Creating Conversational Search

Mark Sanderson (@IR_oldie)

marksanderson.org

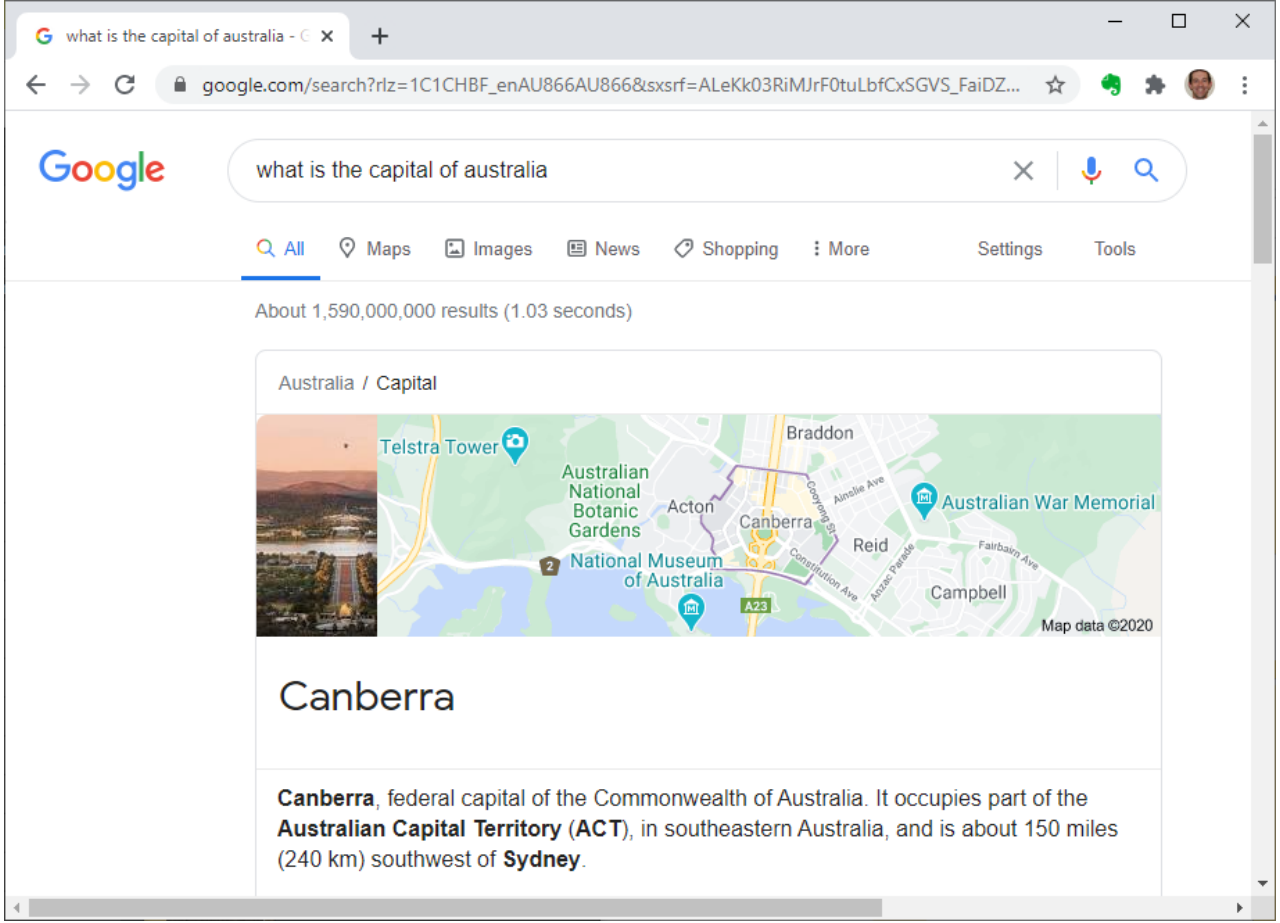
What's next...

