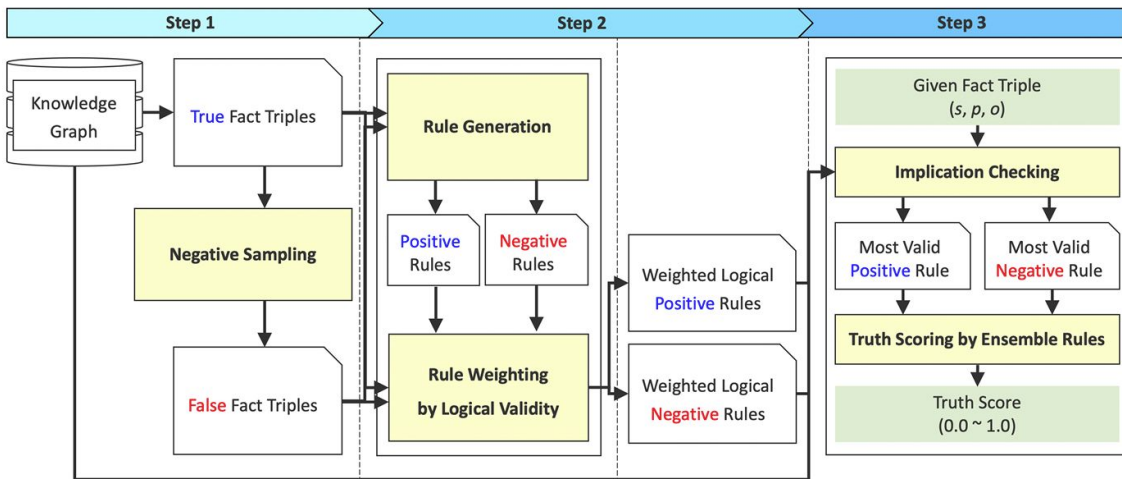
Neural Matching

- Google's ranking algorithm has evolved to neural matching from keyword matching.
- It now recognizes and connects **related entities** across entire websites, emphasizing the importance of their interrelationships.
 - Even if a page lacks specific search terms, the concept can be connected to related entities and their attributes
- Content creators and SEO experts must now prioritize crafting comprehensive, holistic content over narrow keyword-focused pieces.



Fact Verification

- Although Google has historically said they do not verification of facts.
- LLM + KG integrations make this a possibility and Google needs to combat the wealth of content being produced with LLMs. So, it's likely they will use this functionality.



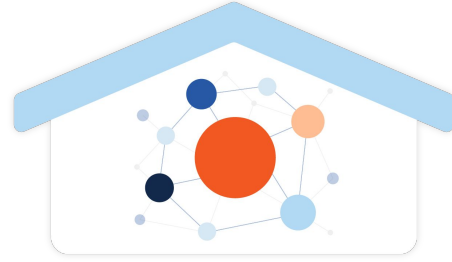
Source: Fact Checking in Knowledge Graphs by Logical Consistency

Source: FactKG: Fact Verification via Reasoning on Knowledge Graphs



What is an
Entity?

An entity is a thing with specific
attributes.



