FAKULTÄT FÜR
INFORMATIK

A Kickoff Presentation on

CREATIVE QUERIES FOR EXPLORATORY SEARCH

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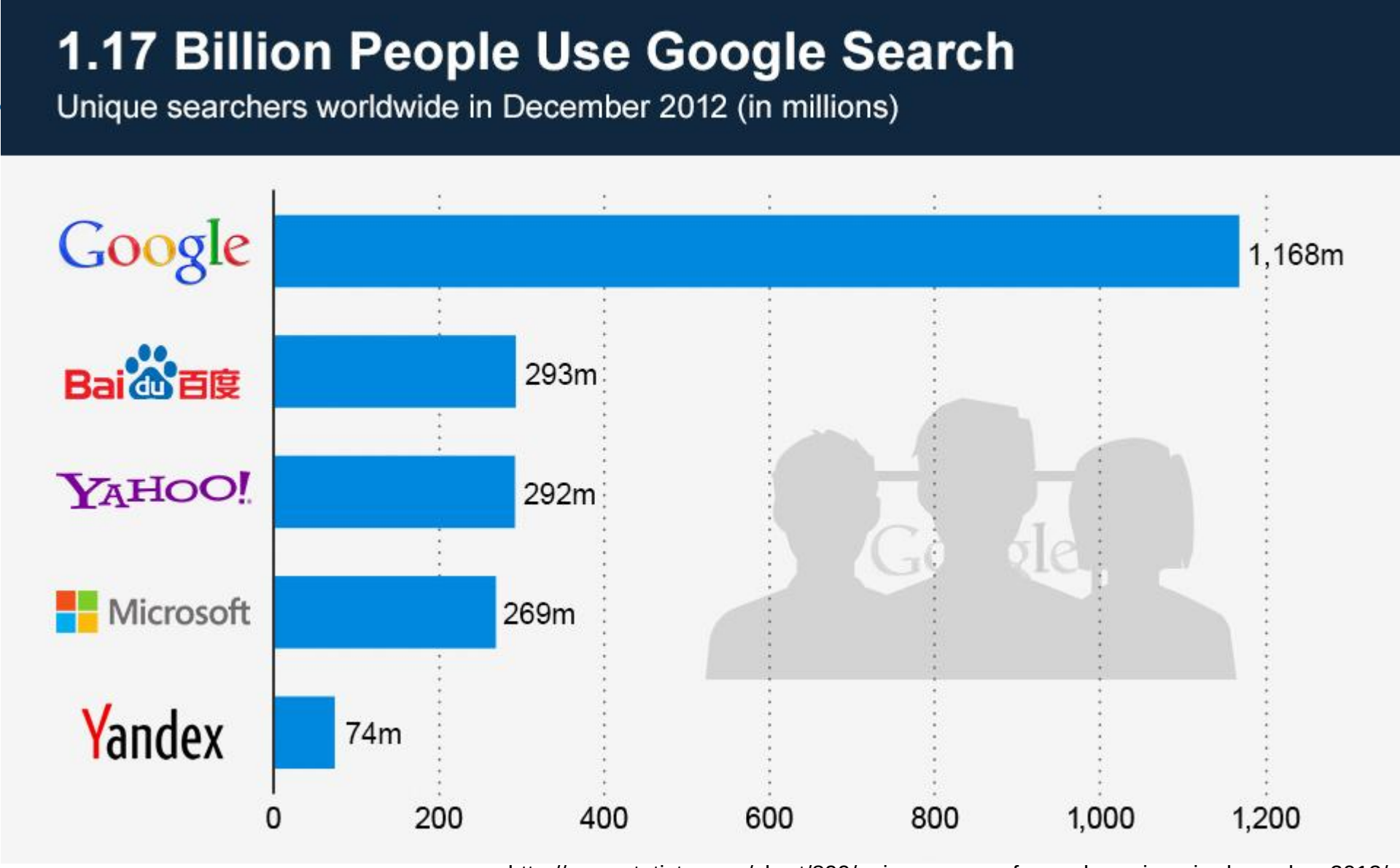
Under the guidance of:
Dr.-Ing.Tatiana Gossen

Presentation Date: 7th March 2016

CONTENTS



http://www.statista.com/chart/899/unique-users-of-search-engines-in-december-2012/

GOOGLE STANDS AS THE TOP SEARCH ENGINE WITH 1.17 Billion USERS

07.03.2016

EXAMPLE: IMPACT OF COOKIES USAGE IN TRADITIONAL SEARCH ENGINE ON SYSTEM 1

Manam (film) - Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/**Manam**_(film)
Manam (English: Us) is a 2014 Indian Telugu drama film written and directed by Vikram Kumar and produced by Akkineni Family under the Annapurna Studios ...
Plot - Cast - Production - Themes and influences

Kanulanu Thaake Full Video Song || Manam Video Songs ...


https://www.youtube.com/watch?v=30Bjg_7KuoE
Jul 30, 2014 - Uploaded by Aditya Music
Watch & Enjoy Kanulanu Thaake Full Video Song from **Manam** Movie Starring Naga Chaitanya,Samantha ...

"MANAM" Exclusive Theatrical Trailer || Akkineni ... - YouTube


https://www.youtube.com/watch?v=Y4Bq4SQc_eM
Apr 7, 2014 - Uploaded by Annapurna Studios
"**MANAM**" Exclusive Theatrical Trailer || Akkineni Nageswara Rao, Akkineni Nagarjuna, Naga Chaitanya ...

Manam (2014) - IMDb
www.imdb.com/title/tt2926068/
★★★★☆ Rating: 8.3/10 - 4,768 votes
Directed by Vikram K. Kumar. With Akkineni Nageshwara Rao, Nagarjuna Akkineni

Manam
2014 film

8.3/10 · IMDb

A married couple die in an accident, leaving be
up, he comes across reincarnations of his fathe
youngsters and tries his best to unite them.

Release date: May 23, 2014 (India)

- DOMINANCE OF COOKIES AND KEYWORD METHODOLOGY

EXAMPLE: IMPACT OF COOKIES USAGE IN TRADITIONAL SEARCH ENGINE ON SYSTEM 2

Über **Manam** : **Manam** Thai Mini Restaurant Translate this page
www.**manam**thaifood.com/de/about
Startseite » Über **Manam**. Über **Manam**. **Manam** ist ein kleines Thai Restaurant in Münche . Obwohl unser Restaurant so klein ist, die Geschmack unserer ...

Manam : Spark Your Time With Our Herbal Symphony
manamthaifood.com
ความอร่อยของท่าน คือความสุขของเรา. Login | ไทย | Deutsch Rosenheimer 34, Munich ...

Images of **manam**
bing.com/images

See more images of **manam**

Manam (film) - Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/**Manam**_(film)
Manam (English: Us) is a 2014 Indian Telugu drama film written and directed by Vikram Kumar and produced by Akkineni Family under the Annapurna Studios banner.
Plot · Cast · Production · Themes and influences · Music · Release

Manam
Insel

Manam, von Einheimischen Manam Motu genannt, ist eine bewohnte Insel in der Bismarck-See und durch die Stephan Strait von der Nordküste der Insel Neuguinea getrennt. Die Entfernung zum Hansa Point beträgt 13,3 km. Die Insel mit ihrem annähernd kreisförmigen Gr... +

Wikipedia

Elevation: 1.807 m

Prominence: 1.807 m

Location: Bismarcksee

People also search for

- DOMINANCE OF COOKIES AND KEYWORD METHODOLOGY

SEARCHING ON WEB

USER 1: Who knows specifically what he wants

For EXAMPLE:

- FIFA 2014 Results
- Latest Volkswagen Model
- JAVA Language Tutorials

http://10best4u.com/10-best-search-engines-on-web-to-make-your-searches-easy/

Traditional Search Engine like GOOGLE implements searching on web

EXPLORATIVE SEARCH ON WEB

USER 2: Unfamiliar with the domain of their goal.
Unsure about the ways to achieve their goals.
Or even unsure about their goals in the first place.

For EXAMPLE :
ENTERTAINMENT

https://en.wikipedia.org/wiki/Exploratory_search

Reference to all images [1]

LITERATURE REVIEW

Creative Search Using Pataphysics (Digital Creativity 2013)

By: Fania Raczinski;
Hongii Yang;
Andrew Hugill;

The syzygy surfer: (Ab)using the semantic web to inspire Creativity(International Journal of Creative Computing, 2013)

By: James Hendler;
Andrew Hugill;

Consider the SYZYGY, CLINAMEN and the ANAMOLY of the WORD rather than the word alone.