RMIT UNIVERSITY

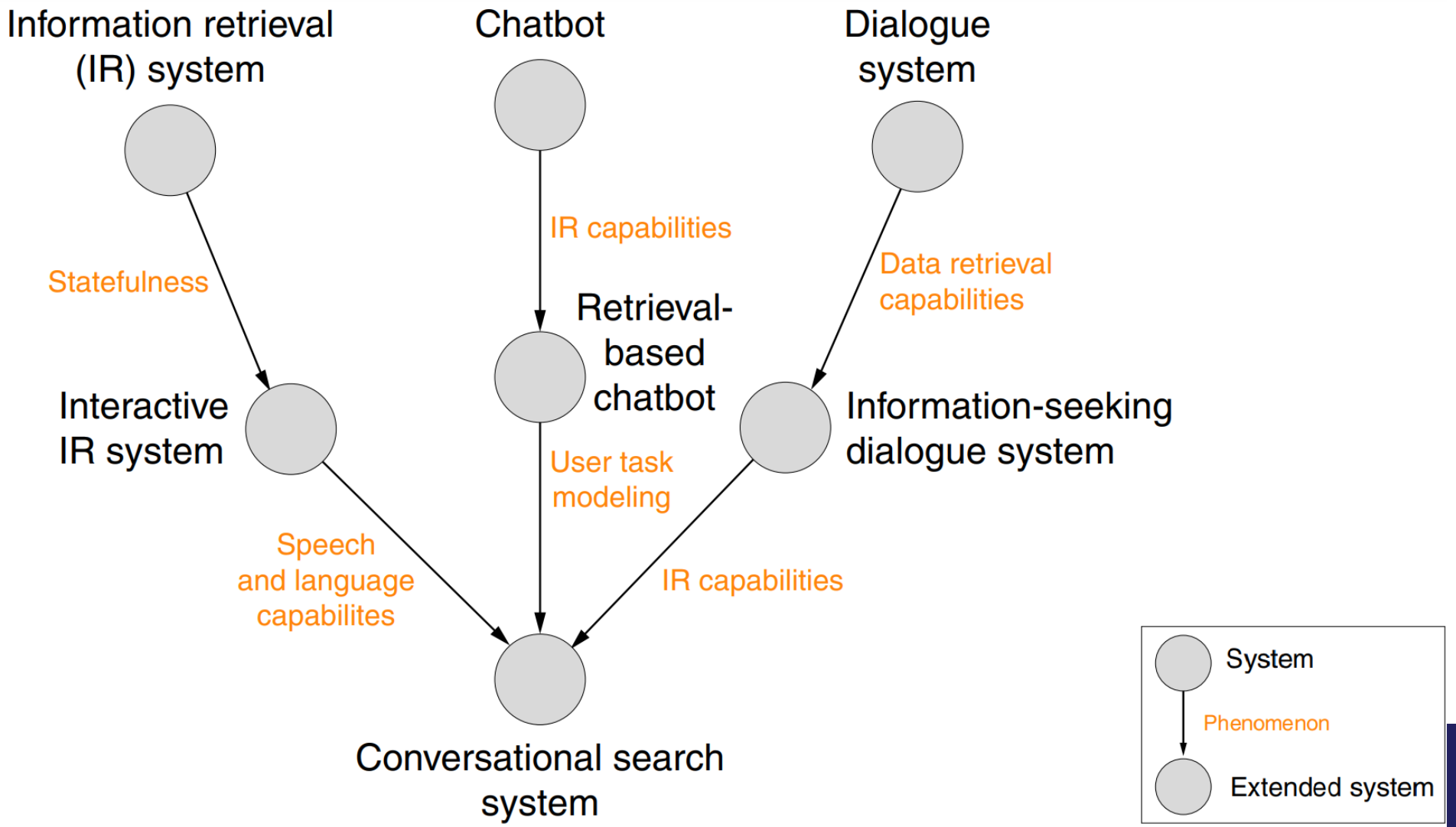
Image credit: Louisa Bloomer, Kamilaroi

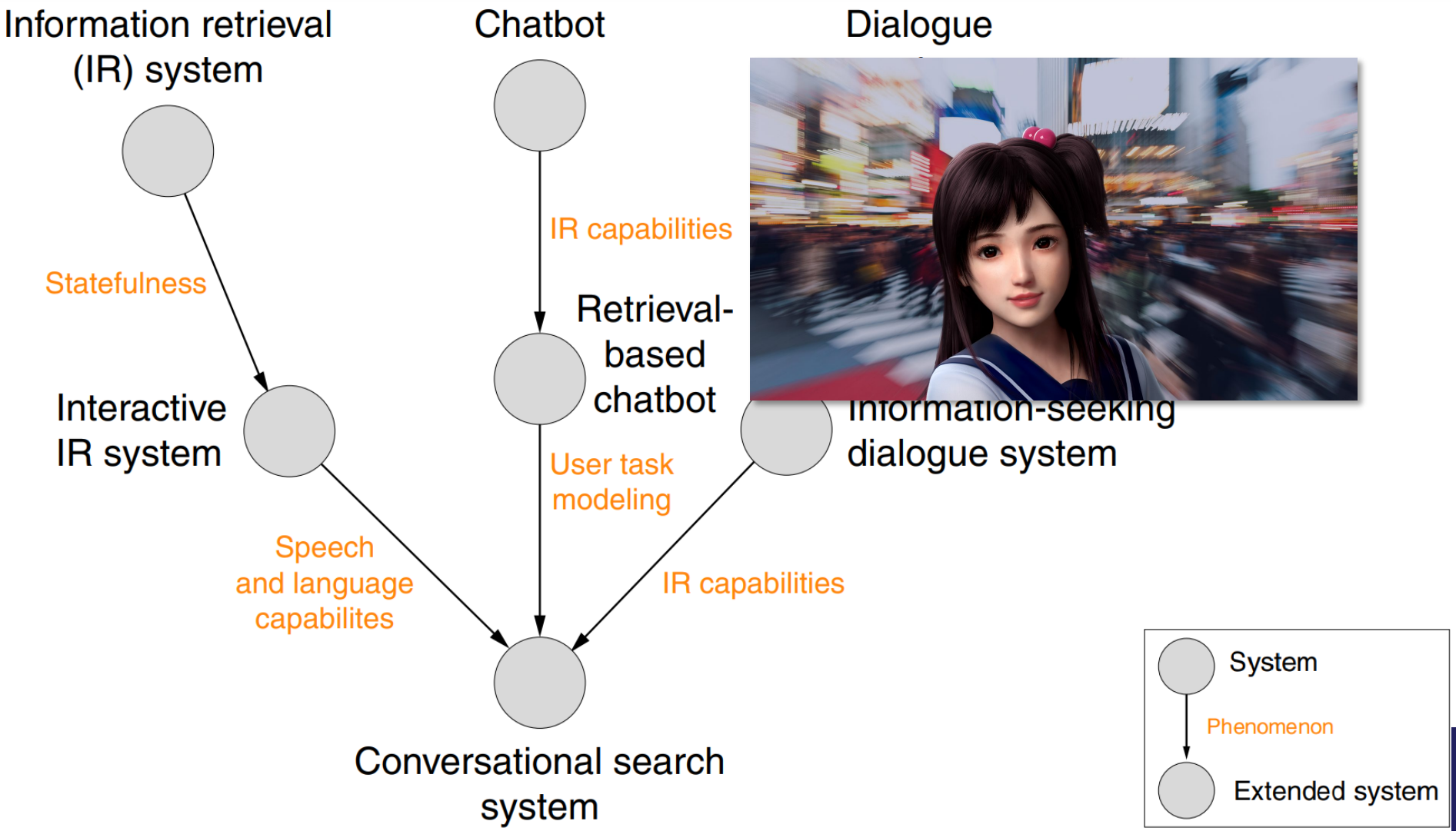
How far we've come

Not just books or documents


what is the capital of australia -
google.com/search?rlz=1C1CHBF_enAU866AU866&sxsrf=ALeKk03RiMJrF0tuLbfCxSGVS_FaiDZ...
Google
what is the capital of australia
All
Maps
Images
News
Shopping
More
Settings
Tools
About 1,590,000,000 results (1.03 seconds)
Australia / Capital
Telstra Tower
Australian National Botanic Gardens
Acton
Braddon
Canberra
Reid
Campbell
Australian War Memorial
National Museum of Australia
Map data ©2020
Canberra
Canberra, federal capital of the Commonwealth of Australia. It occupies part of the Australian Capital Territory (ACT), in southeastern Australia, and is about 150 miles (240 km) southwest of Sydney.

Knowledge Navigator (1987)


Information retrieval (IR) system
Chatbot
Dialogue system
Statefulness
IR capabilities
Data retrieval capabilities
Retrieval-based chatbot
Interactive IR system
Information-seeking dialogue system
User task modeling
Speech and language capabilites
IR capabilities
Conversational search system
System
Phenomenon
Extended system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Richard Waters in San Francisco AUGUST 19 2021

Google LLC updates

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In the engine room that powers its dominant search service, Google recently flipped the switch on a powerful new tool.

