Making and Understanding Affective Metaphors with

<u>*Metaphor Magnet*</u> is an online software application that allows you to explore the space of affective conceptual metaphors. The Metaphor Magnet application can also be used as a service by other NLP applications, returning XML documents to the client. Details of this XML functionality are provided at the end of this page.

The goal of *Metaphor Magnet* is to find and exploit commonplace metaphors in everyday texts (in this case, in the Google n-grams) and to use these mappings to interpret more novel metaphors using an expansionary approach.

Using the Metaphor Magnet app, a user inputs a metaphor as in the following:

life is a +game   Metaphorize This!

This is an *affective* metaphor: the vehicle **game** is marked with **+** to indicate that a positive spin is intended – the user is here seeking an uplifting interpretation of the metaphor **life is a game** (conversely, a more cynical interpretation can be obtained using the input **life is a –game**).

As shown below, Metaphor Magnet offers its interpretation in two parts: on the right, a term cloud shows positive metaphors for the source concept *game*; on the left, a term cloud shows these metaphors projected into the domain of *life*.

Target Metaphors: *life*

entertaining:gimmick towering:crane planning:developer
disciplined:prison rewarding:book
daring:improvisation entertaining:sitcom
rewarding:lottery enlightening:teacher
relaxing:bedroom encompassing:theory
entertaining:illusion prescribed:chemical
compelling:obligation protecting:cage poignant:biography
entertaining:musical liberal:progressive
challenging:mission
entertaining:game simplified:stereotype
inspiring:sacrifice challenging:objective
haunting:tale entertaining:movie
planned:continuation compelling:actor
compelling:advocate challenging:workout
communicating:speaker entertaining:celebrity
painted:nail challenging:enigma

Source Metaphors: *+game*

rocking:ship scheduled:convention
captivating:beauty cherished:gem
charming:doll streaming:banner straight:nail
integrated:blend flashing:console
connected:network inspired:author
entertaining:puzzle entertaining:feat
challenging:challenge
celebrated:icon formatted:word accepted:trend
celebrated:king connecting:cable
supporting:support breathtaking:spectacle
challenging:leader entertaining:smash
indexed:compilation flashing:cursor glistening:cream
fast:bat celebrated:classic entertaining:ride
entertaining:gimmick inspired:thought
scheduled:project entertaining:clown
trusted:source rewarding:reward glittering:pool
rewarding:goal advanced:technology

In contrast, a negative spin (***life is a –game***) yields the following clouds:

Target Metaphors: *life*

daunting:mission dumb:block
scripted:fiction raging:tempest
scripted:comedy raging:warfare
improbable:impossibility sprawling:zoo
bubbling:solution
frustrating:mystery
unfolding:journey frustrating:chore
boring:sitcom grey:pigeon dreary:grave
orchestrated:march frustrating:bummer
twisted:delusion sombre:prayer shocking:perversion
orchestrated:concert grim:torture swirling:blur
grim:destruction lingering:reminder troubled:soul
complicated:brain swirling:circle thin:line
bumbling:professor unreal:allegory grim:crisis

Source Metaphors: *-game*

exhausting:pursuit frightened:lamb
meandering:trail meandering:lane vague:horoscope
thin:poker perilous:intrigue
daunting:mission binding:definition
shocking:nightmare exposed:film
frightened:runaway hardened:hack
calculated:investment exhausting:workout
charging:buffalo threatening:weapon
fake:counterfeit laminated:map complicated:theory
flat:picture frightened:bird
exhausting:journey predetermined:ideal
chilling:killer pulsing:guitar squabbling:family
inanimate:puppet orchestrated:plan
thin:stick threatening:virus dated:throwback

The most salient metaphors for the source concept *game* are not always the most salient for the target concept. The qualities that are shown to be salient in aggregate for the source are used to determine the most salient viewpoints on the target. Consider this metaphor: **love is a +drug**