Your Webpage = Entity Home

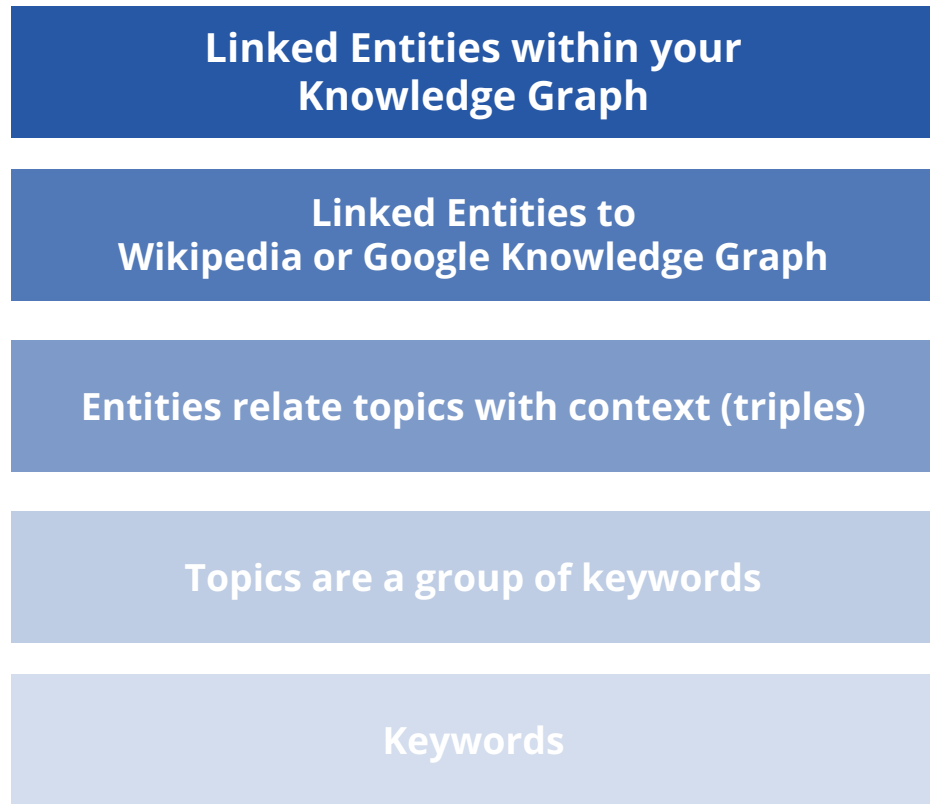


Entity authority and context

- In the world of SGE, you are the authority of your own content
 - 3rd party should not be the entity definition, you link to it
- You define your entities and how they are connected to other entities on your website and in the world
- The entity definition should live on the page that primarily speaks about that topic
- Use Schema Markup to articulate what the page is about and what linked entities exist in context



Entity Maturity Scale



Entity
Maturity



How Schema App helps you manage your knowledge graph



- Schema App platform creates entities for your content through the application of Schema Markup where each “@id” is a URI
 - You can link entities on your site using these URIs
- Linked Entity Recognition feature automatically connects your entities to external authoritative knowledge bases like Wikidata & Google Knowledge Graph at scale



Schema Markup builds Knowledge Graphs



What is Semantics?

Semantics is a term for the study of language, how it expresses meaning, and the rules it must abide by in order to convey this meaning.

What is Semantic Technology?

Semantic technology are the tools and technologies we use to articulate the meaning and relationship between things.

Schema Markup = Language to define Entities on your website



Do search engines care about semantic Schema Markup?

In short, yes.



"Also, over time richer/correct semantics will favour more connected graphs."

– Ryan Levering, Google (Source: Mastodon)



"Write great content annotated with schema markup... use Semantic Markup to convey information about the page."

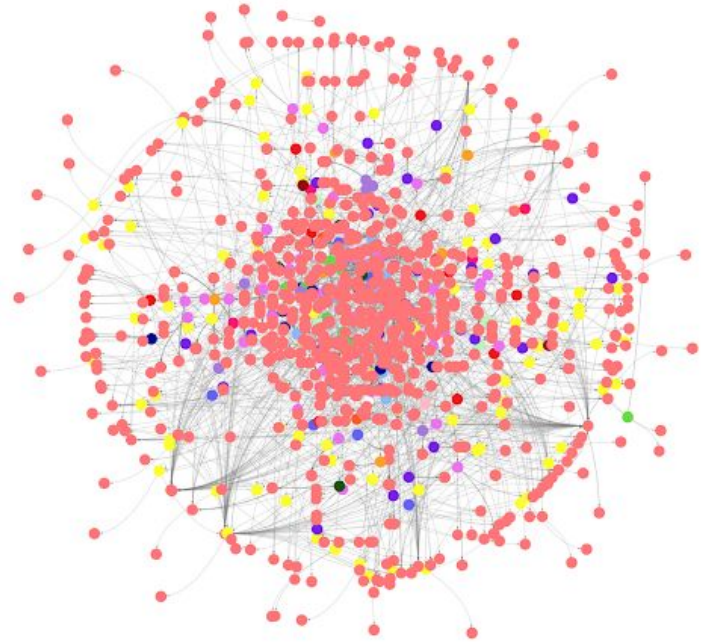
– Fabrice Canel, Bing (Source: Pubcon Austin 2023)

What is a Knowledge Graph?

A collection of relationships between things defined using a standardized vocabulary, from which new knowledge can be gained through inferencing.