According to the search giant, the new technology — a large-scale AI model known as MUM — could one day turn internet search into a far more sophisticated service, acting like a virtual research assistant as it sifts the web for solutions to complex questions.

But the company's critics warn that this comes with a clear risk: that it will accelerate a shift that has already seen Google serve up more direct answers to user queries, stepping in front of other websites to "internalise" search traffic and keep internet users locked in a Google universe.

MUM — short for multitask unified model — is the latest in a series of behind-the-scenes upgrades to the Google search engine which the company claims have brought step-changes in the quality of its results.

The Joint Conference of the 59th

2021.aclweb.org

ACL-IJCNLP 2021

Home Calls Organizations Venue About Bangkok Travel Visa

Welcome to ACL-IJCNLP 2021!

The great event will be jointly organized by the Association for Computational Linguistics (ACL) and Asian Federation of Natural Language Processing (AFNLP) and held in Berkeley Hotel in Bangkok, Thailand, during August 1-6, 2021.

For the first time, the Association for Computational Linguistics and the Asian Federation of Natural Language Processing are pleased to announce that their joint meeting takes place in Thailand. The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 10th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021) will be held in Bangkok, Thailand, during August 1-6, 2021. As in previous years, the program of the conference includes a poster session, tutorials, workshops and demonstrations in addition to the main conference.

Informing the Design of Spoken Conversational Search

Johanne R. Trippas

CHIIR 2018

Generating Clarifying Questions in Conversational Search Systems

Leila Tavakoli

CIKM 2020

Providing Direct Answers in Search Results: A Study of User Behavior

Zhijing Wu

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Using Audio Transformations to Improve Comprehension in Voice Question Answering

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CLEF 2019

Do People and Neural Nets Pay Attention to the Same Words?

Valeriia Bolotova

CIKM 2020

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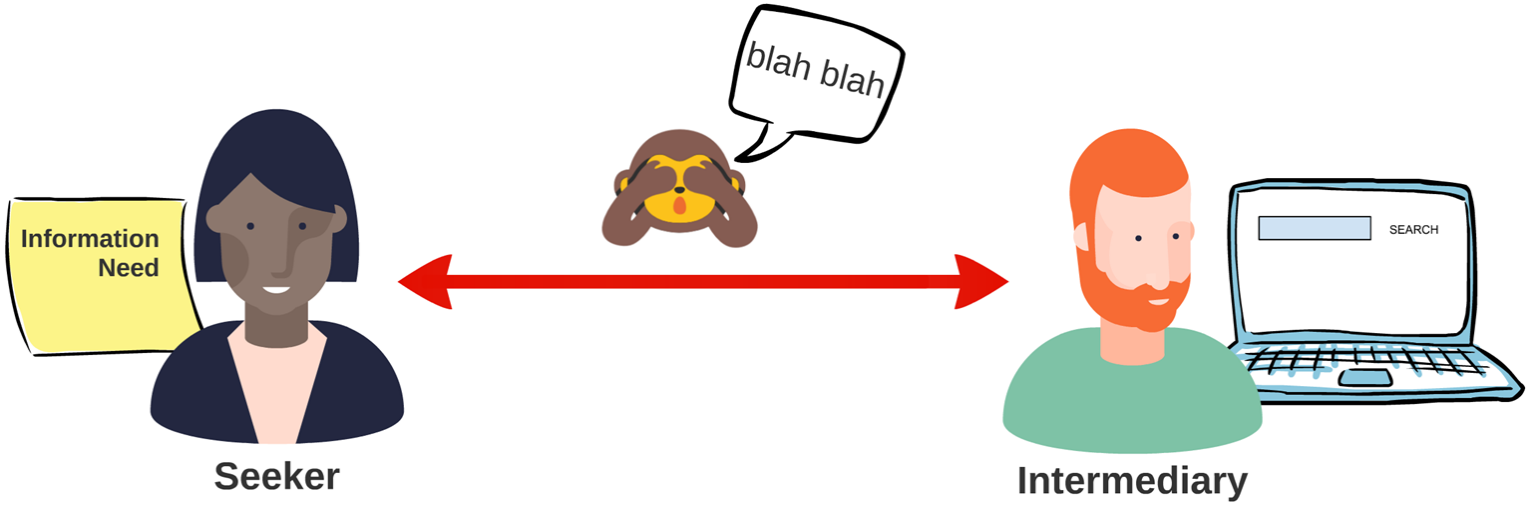

Increased Complexity: One Utterance Multiple Actions

Informing the Design of Spoken Conversational Search

Johanne R. Trippas

CHIIR 2018

Example 1: (seeker)

Yeah I think yeah that actually sounds pretty good that could be relevant is there anything else or is that it?

Providing relevance feedback + More information?

Example 2: (seeker)

Maybe you can get out of it then [long pause] so what's [was] the search term...

Navigation + Asking feedback

Increased Complexity: Decision Making/Offloading

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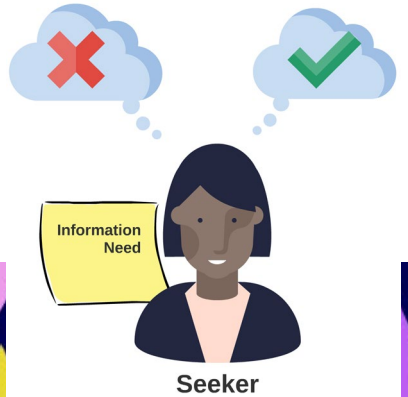
CHIIR 2018

Cost-benefit assessment from Intermediary

- Rewriting queries
- Requesting feedback
- Presentation of results

Explicit request from Seeker to make decisions for them



Increased Complexity: Information Need Expression

Informing the Design of Spoken Conversational Search

Johanne R. Trippas

CHIIR 2018

Voice queries are on average longer than typed queries (4.2 words vs 3.2 words)

Example 3: (seeker) Can you please search car tyre recycling and in the results I am looking for examples of what recycled car tyres are used for

Increased Complexity: Information Need Expression

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CHIIR 2018

Example 4: (seeker) So the count part in uhm a biscuit that you are get from Europe uhm it contains cinnamon and I want to know where the cinnamon is coming from are there is this uhm is this coming from Europe uhm so how uhm search for uhm cinnamon Europe biscuits