Target Metaphors: *love*

loving:grace loving:parent flowing:rhythm trusted:teacher blessed:sacrament shining:shield quick:bullet loving:healing ordained:law loving:healer haunting:song shining:sky healing:wound soothing:music cherished:masterpiece blessed:soul glittering:prize soothing:therapeutic beautiful:model stunning:blow tantalizing:sweet accepted:norm beautiful:spring haunting:fantasy challenging:question tantalizing:recipe challenging:paradox shining:knife satisfying:solution cherished:memory published:study beautiful:rose haunting:tragedy shining:miracle determined:threat cherished:jewel healing:cure haunting:shadow vital:necessity inspiring:fairytale intoxicating:chemical encouraging:catalyst challenging:challenge shining:flame shining:fire exhilarating:delight integrated:mixture shining:lightbulb trusted:promise pulsating:drum guiding:rule cherished:gift inspiring:talent inspiring:mentor cherished:symbol cherished:art defined:function shining:angel glittering:luxury ordained:death

Source Metaphors: *+drug*

protected:trademark packaged:product functional:function haunting:pain functional:tool prescribed:medicine thrilling:danger prescribed:ointment trusted:key prescribed:sedative healing:miracle prescribed:narcotic prescribed:therapeutic prescribed:chemical formulated:mixture prescribed:tranquilizer solid:muscle interlinked:net challenging:problem determined:killer prescribed:placebo miraculous:wonder soothing:remedy healing:cure penetrating:investigator supernatural:spirit prescribed:prescription central:heart cleansing:acid correct:fact anticipated:risk

Note how the descriptions in the left cloud (for the source, **+drug**) offer mostly literal views on the topic *drug*. When viewed through the lens of the target concept love, the most salient qualities are **healing, satisfying** and **intoxicating**.

In effect, the left cloud shows an expansive interpretation of a particular affective spin on the source concept. The right cloud shows how this expansion (e.g. for positively describing drugs) leads to specific metaphoric views on the target concept. Notice how very different viewpoints are suggested when the user's query instead becomes: **love is a –drug**

Target Metaphors: *love*

screaming:fool lingering:sorrow masked:placebo
shocking:joke menacing:guard threatening:risk
bubbling:chemical raging:war
baffling:wonder raging:fire unfortunate:loser raging:battlefield
burning:venom contrived:illusion burning:sin
burning:ember lingering:concern threatening:enemy
grim:death alarming:secret perilous:gamble
scripted:politician overwhelming:power threatening:dog
overwhelming:blow burning:desire
raging:addiction
harrowing:pilgrimage nagging:contradiction
dangerous:knife nagging:paradox raging:hate
lingering:feeling fighting:soldier crippling:loss threatening:fist
smoldering:smoke threatening:force
grim:threat bubbling:stream threatening:gun
scheming:cheat absurd:fallacy overwhelming:masterpiece
threatening:stranger raging:river unfolding:miracle
threatening:catastrophe burning:brand

Source Metaphors: *-drug*

banned:chemical threatening:problem
knotted:muscle alarming:violation
burning:acid numbing:pain
alarming:risk inexplicable:wonder restrictive:diet
polluting:smoke
numbing:narcotic interrogating:investigator
alarming:danger alarming:blow
burning:brand knotted:net inexplicable:miracle
numbing:poison lurking:killer
ineffective:placebo
harmful:toxin alarming:crime
lingering:spirit alarming:threat throbbing:heart

Similes

A user can also pose a figurative query in the form of a simile. This form allows the user to focus the interpretation on a specific quality. For instance, consider the query *Google is as –**powerful** as Microsoft* and the interpretation it yields:

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Target Metaphors: *Google* **Source Metaphors: *Microsoft***

domineering:leader threatening:enemy

menacing:tough threatening:bully

menacing:lackey calculating:investor

menacing:criminal

dreaded:king

domineering:monopoly

complicated:web threatening:competitor arrogant:intellectual

vain:celebrity bloated:dinosaur

twisted:devil

threatening:problem

threatening:threat

isolated:exception twisted:root

dreaded:evil troubling:question

menacing:bully

perilous:battle twisted:devil

menacing:tough menacing:lackey

isolated:exception bewildered:victim

overbearing:king bloated:dinosaur

menacing:threat anxious:investor

troubling:question menacing:evil

threatening:enemy arrogant:master

twisted:joke domineering:leader threatening:competitor

menacing:criminal

threatening:problem

menacing:giant arrogant:intellectual

twisted:root conservative:corporation domineering:superior

The converse, *Google is as **+powerful** as Microsoft*, yields this interpretation:

Target Metaphors: *Google* **Source Metaphors: *Microsoft***

historical:fact spirited:battle integrated:web

mighty:dinosaur fast:top trusted:lackey

entertaining:puppet surprising:exception

enterprising:investor protected:trademark

dependable:standard revered:icon intriguing:question

fast:calculator organized:religion revered:pioneer

trusted:source trusted:key shining:light

determined:threat trusted:master

advanced:technology enterprising:business

enterprising:enterprise determined:competitor

revered:celebrity trusted:leader functional:tool

inspired:intellectual magnificent:marvel

trusted:brand trusted:partner celebrated:winner

magnificent:giant supportive:sponsor

trusted:provider celebrated:classic

revered:king entertaining:joke

trusted:lackey amusing:puppet intriguing:question

celebrated:success advanced:technology enterprising:business

amusing:joke intuitive:natural celebrated:classic

thrilling:battle enterprising:investor

celebrated:pioneer helpful:sponsor

determined:competitor ruling:superior determined:threat

trusted:leader trusted:partner

ruling:monopoly celebrated:king

fast:top trusted:master

protected:trademark mighty:giant functional:tool

trusted:provider dependable:standard trusted:key enterprising:company

amusing:conversation trusted:source

enterprising:enterprise historical:fact surprising:exception

mighty:dinosaur inspired:intellectual

Each element of an interpretation is clickable. For instance, clicking on the element *revered:pioneer* in the left window brings up a specific interpretation:

In this window, the left cloud shows the linguistic evidence for viewing Google as a pioneer (this evidence is found in the Google n-grams). The right panel shows the results of a Google web search using this evidence as the basis of query expansion.
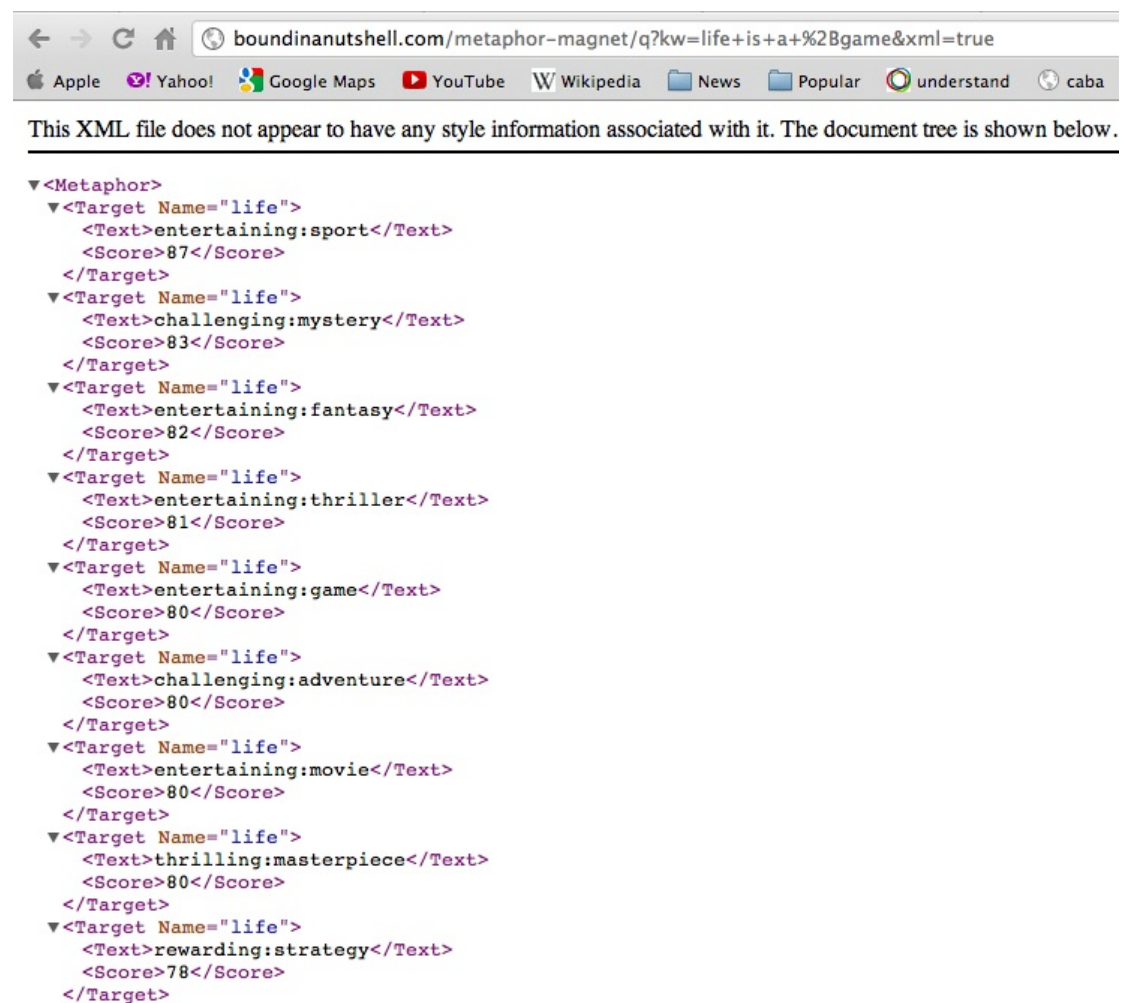
Metaphor Magnet as a Remote Service: XML output

The above screen shots show *Metaphor Magnet* operating as a conventional web application, producing HTML output in response to user inputs.

Metaphor Magnet can also be used as a metaphor generation/interpretation service by other NLP applications that wish to exploit its figurative capabilities.

Client applications can interact with Metaphor Magnet by opening a URL connection; the appropriate parameters should be contained in the URL. For instance, here is one such URL:

http://boundinanutshell.com/metaphor-magnet/q?kw=Google+is+as+-powerful+as+Microsoft&xml=true

Notice the parameter **&xml=true** at the end of this URL: this indicates to Metaphor Magnet that a structured XML document, rather than HTML, should be returned to the client. Below we see XML output for the input *life is a +game*

Simple experimentation will show client developers the expected form of URLs to be sent to Metaphor Magnet. To view the XML output of any query, the app contains a View XML link on each page:

Two sample XML documents are included with this zip archive:

Google is as –powerful as Microsoft.xml

and

Google is a revered king.xml

The latter document contains evidence for the element *revered:king* in the metaphorical query *Google is as **+powerful** as Microsoft*

References

When referring to this research/application, please cite one of the following:

Veale, T. (2012). Exploding the Creativity Myth: The Computational Foundations of Linguistic Creativity. *Bloomsbury Academic*. [sample chapter]

Veale, T. (2012). A Context-sensitive, Multi-faceted model of Lexico-Conceptual Affect. *In Proc. of ACL'2012, the 50th Annual Conference of the Association for Computational Linguistics*, Jeju, South Korea. [pdf]

Veale, T. and Li, G. (2012). Specifying Viewpoint and Information Need with Affective Metaphors: A System Demonstration of Metaphor Magnet. *In Proc. of ACL'2012, the 50th Annual Conference of the Association for Computational Linguistics*, Jeju, South Korea. [pdf]