Semantic Schema Markup = Marketing Knowledge Graph

- All of your entities have URIs, and are connected using the Schema.org vocabulary.
- Connections between entities and properties of things (ie. name, MedicalSpecialty, aggregateRating)
- Connections and Properties are expressed in RDF. RDF is a data model that expresses everything as triples.



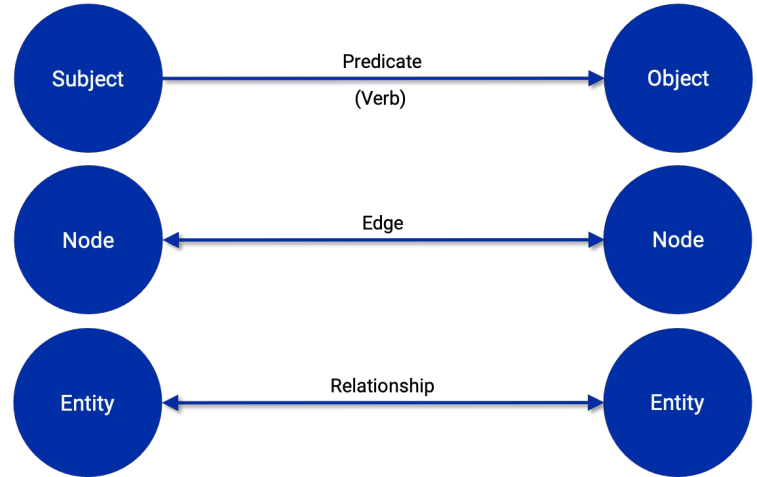
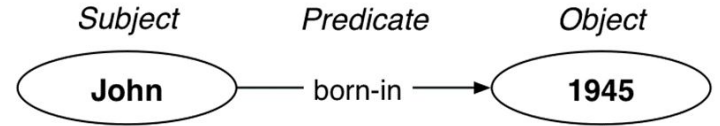
RDF Triples aka Semantic Triples

A semantic triple, commonly used in the context of the semantic web and knowledge graphs, represents a fundamental piece of information as a relationship between two entities in the form of:

subject-predicate-object

- The subject denotes the entity being described
- the predicate specifies the type of relationship or property
- the object represents the value or another entity that the subject is related to

In knowledge graphs, these triples form interconnected networks of data, allowing machines to understand and reason about complex relationships and hierarchies in a structured manner.

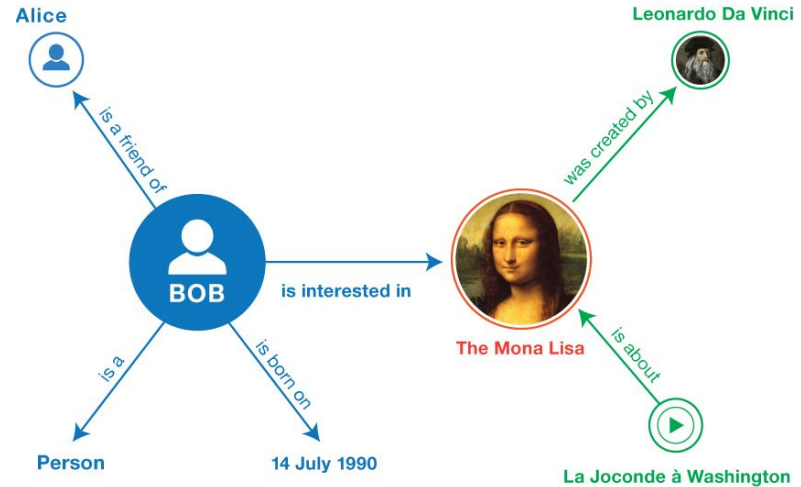


Knowledge Graphs are Networks of Triples

Knowledge graphs represent information as a **web of interconnected nodes and edges formed by semantic triples**, where nodes correspond to subjects and objects, and edges represent predicates.

By linking these triples together, knowledge graphs facilitate understanding and querying of complex relationships and structures in a coherent and structured manner.

Search engines extract in this implicit information through parts of speech tagging. **Structured data allows you to provide this data more explicitly.**



Why should you implement Semantic Schema Markup?