Example 5: (seeker)

Algorithm 2: Automated Repetitive Search (Rivers Turkey)

Result: Did Turkish river control projects affect Iraqi water resources

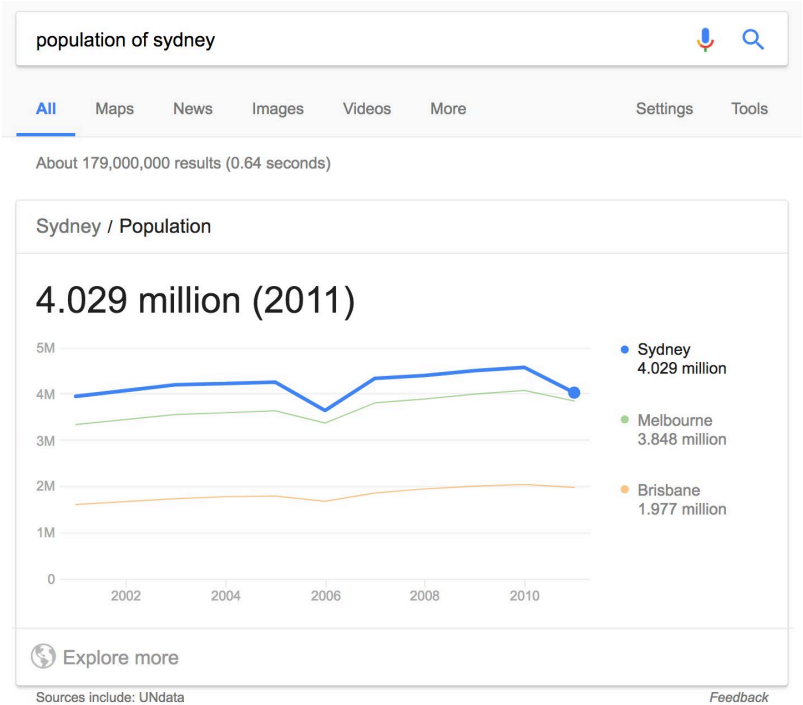
```
1 foreach River in Turkey and Iraq do
2     if They have a dam in Turkey then
3         if Building date of dam and volume is stated then
4             Compare river's volume in Iraq before and after
              building of the dam
5         end
6     end
7 end
```

Increased Interactivity: Collaboration

Informing the Design of Spoken Conversational Search

Johanne R. Trippas

CHIIR 2018



Increased Interactivity: Collaboration

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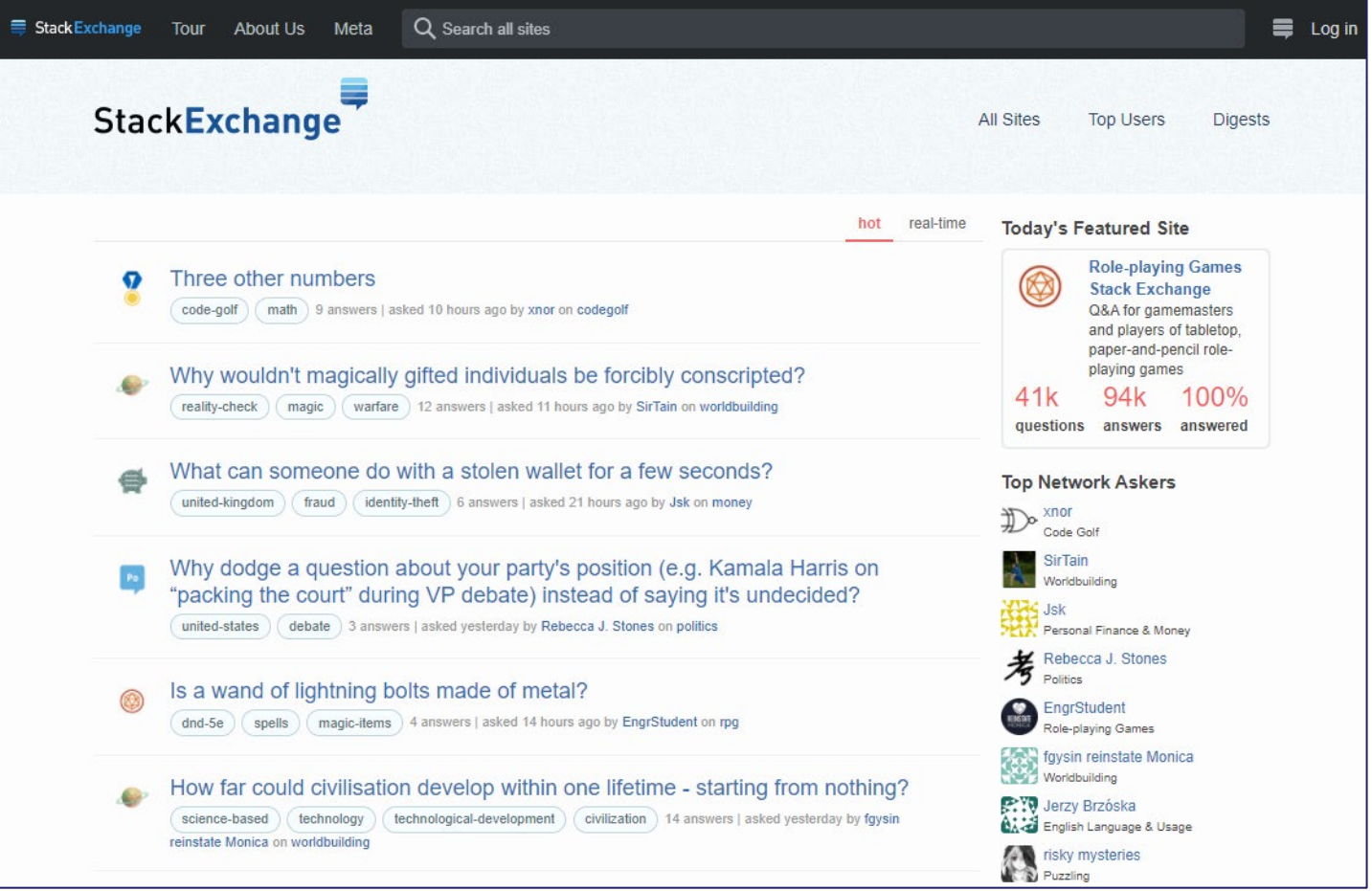
CHIIR 2018

MISC: http://aka.ms/MISCv1

SCSdata: http://bit.ly/SpokenConvSearchCHIIR



Generating Clarifying Questions in Conversational Search Systems

Leila Tavakoli

CIKM 2020

Generating Clarifying Questions in Conversational Search Systems

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CIKM 2020

Question

Today is Tuesday of week 1.
I have just been told to do X **until next week.**

When is the last day I can do X?
Sunday of week 1? Sunday of week 2?