- SYZYGY: A pair of connected or corresponding things.
- CLINAMEN: Inclination or tendency to turn aside.
- ANAMOLY: something that deviates from what is standard, normal, or expected.

WORDNET Dictionary is required to implement these algorithms.

ALGORITHMS AND APPROACH

SYZYGY:

We use WORDNET lexical database to find suitable results.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in$ syno(t)

$hypo(t) = \{ h : h \in hyponyms(s) \}$

$hyper(t) = \{ h : h \in hypernyms(s) \}$

$holo(t) = \{ h : h \in holonyms(s) \}$

$union(t) = hypo(t) \cup hyper(t) \cup holo(t)$

$syzygy(t) = \{ h : h \in union(t) \wedge \exists h \in V \}$

$V \in$ *original vocabulary of the text*

ALGORITHMS AND APPROACH

SYZYGY:

We use WORDNET lexical database to find suitable results.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in$ syno(t)

$hypo(t) = \{ h : h \in hyponyms(s) \}$

$hyper(t) = \{ h : h \in hypernyms(s) \}$

$holo(t) = \{ h : h \in holonyms(s) \}$

$union(t) = hypo(t) \cup hyper(t) \cup holo(t)$

$syzygy(t) = \{ h : h \in union(t) \wedge \exists h \in V \}$

$V \in$ *original vocabulary of the text*

In the current implemented interface(Interactive Interface), we need to select only one of the Syzygy terms, but

- Union of relations and intersection of union with original vocabulary, induces low diversity in the current search results.

Hence a new algorithm(E_SYZYGY), with only intersection of relations is developed.

ALGORITHMS AND APPROACH

SYZYGY:

We use WORDNET lexical database to find suitable results.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in$ syno(t)

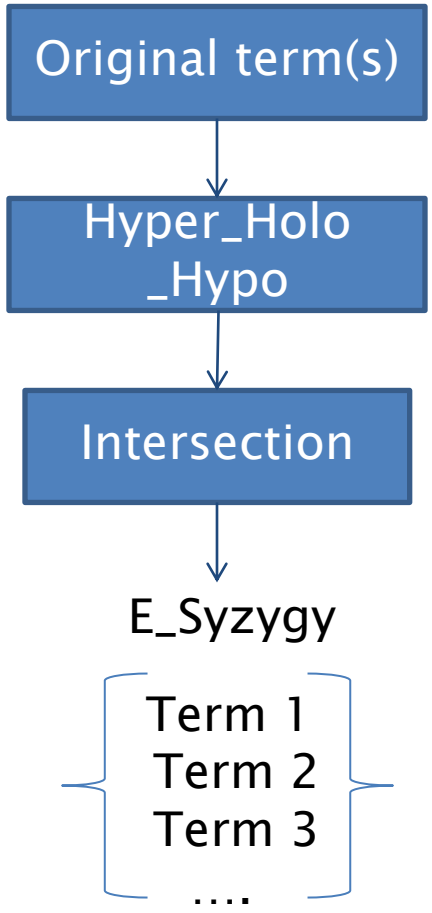
$hypo(t) = \{ h : h \in hyponyms(s) \}$

$hyper(t) = \{ h : h \in hypernyms(s) \}$

$holo(t) = \{ h : h \in holonyms(s) \}$

$union(t) = hypo(t) \cup hyper(t) \cup holo(t)$

$Syzygy(t) = \{ h : h \in union(t) \wedge \exists h \in V \}$



E_SYZYGY

For a search term t

$hypo(t) = \{ h : h \in hyponyms(s) \}$

$hyper(t) = \{ h : h \in hypernyms(s) \}$

$holo(t) = \{ h : h \in holonyms(s) \}$

$syno(t) = \{ s : s \in synonyms(t) \}$

$intersection(t) = hypo(t) \wedge hyper(t) \wedge holo(t)$

$E\_Syzygy(t) = \{ h : h \in intersection(t) \}$

ALGORITHMS AND APPROACH

E_SYZYGY:

For e.g. Let t = live

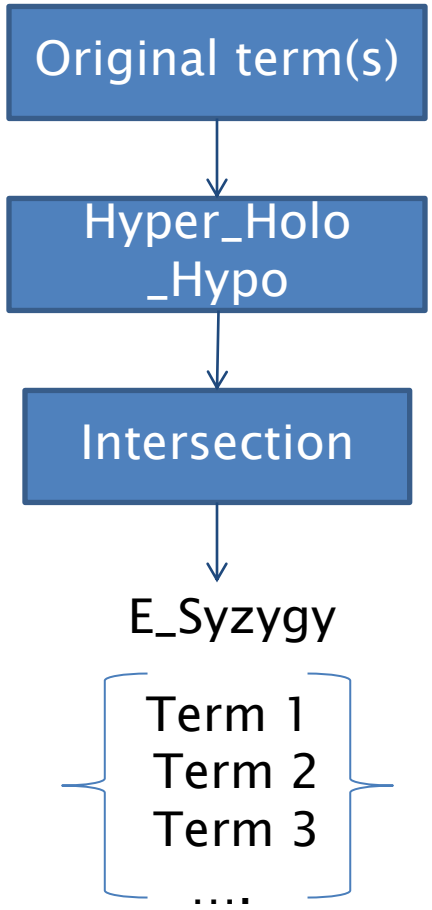
Syno (live) = { populate, inhabit, be, domicile }

Hypo (populate, inhabit, be, domicile)
= { cliff, dwelling, house,... }

Hyper (populate, inhabit, be, domicile)
= { be, fill up, exist, residence, abode,.... }

Hypo (populate, inhabit, be, domicile)
= { domicile, reside, camp, tent, nest,.... }

E_Syzygy = intersection(hypo, holo, hyper)
= {be, go through, experience, see }



ALGORITHMS AND APPROACH

CLINAMEN:

The Clinamen function uses the Damerau-Levenshtein algorithm which measures the distance between two strings

For a specific search term t
Clinamen (t) $=\{ v : 0 <$ dameraulevenshtein (t,v) $\leq 2 \}$, for $v \in V$

For e.g. Clinamen of LIVE= LOVE, LIES, SIZE, RIVER

- Clinamen is completely ignored due to it's enormous distinctiveness.

ALGORITHMS AND APPROACH

ANOMOLY:

Anomaly function simply made use of WordNet's antonyms.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in syno(t)$

$anto(t) = \{ h : h \in antonyms(s) \}$

$anomaly(t) = \{ h : h \in anto(t) \wedge \exists\, h \in V \}$

ALGORITHMS AND APPROACH

ANOMOLY:

Anomaly function simply made use of WordNet's antonyms.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in syno(t)$

$anto(t) = \{ h : h \in antonyms(s) \}$

$anomaly(t) = \{ h : h \in anto(t) \wedge \exists\, h \in V \}$

In the current implemented interface(Interactive Interface), we need to select only one of the Anomaly terms, but

- Intersection of antonyms of synonyms with the original vocabulary, leads to high processing over head and low diversity.

Hence a new algorithm(E_ANOMALY), considering only direct terms, is developed.

ALGORITHMS AND APPROACH

ANOMOLY:

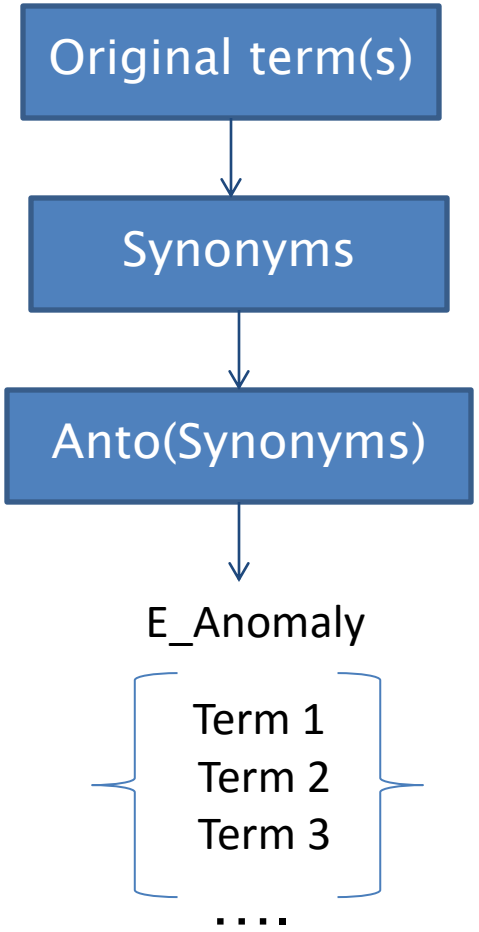
Anomaly function simply made use of WordNet's antonyms.

