

Sirsidynix Symposium

July 19, 2022

Ruth Pickering

Artificial Intelligence

THE FUTURE OF
KNOWLEDGE CURATION
AND DISCOVERY

Contents

- Product recap
- Technology Overview
- Knowledge Graph MetaData
- The Future – how can AI technology help transform the library Ecosystem
- Discussion



75 Results

Filters

OPEN ALL

Search Within Results

Format

Publication Date

Peer Reviewed

Field of Study

Publication Name

Language

License



Select an Action

1 2 3 4 5 .. ▶

**Pontificale Romanum. Editio Princeps (1595-1596)****Author:** Gilles G Routhier**Journal:** Laval théologique et philosophique, vol. 55 no. 1 pp. 160-162**Published:** 1999-01-01, Consortium Erudit, Canada*Journal Article*

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Publisher Page

Citation

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**La Scienza Nuova 1744: testo, manoscritto, editio princeps****Author:** VicoGiambattista**Journal:** Laboratorio dell'ISPF, vol. XII**Abstract:** The New Science 1744. Electronic text edition of Giambattista Vico, La Scienza Nuova 1744, based on the critical edition by P. Cristofolini and M. Sanna. It includes links to the autograph manuscript ... [more](#)*Journal Article*

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**Takıyyüddin Râsîd ve Cebir Risalesi: Editio Princeps, Tercüme ve Matematiksel Değerlendirme****Author:** Elif E Baga**Journal:** Nazariyat İslam Felsefe ve Bilim Tarihi Araştırmaları Dergisi (Journal for the History of Islamic Philosophy and Sciences), vol. 7 no. 2

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Editio princeps



Connections: < 1 - 10/50 >

In classical scholarship, editio princeps (plural: editiones principes) is a term of art. It means, roughly, the first printed edition of a work that previously had existed only in manuscripts, which could be circulated only after being copied by hand...

Wikipedia

in Yewno Discover

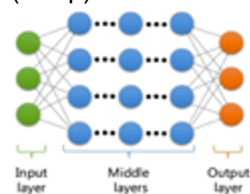


From Data to Knowledge - all content domains and types

Machine Learning + Computational Linguistics + Graph Theory

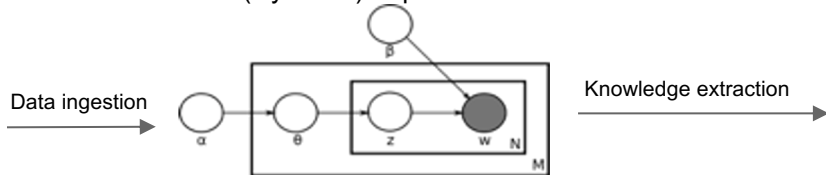
Computational linguistics analysis is undertaken on raw data to create a vast, multi-layered, multi-dimensional set of **concepts**

(Deep) Neural Nets

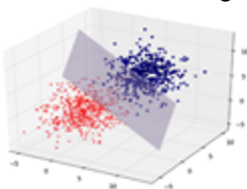


Concepts are projected onto a hierarchical **knowledge network** that represents their relations

(Dynamic) Topic Models



Stochastic Learning



Data-driven analysis is performed against the knowledge network to detect **emerging phenomena**



What is a Concept?

A concept is an atomic unit of information, composed of:

- One or more definitions
- One or more topics



Jaguar (animal)

Definition(s)
Topic(s)

The **jaguar** is the largest cat in the Americas. The jaguar has a compact body, a broad head and powerful jaws. Its coat is normally yellow and tan, but the color can vary from reddish brown to black.

Nature / Zoology
Nature / Wildlife

Jaguar is the luxury vehicle brand of Jaguar Land Rover, a British multinational car manufacturer with its headquarters in Whitley, Coventry, England. Jaguar has had major success in sports car racing, particularly in the Le Mans 24 Hours.