Develop your knowledge graph by connecting the various entities to your organization



Help AI search engines understand and contextualize your content



Train AI search engines to provide more accurate results by grounding the LLM with your knowledge graph



Schema Markup
to achieve
Rich Results



Schema Markup
to build a
Knowledge Graph





How to incorporate Schema Markup into your Content Strategy

1. Design your content to talk about specific topics / entities
2. Use Schema Markup to describe the entity and its relationship to other things on the page and on your site for greater context
3. Connect known entities on your page with Wikidata or Google Knowledge Graph



Example

Washington Health [Services](#) [Doctors](#) [Locations](#) [Patients](#) [About](#) [Careers](#)



Emily Schroeder, MD

Internal Medicine

★★★★★ 4.5 (178 Reviews)

Emily Schroeder fulfilled her internal medical residency at Washington Health for specialty training in Endocrinology. Emily Schroeder, MD is a board certified internist and endocrinologist. Dr Schroeder's areas of expertise include:

- NEW: online doctor visits
- Osteoporosis
- Obesity
- Hormonal Disorders
- Postmenopausal Concerns
- Cholesterol Issues
- Electrolyte Imbalances
- Diabetes & Thyroid Disorders

Primary Office

US Health Systems Medical Center

1111 E Columbia St #107
+1 206-296-6300

Office Hours

Monday 7:30 AM – 4:00 PM
Tuesday 7:30 AM – 4:00 PM
Wednesday 7:30 AM – 4:00 PM
Thursday 7:30 AM – 4:00 PM
Friday 7:30 AM – 4:00 PM

FAQ

Will Dr. Schroeder accept my insurance? +

How do I make an appointment with Dr. Schroeder? +

Leverage Schema.org properties to describe entity

Schema.org Docs Schemas Validate About

Physician

A Schema.org Type

Thing > Organization > LocalBusiness > MedicalBusiness > Physician
Thing > Organization > MedicalOrganization > Physician
Thing > Place > LocalBusiness > MedicalBusiness > Physician

[more...]

A doctor's office.

Property	Expected Type	Description
Properties from Physician		
availableService	MedicalProcedure or MedicalTest or MedicalTherapy	A medical service available from this provider.
hospitalAffiliation	Hospital	A hospital with which the physician or office is affiliated.
medicalSpecialty	MedicalSpecialty	A medical specialty of the provider.
Properties from LocalBusiness		
currenciesAccepted	Text	The currency accepted. Use standard formats: ISO 4217 currency format, e.g. 'USD'; Ticker symbol for cryptocurrencies, e.g. 'BTC'; well known names for Local Exchange Trading Systems (LETS) and other currency types, e.g. 'Ithaca HOUR'.
openingHours	Text	The general opening hours for a business. Opening hours can be specified as a weekly time range, starting with days, then times per day. Multiple days can be listed with commas ',' separating each day. Day or time ranges are specified using a hyphen '-'. <ul style="list-style-type: none">Days are specified using the following two-letter combinations: Mo, Tu, We, Th, Fr, Sa, Su.Times are specified using 24:00 format. For example, 3pm is specified as 15:00, 10am as 10:00.Here is an example: <code><time itemprop="openingHours" datetime="Tu,Th 16:00-20:00">Tuesdays and Thursdays 4-8pm</time></code>.If a business is open 7 days a week, then it can be specified as <code><time itemprop="openingHours" datetime="Mo-Su">Monday through Sunday, all day</time></code>.
paymentAccepted	Text	Cash, Credit Card, Cryptocurrency, Local Exchange Tradings System, etc.
priceRange	Text	The price range of the business, for example \$\$\$.
Properties from Place		

Properties used to describe the Physician entity and its relationship to other entities on the page/the website

The screenshot shows a physician profile page for Emily Schroeder, MD, with various schema annotations. The annotations are as follows:

- parentOrganization**: Points to the Washington Health logo.
- name**: Points to the name "Emily Schroeder, MD".
- hospitalAffiliation**: Points to the "Primary Office" section, which includes "US Health Systems Medical Center", "1111 E Columbia St #107", and "+1 206-296-6300".
- aggregateRating**: Points to the "4.5 (178 Reviews)" rating.
- description**: Points to the text: "Emily Schroeder fulfilled her internal medical residence at Washington Health for specialty training in Endocrinology. Emily Schroeder, MD is a board certified internist and endocrinologist. Dr Schroeder's areas of expertise include:".
- availableService**: Points to the list of services: "NEW: online doctor visits", "Osteoporosis", "Obesity", "Hormonal Disorders", "Postmenopausal Concerns", "Cholesterol Issues", "Electrolyte Imbalances", and "Diabetes & Thyroid Disorders".
- openingHours**: Points to the "Office Hours" section, which lists: "Monday 7:30 AM - 4:00 PM", "Tuesday 7:30 AM - 4:00 PM", "Wednesday 7:30 AM - 4:00 PM", "Thursday 7:30 AM - 4:00 PM", and "Friday 7:30 AM - 4:00 PM".
- FAQPage**: Points to the "FAQ" section, which includes questions like "Will Dr. Schroeder accept my insurance?" and "How do I make an appointment with Dr. Schroeder?".