Asker

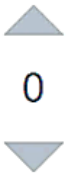
Clarifying Question

You mean you have until next week to do X, right? –

Answer to Clarifying Question

@**Resp. 1**here is the full sentence (neither of us are native speakers by the way): "But it's ok if you let me know the name until next week." –

Accepted Answer to the post



0

According to Wiktionary, Until basically means:

Upto the time of (something happening)

Hence, accordingly, until next week means, before next week begins, i.e., the Sunday of Week1.

share improve this answer follow

Responder 2

Clarifying questions

Generating Clarifying Questions in Conversational Search Systems

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CIKM 2020

Type of Answerer	Quantitative Finance	English Language and Usage	Science Fiction and Fantasy (%)
Asker	8.7% (376)	6.5% (4065)	9.0% (3144)
Responder	1.0% (42)	3.2% (2027)	6.0% (2100)
Asker & Responder	0.1% (3)	0.2% (100)	0.4% (167)
No One	90.4% (3905)	90.5% (56971)	85.4% (29707)

Types of clarification

Generating Clarifying Questions in Conversational Search Systems

Leila Tavakoli

CIKM 2020

Pattern	Example
Why do you need	Why do you need an alternative?
What do you (aim, mean, want, …)	What do you mean by "open"?
Can/Could you (add, explain, ...)	Could you explain what you are trying to achieve?
What (X) are you interested	What model are you investigating?

Types of clarification

Generating Clarifying Questions in Conversational Search Systems

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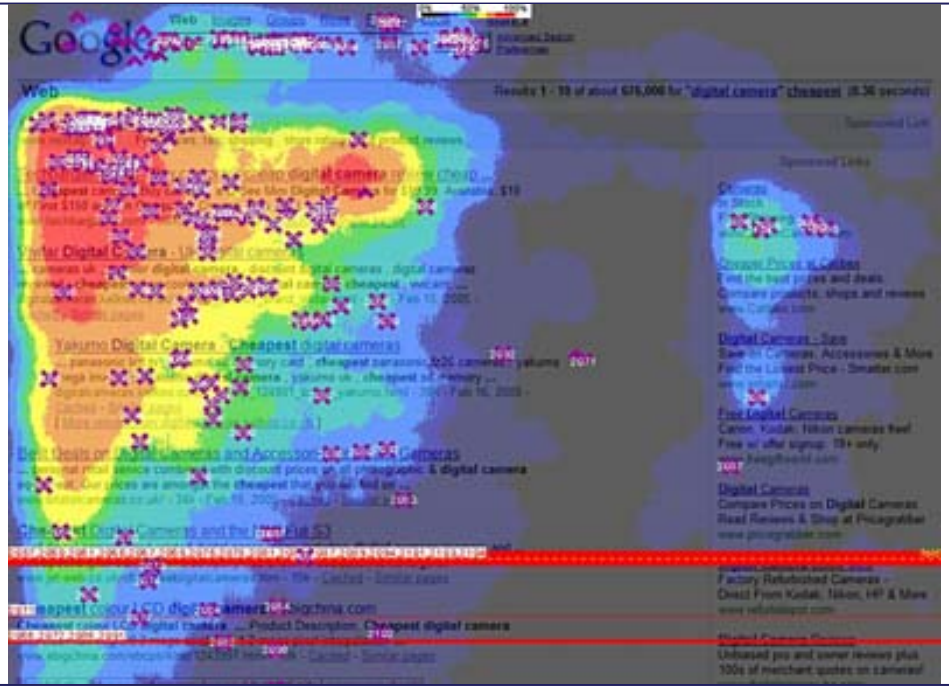
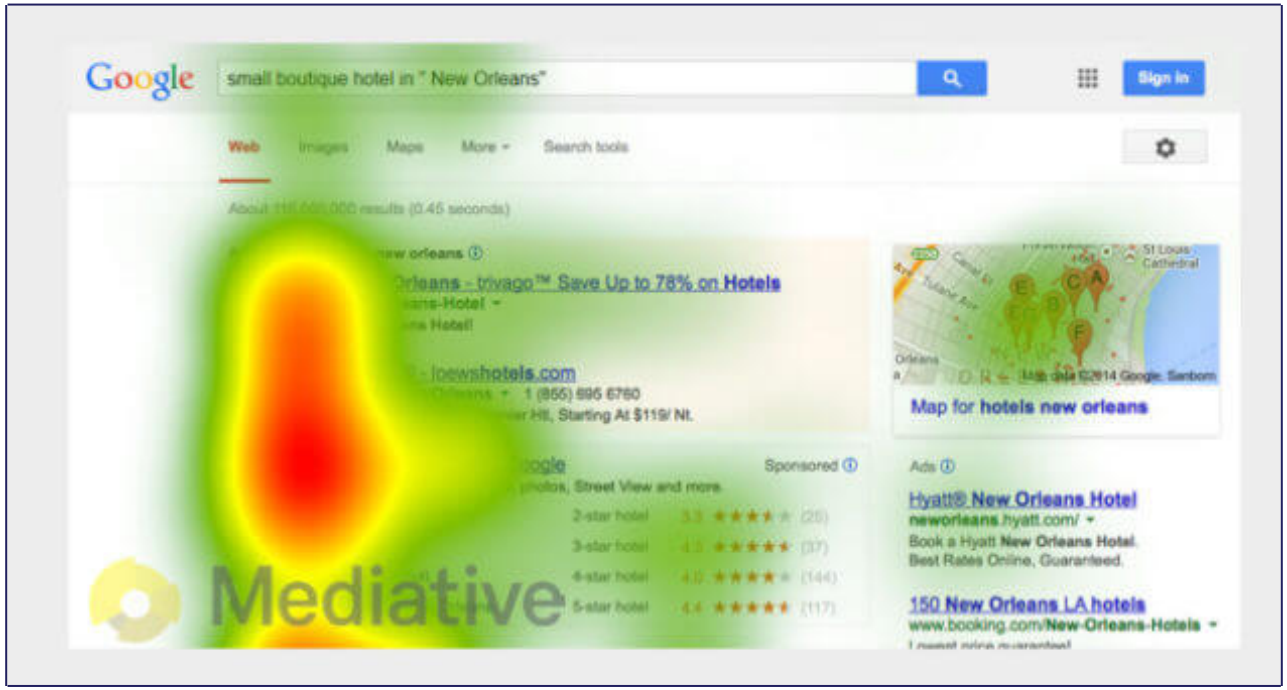

Web
Yakumo Digital Camera - Cheapest digital cameras
Digital Cameras - Save
Free Digital Cameras
Digital Cameras
Compare Prices on Digital Cameras
Read Reviews & Shop at Pricegrabber
Factory Refurbished Cameras -
Direct From Kodak, Nikon, HP & More
Unbiased pro and owner reviews plus
100s of merchant quotes on cameras!