For a search term t

$syno(t) = \{ s : s \in synonyms(t) \}$ for $s \in syno(t)$

$anto(t) = \{ h : h \in antonyms(s) \}$

$anomaly(t) = \{ h : h \in anto(t) \wedge \exists h \in V \}$



E_ANOMALY

For a search term t

syno(t) = { s : $s \in$ synonyms(t) } for $s \in$ syno(t)

anto(t) = { h : $h \in$ antonyms(s) }

anomaly(t) = { h : $h \in$ anto(t) }

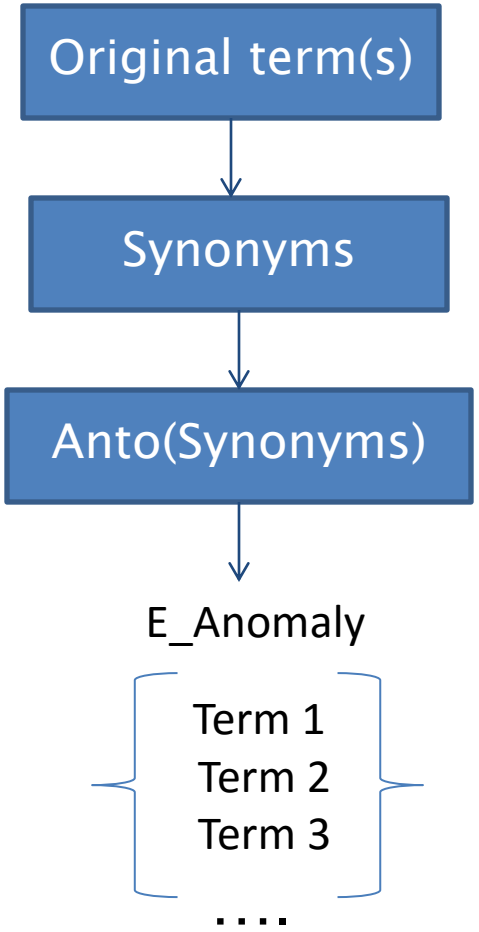
ALGORITHMS AND APPROACH

E_ANAMOLY:

For e.g. t = live

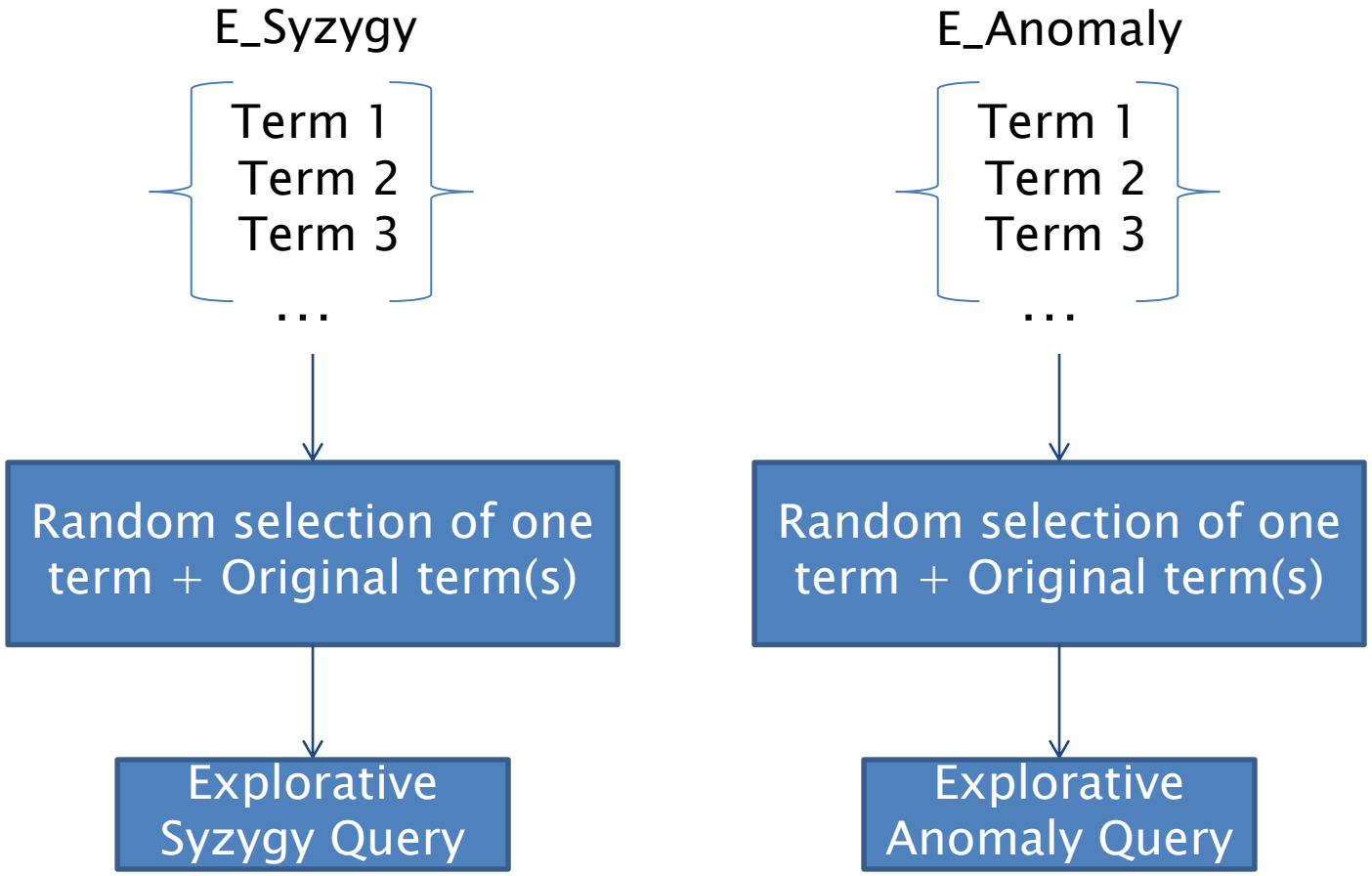
Synonym (live) = { alive, animate, breathing }

E_Anomaly = **antonym** (alive, animate, breathing)
= {dead, recorded, breathless,....}