Engineering / Car
Marketing / Brands

Definition(s)



Jaguar (automobile)

Topic(s)

Concept Disambiguation

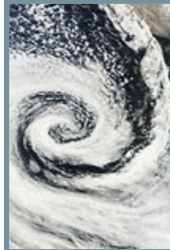


Earth Sciences / Geology

Depression (geology)

A depression in geology is a landform sunken or depressed below the surrounding area. Depressions form by various mechanisms. Erosion-related:

EN



Earth Sciences / Meteorology & Climatology

Low-pressure area

A low-pressure area, low, or depression is a region where the atmospheric pressure is lower than that of surrounding locations. Low-

EN



Business & Economics / Money & Monetary Policy

Depression (economics)

In economics, a depression is a sustained, long-term downturn in economic activity in one or more

EN



Business & Economics / Money & Monetary Policy

Great Depression

Great Depression, worldwide economic downturn that began in 1929 and lasted until about 1939. It was the longest and most severe

EN



Business & Economics / Money & Monetary Policy

Long Depression

The Long Depression was a worldwide price and economic recession, beginning in 1873 and running either through the spring

EN



Business & Economics / Money & Monetary Policy

Depression of 1920-21

The Depression of 1920-21 was a sharp deflationary recession in the United States and other countries, 14 months after the end of World

EN

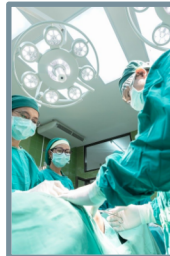


Psychology / Psychopathology

Depression (mood)

Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behavior, feelings, and sense of well-being. People with a

EN



Medicine / Clinical Medicine

Depression (physiology)

Depression in physiology and medicine refers to a lowering, in particular a reduction in a particular biological variable or the

EN



Psychology / Psychopathology

Major depressive disorder

Marked depression appearing in the involution period and characterized by hallucinations, delusions, paranoia, and agitation

EN

Knowledge Graph Semantic MetaData

Working to address some long-term industry issues...

EXAMPLE OF ENHANCED SEMANTIC METADATA

Journal Article Publisher Provider Keywords		
urban heat island ✓, urban forest ✓, air temperature ✓, ecosystem services ✓ landscape context X (not in document)		
Yewno Concepts		
urban forest city block urban planning vegetation index vegetation urban forestry urban heat island impervious surface cooling urbanization ecosystem services spatial scale spatial analysis urban sprawl temperature transect basis function citizen science soil rechargeable battery digital elevation model weather wetland	stormwater measurement observational error gaussian process tensor product availability evapotranspiration normalized difference relative humidity cloud cover data logger temperature measurement percentage temperate climate sampling (Signal Processing) subset infrastructure Leaf Area Index additive model urban ecology functional response	residential area thermal radiation bicycle cycling air conditioning precipitation northern hemisphere coordinate system qgis geographic coordinate system tree planting matern covariance function uncertainty tree thin plate spline satellite imagery emerald ash borer data set autocorrelation sidewalk estimation

Semantic Metadata:

Extract concept list from content to display the semantic metadata and improve the 'discoverability' of content

Additionally, all concepts have:

- A Concept ID (CID) allowing disambiguation
- A unique definition
- A pertinence score (for ranking)


What's different about KG metadata?

- Concepts not Keywords – disambiguated for any term with more than one meaning e.g. Jaguar, depression, bank etc.
- Concept definitions – constantly updated as language evolves
- Every concept has a score – to rank results
- Relationships with other concepts
 - To offer broader search suggestions
 - To create packages and lists of relevant content
- Granularity – uncovers value in Content that might otherwise be hidden
- Overcomes any issues relating to historic bias or out of date terminology



Full text Indexing and the data produced



- More granular and will uncover content you didn't know you had access to
- The concept-based approach and disambiguation save time and frustration, keep learners engaged and enable better ways of working
- Take students, teachers and patrons to the relevant section/snippet of text
- Connections from the Knowledge Graph can help with suggestions



Turning Information into Knowledge




About 3,450,000 results (0.03 sec)

[HTML] **Artificial intelligence**
S Dick - 2019 - hdsr.mitpress.mit.edu
... **Artificial Intelligence** as a research discipline 'to proceed on the basis of the conjecture that every aspect of learning or any other feature of **intelligence** ... the history of **Artificial Intelligence**...
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[BOOK] **Artificial intelligence**
PH Winston - 1992 - dl.acm.org
Rather than being a third edition of< __? __Pub Fmt italic> **Artificial intelligence**,< __? __Pub Fmt/italic> this "textbook" is almost entirely new. The quotes are intentional. The book does ...
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[BOOK] **Artificial intelligence**
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Artificial intelligence in medicine
P Hamet, J Tremblay - Metabolism, 2017 - Elsevier
Artificial Intelligence (AI) is a general term that implies the use of a computer to model intelligent behavior with minimal human intervention. AI is generally accepted as having started ...
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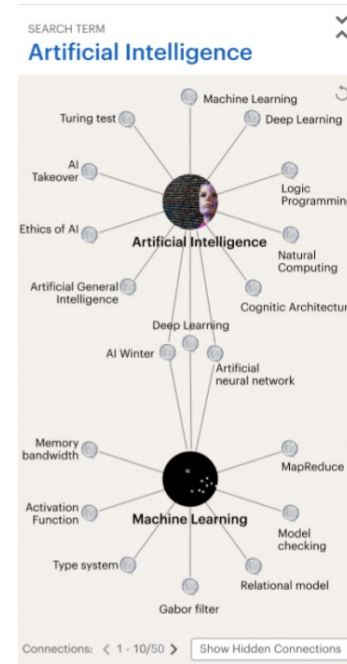
The volume of content today is overwhelming and ever growing. Its difficult, and often frustrating, for patrons to deal with long lists.