Google
small boutique hotel in " New Orleans"
Sign in
Web
Images
Maps
More
Search tools
Map for hotels new orleans
Sponsored
Ads
Hyatt® New Orleans Hotel
neworleans.hyatt.com/
Book a Hyatt New Orleans Hotel.
Best Rates Online, Guaranteed.
150 New Orleans LA hotels
www.booking.com/New-Orleans-Hotels
Mediative

Providing Direct Answers in Search Results: A Study of User Behavior

Zhijing Wu

CIKM 2020

① only ten organic search results.

② with one useful answer.

③ with one useless answer.

④ with five answers and the first one is useful.

⑤ with five answers and the first one is useless.

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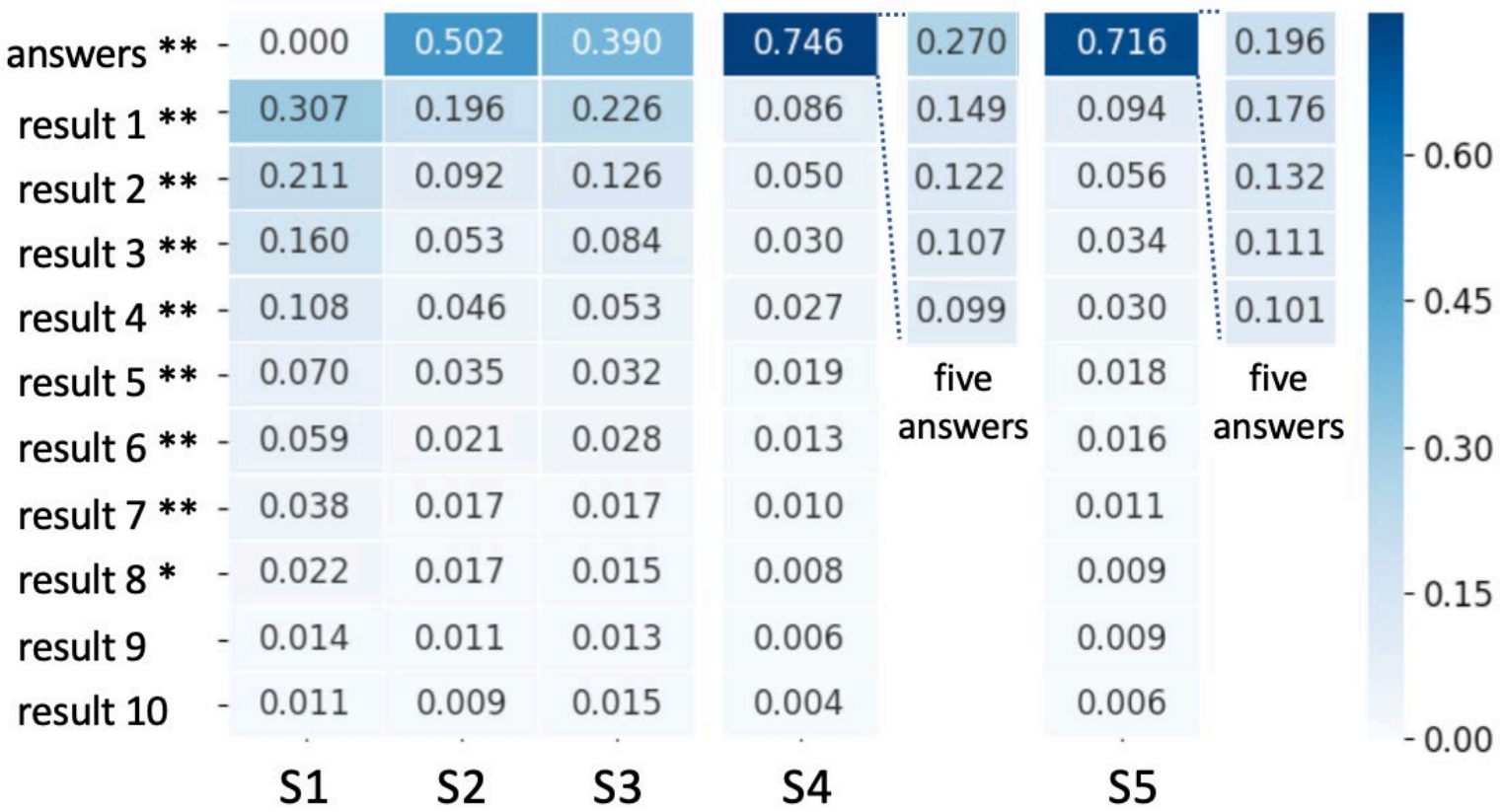
	S1	S2	S3	S4	S5
Session dwell time (DTime) (s)**	103.870	86.469†	88.626	81.916†	92.268
DTime on landing pages (s)**	84.545	54.545†	60.320†	39.986†	50.388†
Avg. DTime per page (s)**	35.485	31.184†	32.107	26.936†	28.188†
#Clicked results**	2.433	1.625†	1.775†	1.300†	1.633†
Lowest clicked results position**	4.158	3.017†	3.458†	2.608†	3.158†
Sessions without click (%)**	1.667	14.167	5.000	12.500	9.167