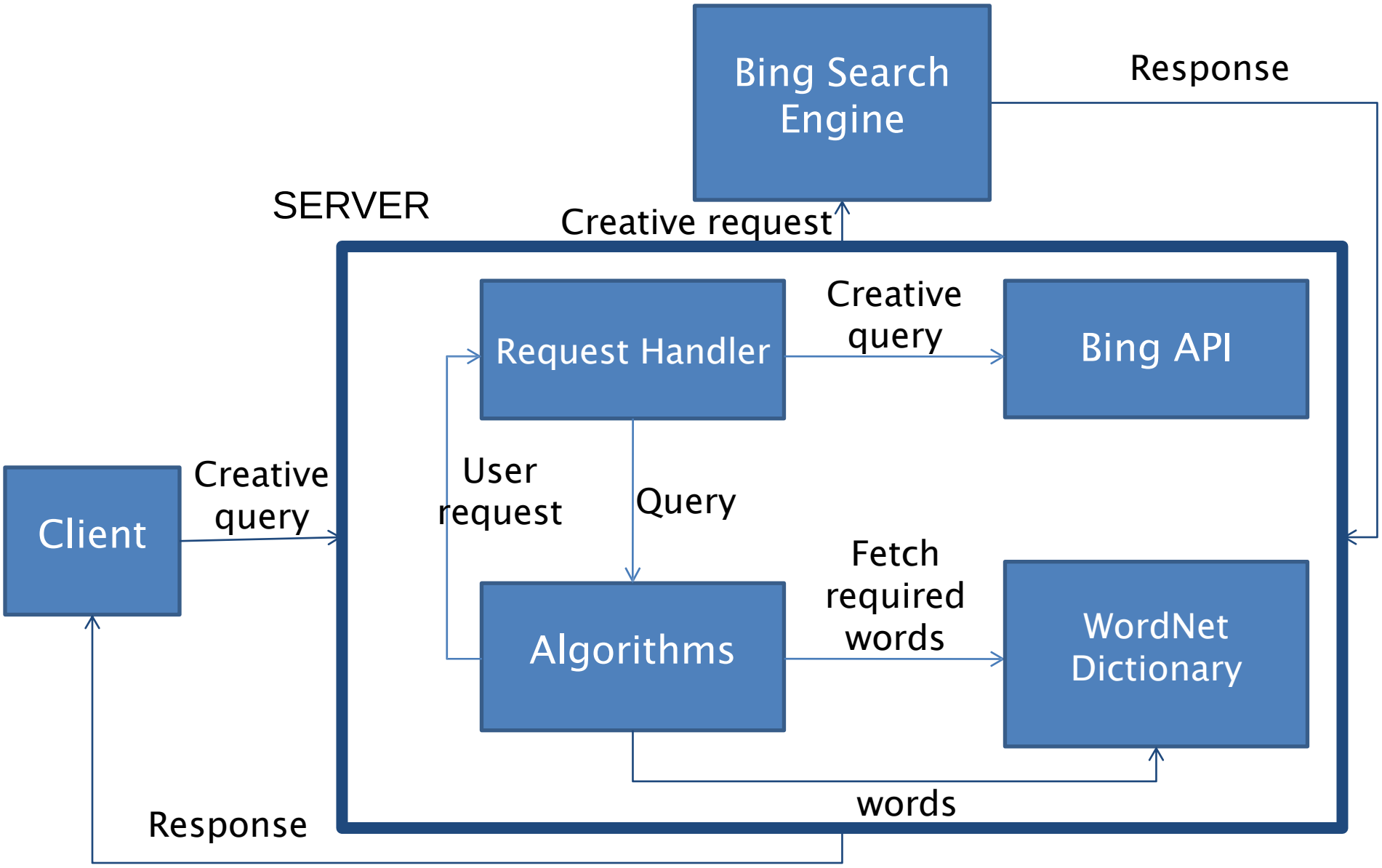


CREATIVE QUERY GENERATION

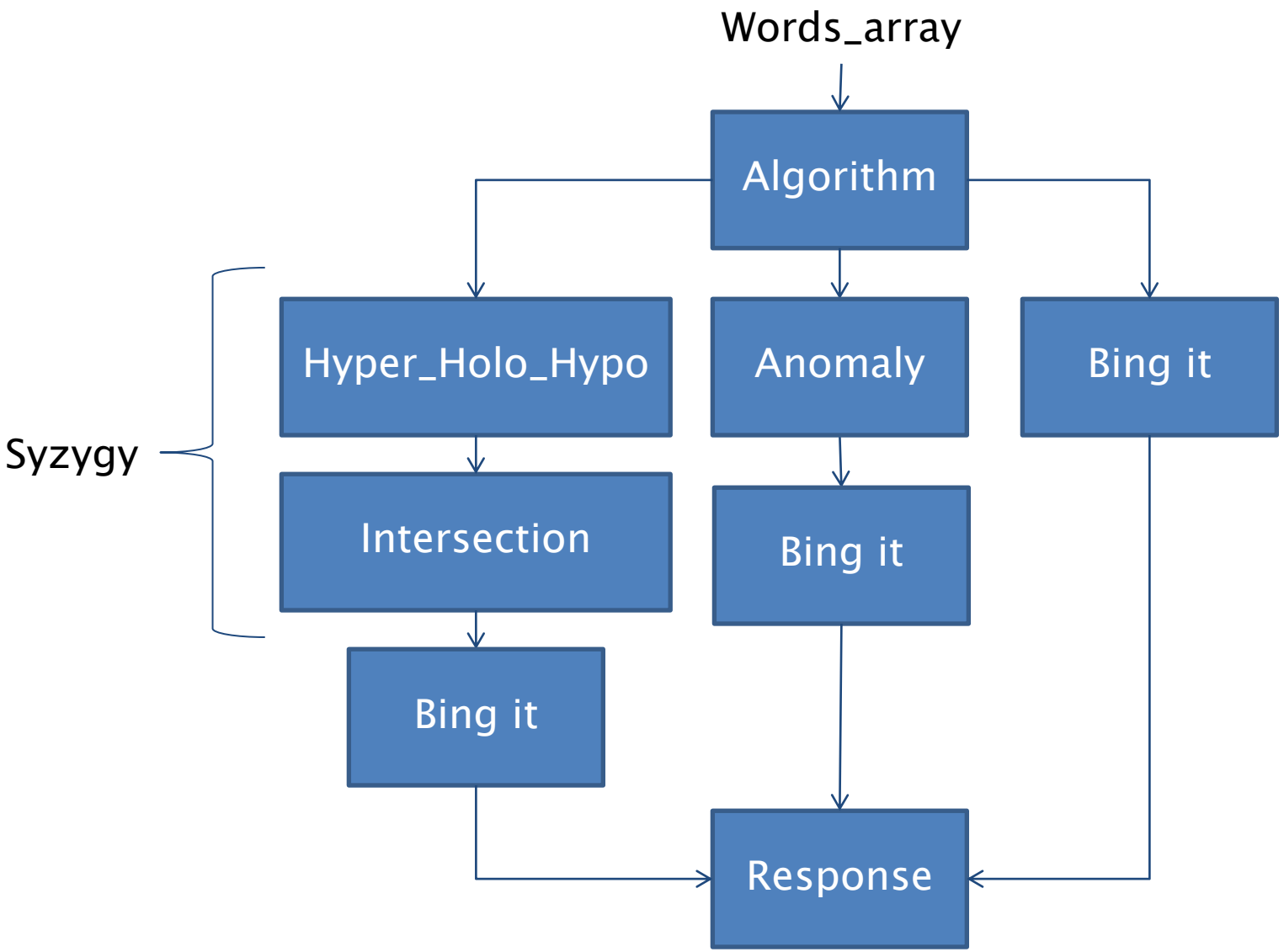
From the resultant set of Syzygy/Anomaly terms, a single term is rando-
-mly selected and combined with Original term(s) to form CREATIVE QUERIES FOR EXPLORATIVE SEARCH.