Engagement levels are challenged by 'list' format.


Turning Information into Knowledge

Yewno's AI technology provides a more visual and engaging interface along with precision searching to overcome these barriers and improve the search experience.

Visualisation is engaging and shows context and perspective. It also offers everyone a personalized journey.



Turning Information into Knowledge

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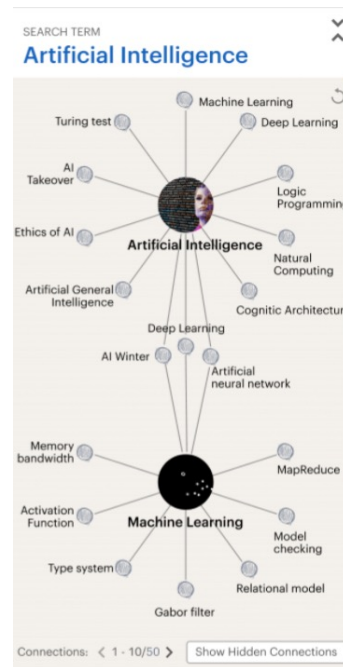
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What's different?

1. AI can extract meaning and associate concepts from documents that traditional indexing can't achieve. AI is also consistent and unbiased.
2. Shows connections and context – unlocking Knowledge
3. Saves time and frustration, using the concept-based approach and disambiguation to provide precision and enable better ways of working
4. Personalised and Fun!

The Future

- Ever expanding content set
- Adding an OA news product!
- Embed the Yewno NEWS widget together with Yewno Relate to get latest intelligent news about the searched term

The screenshot shows a 'Library Search' interface with a search bar containing 'artificial intelligence'. Below the search bar, there are filters for 'All items', 'with the words', and 'anywhere in the record'. The search results are displayed in a list format, showing four items:

- Item 1:** JOURNAL **Artificial intelligence.** Amsterdam etc. : North-Holland Pub. Co. etc., 1970. Check availability at DLRC, Jubilee Campus Journals (Periodicals:QA) > View journal contents >
- Item 2:** JOURNAL **Artificial intelligence.** Amsterdam : Elsevier Science BV 1970. OPEN ACCESS. Available online > View journal contents >
- Item 3:** BOOK **Artificial intelligence [electronic resource] /** edited by Margaret A. Boden. 2nd ed. San Diego : Academic Press c1996. Available online >
- Item 4:** BOOK **Artificial intelligence /** Rob Callan. Callan, Robert. Basingstoke : Palgrave Macmillan 2003. Available at DLRC, Jubilee Campus General Stock (Q335 CAL) and other locations >

On the right side of the interface, there is a 'SEARCH TERM' section for 'Artificial Intelligence' with a diagram showing related concepts: Turing test, Machine Learning, Deep Learning, Logic Programming, Natural Computing, Cognitive Architecture, Artificial neural network, Artificial General Intelligence, and Ethics of AI. Below this, there is a 'Key Development Headline' section with a list of news items:

- 11/10 Why the Checkbox Was Already Clicked: Fighting: Tricks Tech Companies Use to
- 11/10 LO's flagship phone just can't catch a break
- 11/10 U.S. Senate Republican leader calls net neutrality bill dead on arrival
- 11/10 Bank of America to raise its minimum wage to \$20
- 11/10 Family's control over Korean Air empire threatened by death of patriarch in Los ...
- 11/09 More Trump firings of senior U.S. immigration officials seen likely
- 11/09 Morgan Stanley increased their price objective on Universal Health Services.

Below the headlines, there is a list of research notes:

- Morgan Stanley increased their price objective on Universal Health Services. Morgan Stanley gave the stock an equal weight rating in a research note on Wednesday 9th.
- Research analysts predict that AstraZeneca will cost 168 earnings per share for the current year as a

Discussion



Yewno

Transforming Information to Knowledge