	S1	S2	S3	S4	S5
Fixation duration on the SERP**	12.520	19.242†	17.223†	28.130†	28.104†
#Examined answers**	-	1.000	1.000	4.133	4.308
Lowest examined answers position**	-	1.000	1.000	4.158	4.317
Duration on answers**	-	9.503	6.504	20.795	19.500
Avg. duration per answer**	-	9.503	6.504	4.991	4.436
#Examined results*	6.200	5.150†	5.517	5.625	5.508
Lowest examined snippets position	7.675	6.633	7.075	7.075	6.958
Duration on snippets**	12.520	9.739†	10.719	7.336†	8.609†
Avg. duration per snippet**	1.950	1.776	1.980	1.236†	1.440†
#Clicked results**	2.433	1.625†	1.775†	1.300†	1.633†
Lowest clicked result position**	4.158	3.017†	3.458†	2.608†	3.158†
Duration on landing pages**	51.233	31.711†	35.206†	23.320†	28.527†
Avg. duration per landing page**	21.461	18.317†	18.444	15.705†	16.422†



Providing Direct Answers in Search Results: A Study of User Behavior

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CIKM 2020

clef 2021 - Google Search

google.com/search?q=clef+2021&rlz=1C1GGRV_enAU749AU749&oq=clef+2021&aqs=chrome.0.69i59j0i512l2j0i22i30l2j69i60l3.2306j0j4&sourceid=chrome&ie=UTF-8

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http://clef2021.clef-initiative.eu

CLEF 2021 | Conference and Labs of the Evaluation Forum

CLEF 2021 is the 12th CLEF conference continuing the popular CLEF campaigns which have run since 2000 contributing to the systematic evaluation of ...

Schedule
16 November 2020: Registration opens · 30 April 2021 ...

Programme
Boston (GMT -4), Bucharest (GMT+3), Beijing (GMT +8), 21 ...

Labs
ImageCLEF 2021, the Multimedia Retrieval Challenge in CLEF, is ...

Contacts
Contacts. CLEF 2021 local organization: For general ...

Call for Papers
CLEF 2021 in Bucharest is the 12th year of the CLEF ...

Conference and Labs of the ...
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Craig Bro Dude
@CraigSJ

the fugees came out with a ten piece band, full horn

Conference and Labs of the Evaluation Forum
Event

Dates: 21 Sept 2021 – 24 Sept 2021

Location: Bucharest, Romania Source

Location: Bucharest Source

Feedback

SIGIR98.pdf
Not secure | marksanderson.org/publications/my_papers/SIGIR98.pdf
SIGIR98.pdf 1 / 9 230%

Advantages of Query Biased Summaries in Information Retrieval

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www-ciir.cs.umass.edu/~sanderso/

Abstract This paper presents an investigation into the utility of document summarisation in the context of information retrieval, more specifically in the application of so called query biased (or user directed) summaries: summaries customised to reflect the information need expressed in a query. Employed in the retrieved document list displayed after a retrieval took place, the summaries' utility was evaluated in a task-based environment by measuring users' speed and accuracy in identifying relevant documents. This was compared to the performance achieved when users were presented with the more typical output of an IR system:

have a confounding effect: it may be large and difficult to manage, and relevant information may be widely scattered, and therefore hard for the user to extract.

Recognising the cognitive overhead this imposes, there have been attempts to concentrate users' attention on the parts of the text that possess a high density of relevant information. These methods, known as passage retrieval (Callan 1994; Knaus et al. 1995), identify and present to the user individual text passages that are more focussed towards particular information needs than the full document texts. The main advantage of these approaches is that they provide an intuitive

Using Audio Transformations to Improve Comprehension in Voice Question Answering

Johanne R. Trippas

CLEF 2019

Question	Which guitarist inspired Queen?
Answer Sentence	Queen drew artistic influence from British rock acts of the 60s [. . .] in addition to American guitarist **Jimi Hendrix**, with Mercury also inspired by the gospel singer Aretha Franklin.
Answer Key	Jimi Hendrix

Using Audio Transformations to Improve Comprehension in Voice Question Answering

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CLEF 2019

Finding Answers – Eyes-Free Voice Assistant

Instructions

An **eyes-free voice assistant** is an electronic device that can understand voice queries from a user and provide audio responses to that query. Eyes-free voice assistants that you may know include **Amazon Alexa** or **Google Home**

In this task, you will first read a query and then you will listen to a corresponding answer in an audio file from the eyes-free voice assistant. Your job is to provide feedback about:

1. the answer to a query in audio,
2. the quality of the audio.

User's query: **[Which guitarist inspired Queen?]**

Eyes-free voice assistant's response:

	inform.↑	*correctness*↑	*elocution*↑	*interruption*↓	*length*↓
IBM					
pauses	-0.21	$+0.04$	-0.03	$+0.37^{**}$	$+0.08$
rate	$+0.26$	$+0.02$	-0.24^{**}	$+0.03$	$+0.03$
pitch	$+0.02$	-0.03	-0.11	$+0.01$	-0.03
Google					
pauses	$+0.21$	$+0.09$	-0.04	$+0.15^{**}$	$+0.00$
rate	$+0.22$	$+0.07$	-0.18^{**}	$+0.18^{**}$	$+0.03$
pitch	-0.03	$+0.08$	$+0.08$	$+0.13^{**}$	$+0.07$
emphasis	$+0.87^{**}$	$+0.28^{**}$	-0.07	$+0.13^{**}$	-0.07

Using Audio Transformations to Improve Comprehension in Voice Question Answering

Johanne R. Trippas

CLEF 2019

I have a DSL connection, another house members is using it for a wireless connection, how can I stop access to mine?

Upgrade to dsl and tell them what you want to do or upgrade to cable and get yourself a router. With a dial-up connection, a router is a waste of time. It'll work but if you upgrade to dsl, chances are it won't cost you any more (or much more) than dial-up and they'll give you all the equipment you need. Plus you'll have a much better connection with dsl over dial-up.

Do People and Neural Nets Pay Attention to the Same Words?