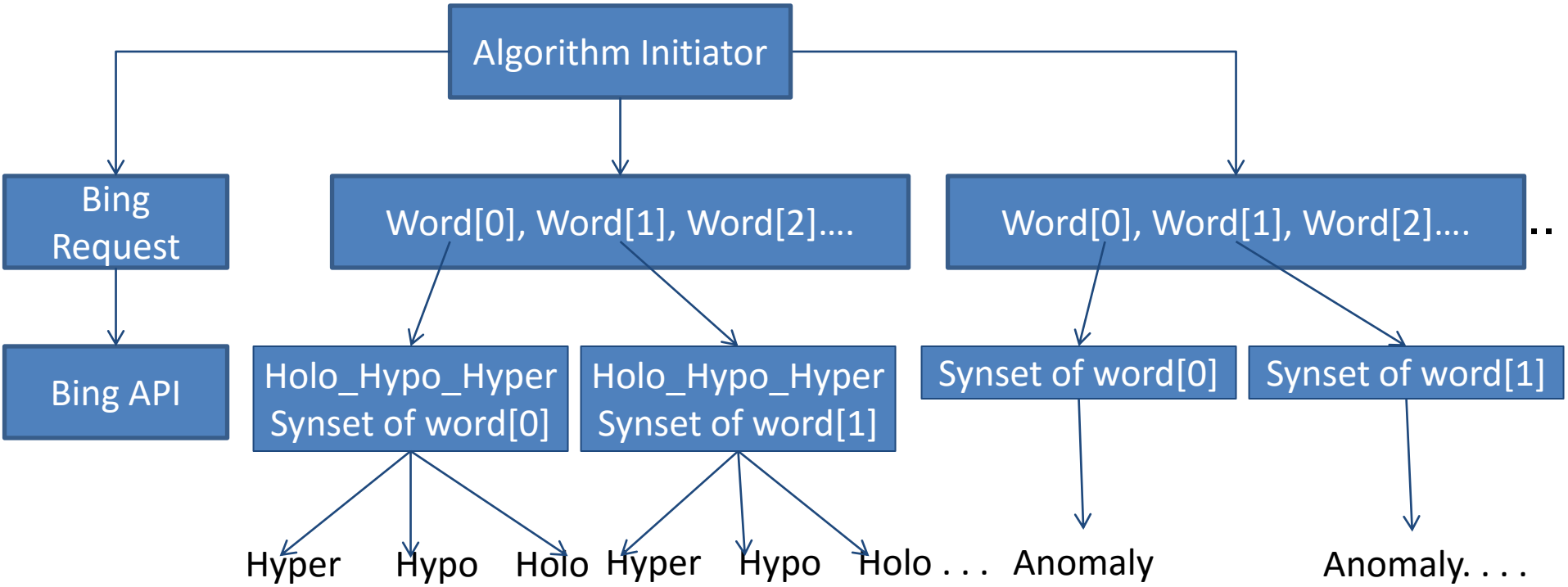
APPLICATION ARCHITECTURE



SEARCH REQUEST HANDLER

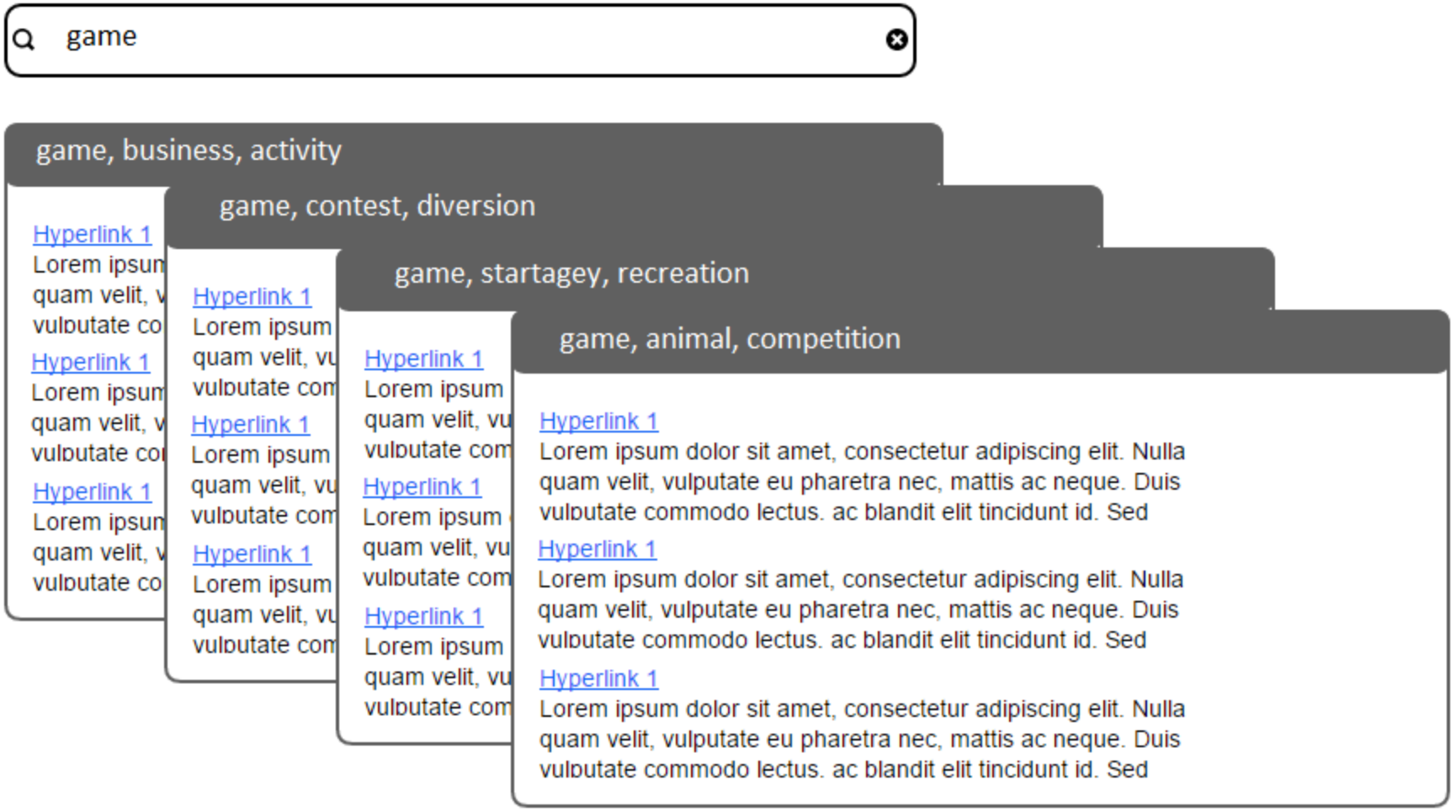


MULTILEVELS OF PARALLELISM



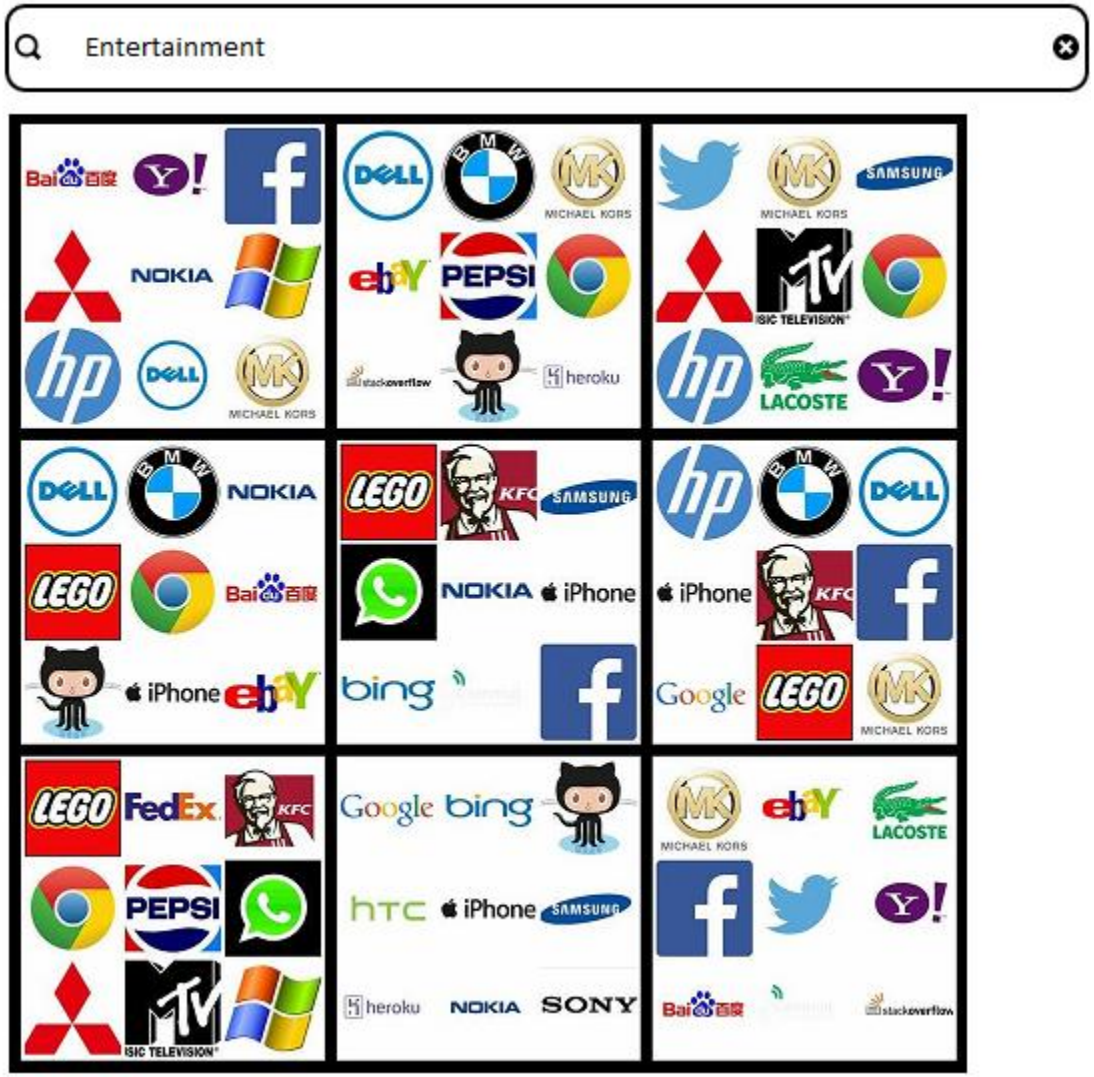
USER INTERFACE DEVELOPMENT

- QUERY DISPLAY INTERFACE



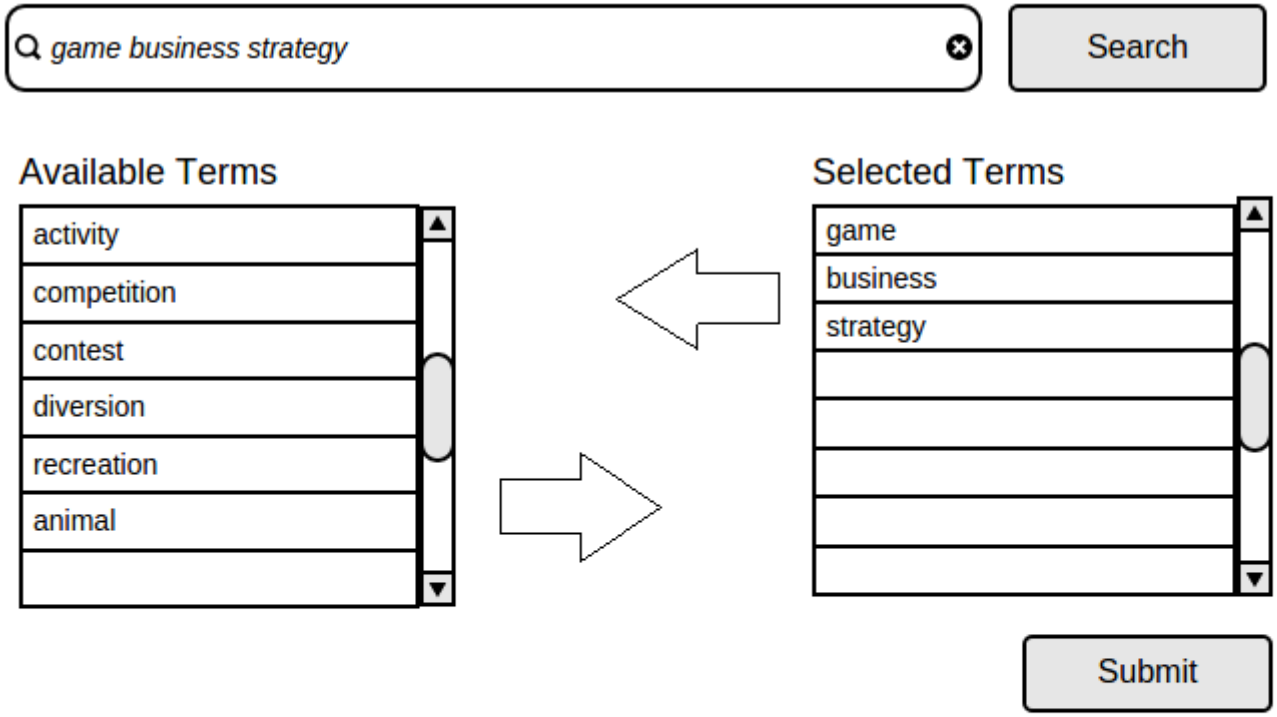
USER INTERFACE DEVELOPMENT

- GRID DISPLAY INTERFACE



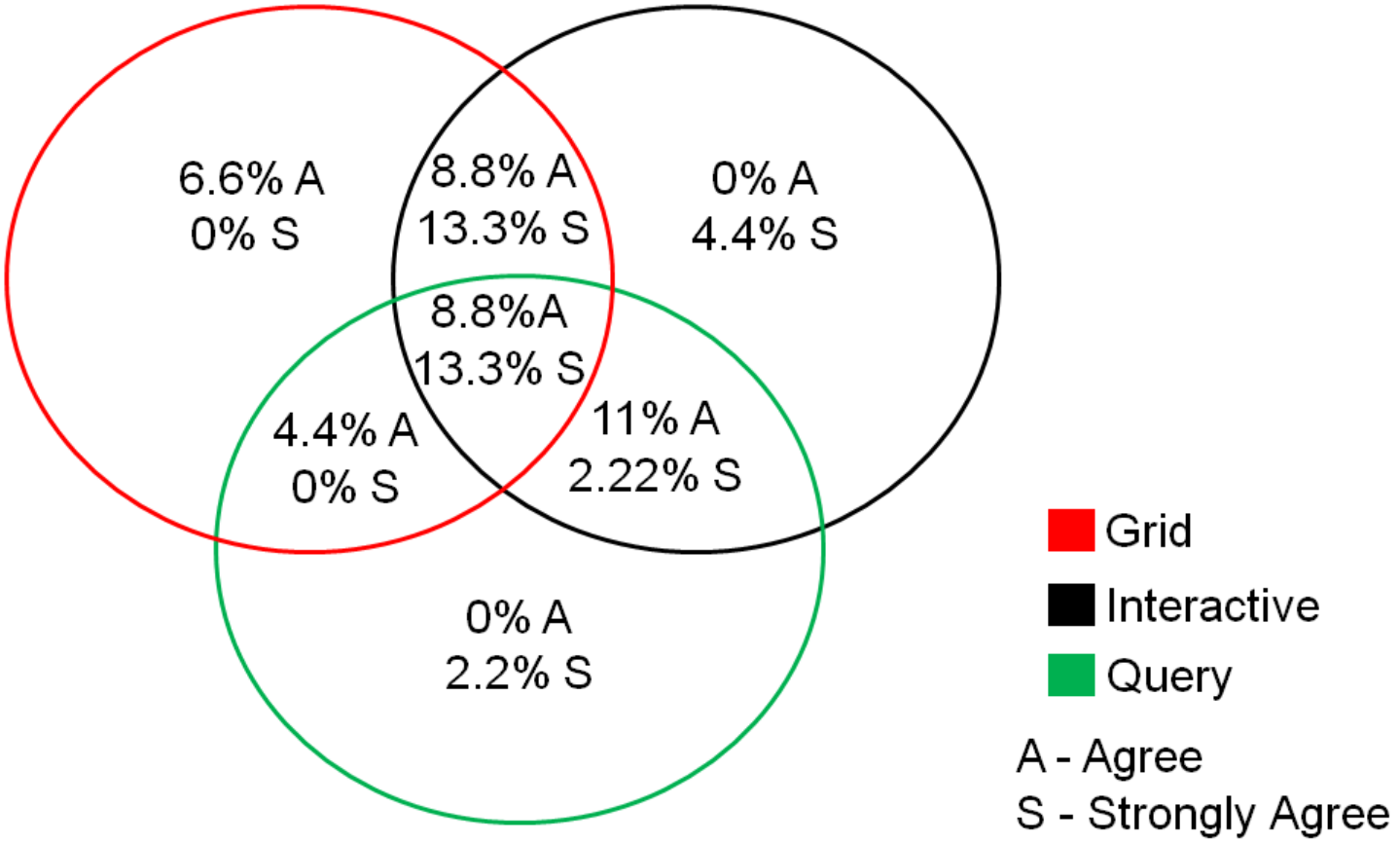