Example

Connect entities on
a page to other
entities within your
organization /
website

@type: Physician

URL

name

telephone

description

openingHours

parentOrganization

@type: MedicalOrganization

name: Washington Health

url: www.washingtonhealth.com

description: Washington Health is a healthcare...

sameAs: www.twitter.com/washington-health

sameAs: www.facebook.com/washington-health

areaServed: <https://www.wikidata.org/wiki/Q61>

medicalSpecialty

availableService





Example

Connect the primary entity on a page to the relevant rich result

@type: Physician

URL

name

telephone

description

openingHours

parentOrganization

medicalSpecialty

availableService

aggregateRating

@type: AggregateRating

bestRating: 5

ratingValue: 4.5

reviewCount: 178

worstRating: 1



Example

Nesting links
to external
authoritative
knowledge
bases

@type: Physician

URL

name

telephone

description

openingHours

parentOrganization

medicalSpecialty

@type: MedicalSpecialty

name: plastic surgery

url: www.washingtonhealth.com/service/plastic-surgery

sameAs: <https://www.wikidata.org/wiki/Q182442>

availableService

What can you do to prepare your content for Generative AI search?

- Design your content to talk about specific topics / entities with depth
- Ensure content on your site covers all the relevant subtopics related to your entity
- Implement Schema Markup across your entire site to describe the entity and their relationship to other things – on page, on site or external knowledge bases



Questions?

Thanks for tuning in!



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Ready to implement semantic Schema Markup at scale and build your marketing knowledge graph?

Get in touch with us!

<https://bit.ly/Get-Started-with-Schema-App>



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Discover the latest in generative AI and how it can be a force multiplier for your business.

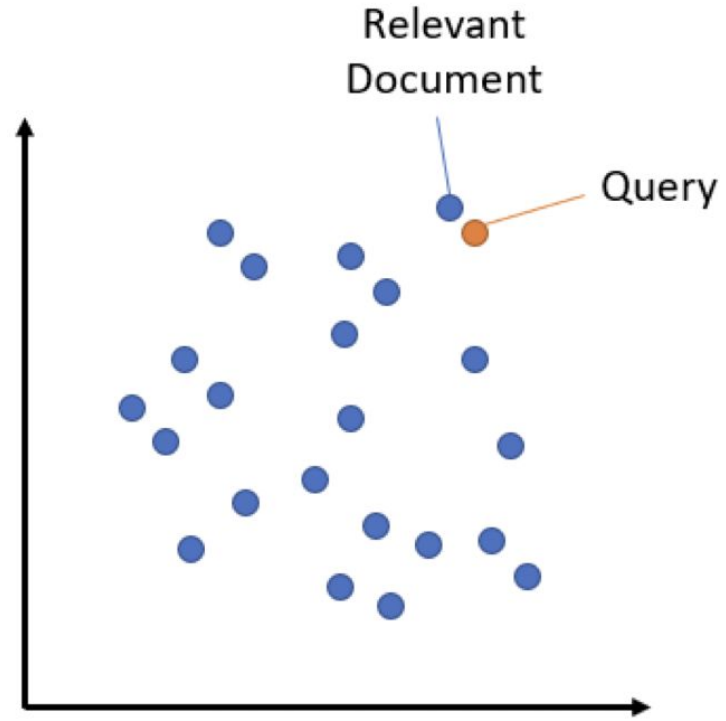
Install the AIPRM Chrome Extension for Free.

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Vector Space Model

- This model is a lot stronger in the neural network environment because Google can capture more meaning in the vector representations.



Sentence Embeddings Are the Answer to Scaling

- The more related keywords will be closer in 10-dimensional space than the unrelated keywords.
- Notice how the “nike sneakers” keyword is far away from the “[state] bike trails” keywords.

Try it out with the Sentence Transformer visualization:
<https://huggingface.co/spaces/radames/sentence-embeddings-visualization>