Valeriia Bolotova

CIKM 2020

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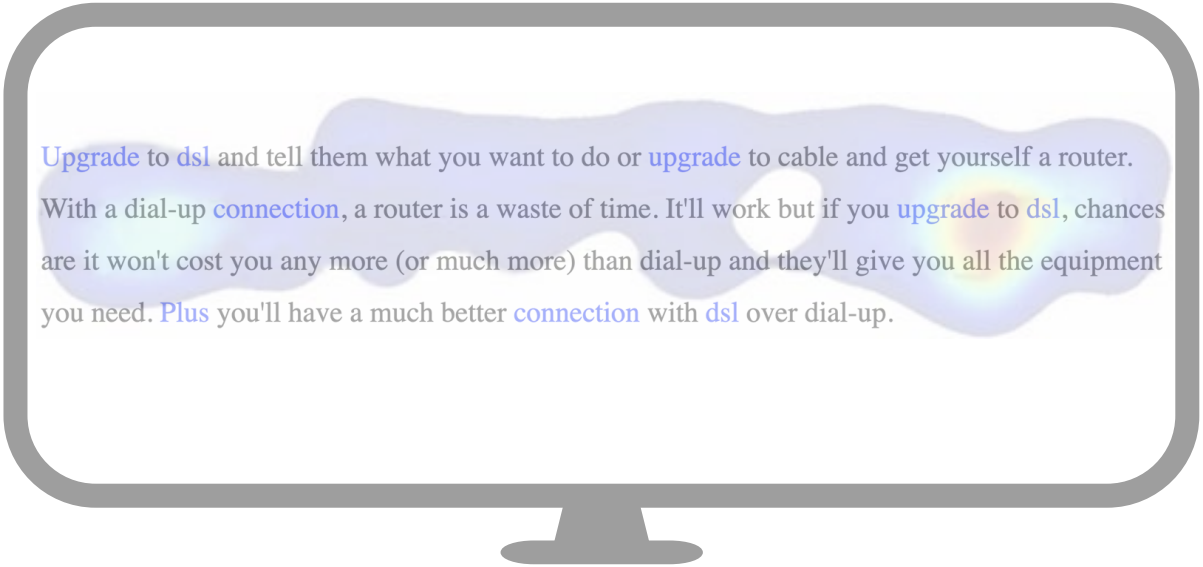

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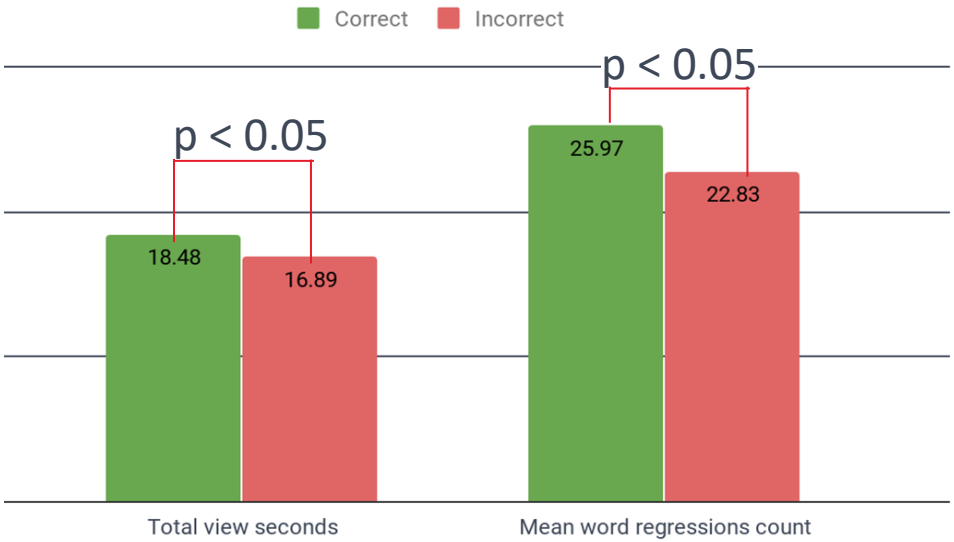

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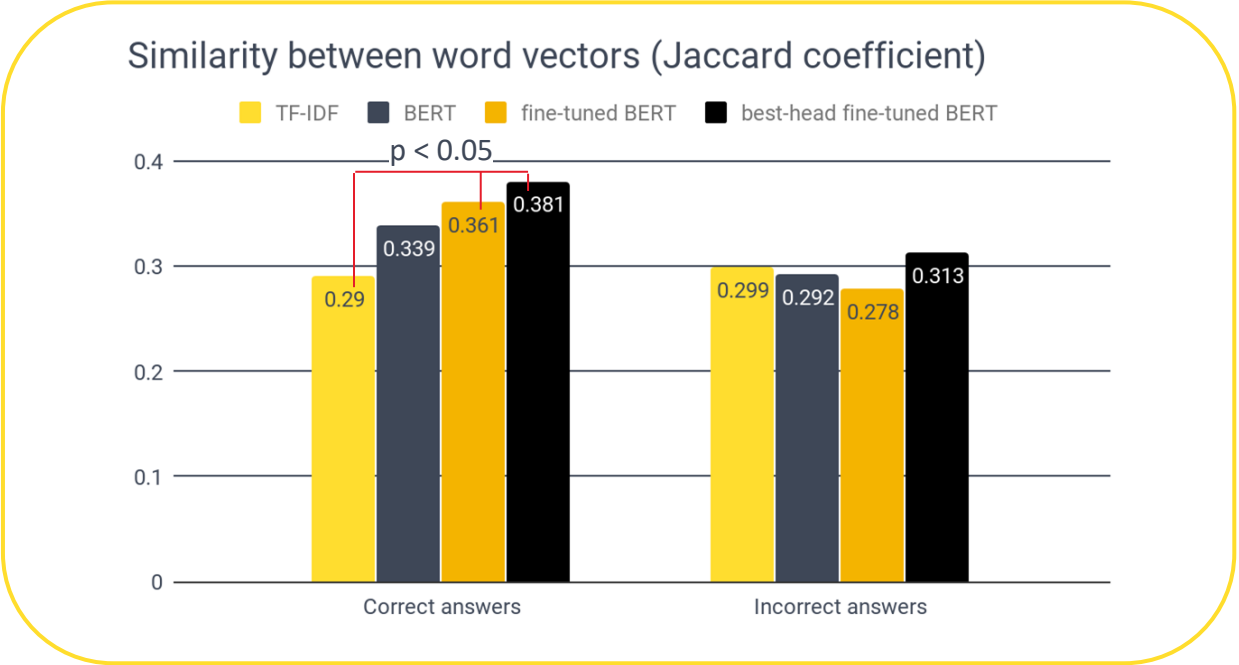
CIKM 2020



Do People and Neural Nets Pay Attention to the Same Words?

Valeriia Bolotova

CIKM 2020

- completeness of an answer to a non-factoid question is as important as correctness
- highlighting allows users to assess answers to non-factoid questions faster and with less effort
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If we are done, why do my fish keep dying?

Creating Conversational Search

Mark Sanderson (@IR_oldie)

marksanderson.org

What's next...

RMIT UNIVERSITY

Image credit: Louisa Bloomer, Kamilaroi