USER INTERFACE DEVELOPMENT

- INTERACTIVE INTERFACE



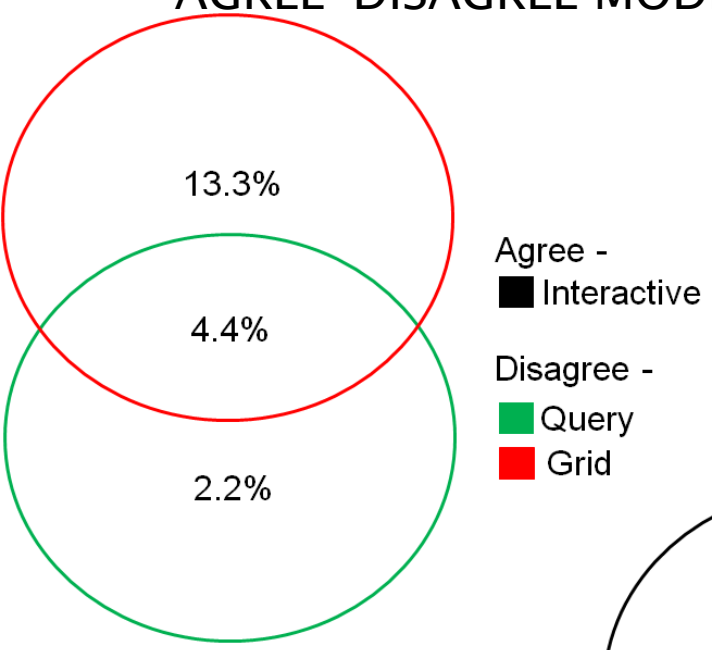
PRELIMINARY EVALUATION

- AGREEMENT MODEL



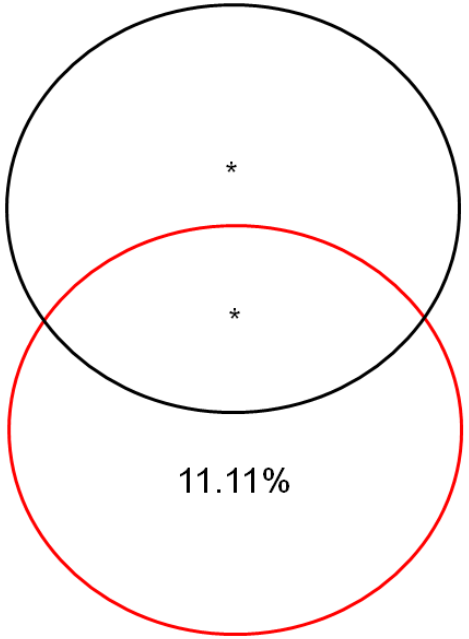
PRELIMINARY EVALUATION

- AGREE–DISAGREE MODEL



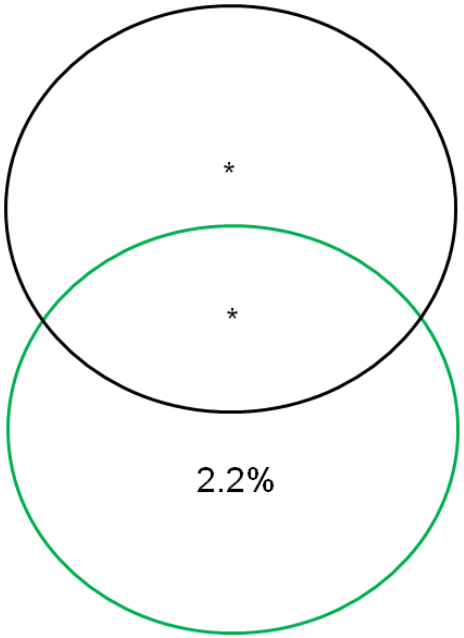
Agree -
Interactive

Disagree -
Query
Grid



Agree -
Query

Disagree -
Interactive
Grid

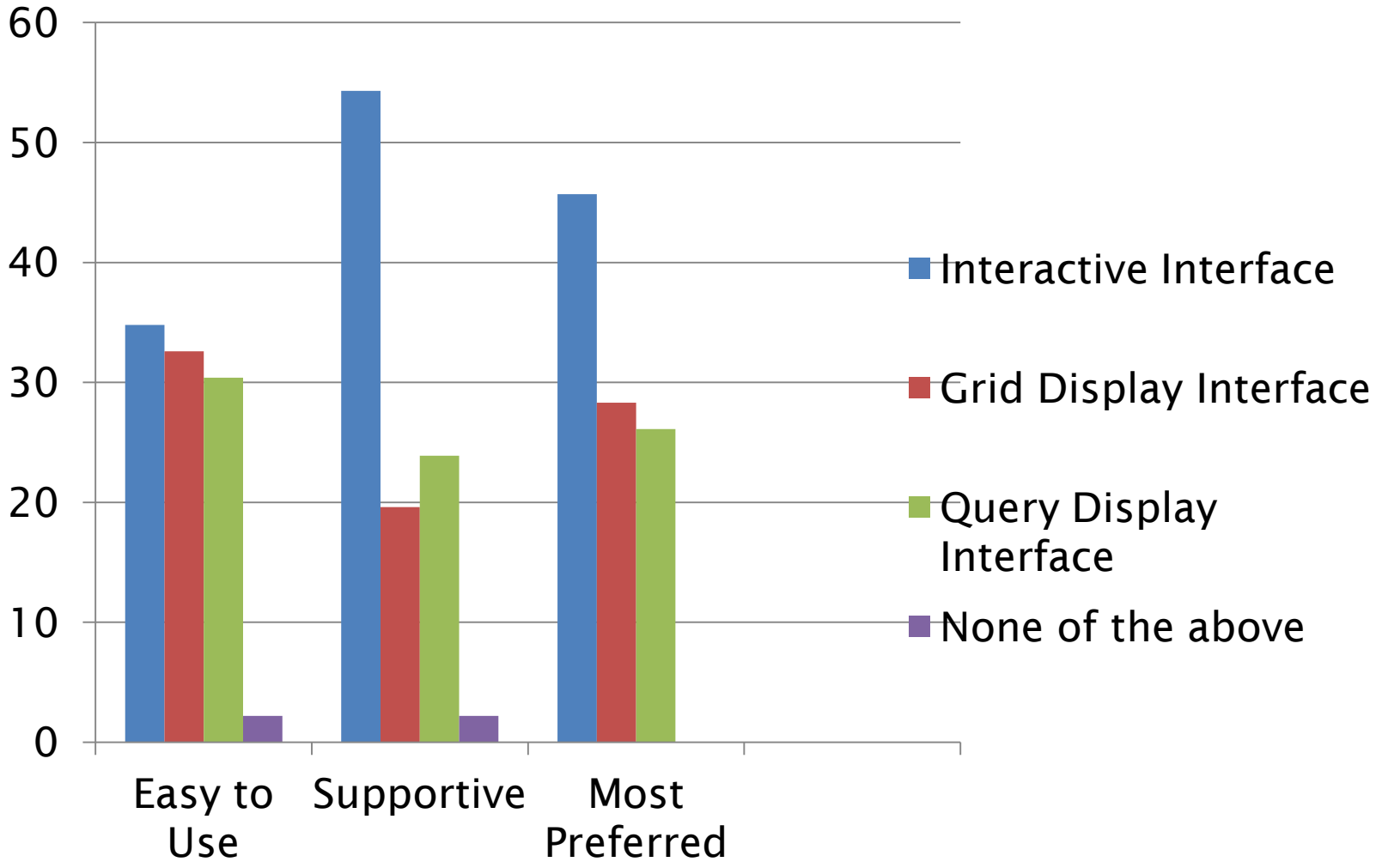


Agree -
Grid

Disagree -
Query
Interactive

FINAL EVALUATION

- LINEAR COMPARISION



INTERACTIVE INTERFACE

Live

Exploratory Search

Available Terms

Be | Experience | Go through | Recorded

Explorative Syzygy results for *live*

. . . . . .

Explorative Syzygy results for *live*

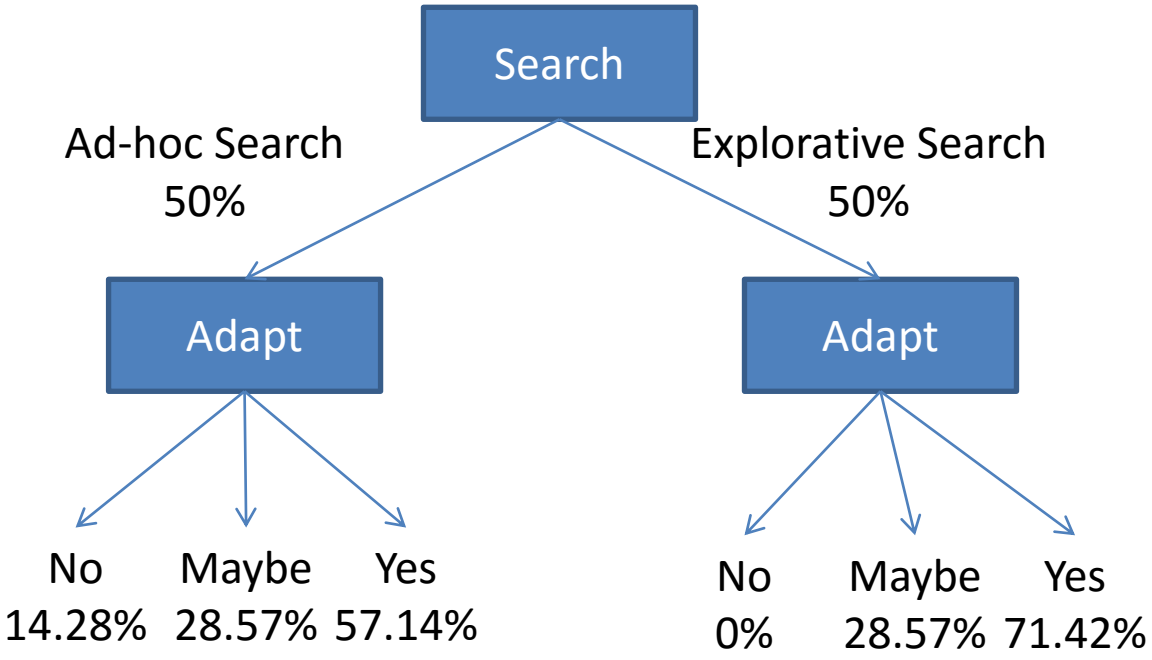
. . . . . .

Conventional results for *live*

. . . . . .

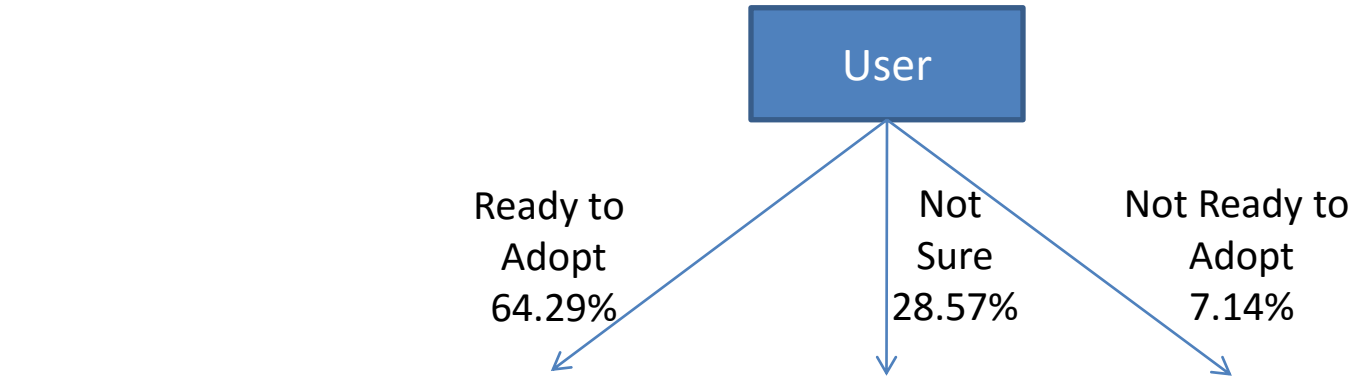
FINAL EVALUATION

- User Behavior before getting familiar with the interface



FINAL EVALUATION

- User Behavior after getting familiar with the interface



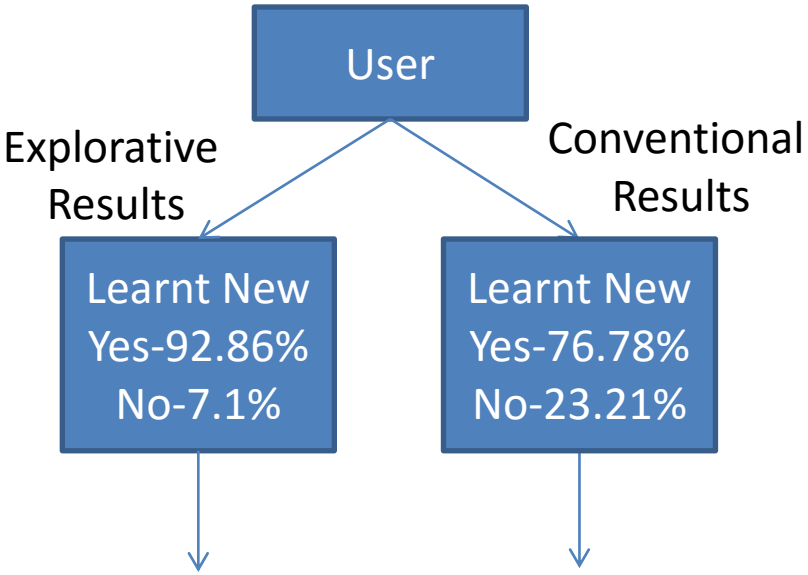
	Ready to Adopt 64.29%	Not Sure 28.57%	Not Ready to Adopt 7.14%
Disagree	11.1%, 11.1%	0%, 0%	0%, 0%
Agree	55.5%, 33.3%	50.0%, 50.0%	100%, 100%
Strongly Agree	33.3%, 55.5%	25.0%, 50.0%	0%, 0%
Neither Agree Nor Disagree	0%, 0%	25.0%,0%	0%, 0%

Suggestions are related to search query

Suggestions are useful for Research

FINAL EVALUATION

- Comparison of Conventional and Explorative Results



Diversity	53.57%	39.28%
Usefulness	64.28%	32.14%
Interesting	50.00%	46.42%
Research	67.8%	32.14%

CONCLUSION AND FUTURE WORK

- An Interactive Search Engine Interface which generates effective, diverse, fruitful and compelling Explorative results is developed.

- To decrease the processing time(currently 30 seconds), in future, following mechanisms can be deployed.
  1. Inverted Indexing process.
  2. Kill with iron process(Adding Hardware).

- Limited set of terms in WordNet Dictionary also has to be enhanced.

WORK LOAD DISTRIBUTION

TASK	IKRAM	SHRAVYA
STATE OF THE ART	Ca 25 hrs	Ca 25hrs
MOCK UP FOR FRONT END DESIGN		Ca 10 hrs
DESIGNING FRONT END (Html & CSS)	Ca 10 hrs	Ca 40 hrs
INTEGRATION OF BING API AND LEXICAL DICTIONARY(NODE.JS)	Ca 25 hrs	Ca 15 hrs
INSTALLING NODE.JS SERVER , NPM PACKAGE STRUCTURE	Ca 40 hrs	
IMPLEMENTATION OF ALGORITHMS(Javascript)	Ca 70 hrs	Ca 70 hrs
PRELIMINARY + FINAL USER STUDY	Ca 40 hrs	Ca 10 hrs
DOCUMENTATION		Ca 40 hrs

Thank you for listening. Any questions?

REFERENCES

Digital Creativity:
https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=sRce9ogAAAAJ&citation_for_view=sRce9ogAAAAJ:TFP_iSt0sucC
International Journal of Creative Computing,2013:
https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=sRce9ogAAAAJ&citation_for_view=sRce9ogAAAAJ:e5wmG9Sq2KIC
[1]Sports:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=sports&oq=sports&gs_l=img.3..0l10.103378.104573.0.105407.6.6.0.0.0.0.131.671.1j5.6.0....0...1c.1.64.img..0.6.663.siDaaxFZ2QI#imgrc=-1DK2TJ5lVuXqM%3A
[1]TV shows:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=tv+shows&oq=tv+shows&gs_l=img.3..0l10.79917.81712.0.82233.8.7.0.1.1.0.141.754.1j6.7.0....0...1c.1.64.img..0.8.765._PJaAWoTtnw#imgrc=_v6UYojsFyD0UM%3A
[1]facebook:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=facebook&oq=facebok&gs_l=img.3.0.0i10j0j0i10l2j0j0i10l3j0j0i10.29428.30764.0.32350.7.5.0.2.2.0.134.558.0j5.5.0....0...1c.1.64.img..0.7.574._9NfFoykG_8#imgrc=LUjnnkvhX4rfvM%3A
[1]games:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=games&oq=games&gs_l=img.3..0l10.48184.49089.0.49919.5.5.0.0.0.0.135.534.2j3.5.0....0...1c.1.64.img..0.5.530.uSx1Ezd9qX0#imgrc=6K8fHew_LyI1rM%3A
[1]technology:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=technology&oq=technology&gs_l=img.3..0l10.48782.50732.0.51413.10.8.0.2.2.0.113.843.1j7.8.0....0...1c.1.64.img..0.10.855.Kt2GCGGFKuM#imgrc=lSRH5n6g3a9wzM%3A
[1]Movies:
https://www.google.co.in/search?newwindow=1&biw=1242&bih=585&tbm=isch&sa=1&q=movies&oq=movies&gs_l=img.3..0l10.45832.46892.0.47092.6.6.0.0.0.0.162.696.1j5.6.0....0...1c.1.64.img..0.6.692.1k0ZdGwFaBE#imgrc=FvhmHpwP0i4_xM%3A

DESCRIPTION OF WORDNET DICTIONARY

Lexical Categories in WORDNET

- NOUN(117798+82115)
- ADVERB(11529+13767)
- ADJECTIVE(21479+18156)
- VERBS(4481+3621)

but ignores prepositions, determiners and other function words.

WordNet Dictionary determines

- Similarity between the words
- Distance amongst the words
- Produces Synsets

Word Net dictionary comprises a total of 206941 Word sense pairs(Unique strings+synsets)

DESCRIPTION OF WORDNET DICTIONARY

RELATIONS	Also Called	Example
Hypernym	Superordinate	Breakfast - meal
Hyponym	Subtype	Meal - lunch
Member Meronym	Has member	Faculty - professor
Member Holonym	Member of	
Has Instance		Composer - MJ
Instance		MJ– author
Part Meronym	Has part	Table - leg
Part Holonym	Part of	Wheel - bike
Antonym	Opposite	Leader- follower