

Literature Review

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Our project focuses on visualizing etymological relationships between words. To this effect, the most relevant work is [Etymological Wordnet: Tracing the History of Words](#), by De Melo, G. This work provides an extensive dataset to see the connections between words, across languages. Although they have a very rudimentary [tool](#) to view the results, they have not yet worked toward visualizing the dataset.

As for the world of visual communication of language data, there has been extensive work in showing wordnet structures within the english language, for relations such as synonyms, antonyms, usage, meanings etc. However, we have not found a satisfactory visualization for the etymology of words. Some examples for these works are mentioned under visual dictionary interfaces in the reference section. One common theme that we noticed in these works, is that trees were used most extensively. The visualizations are clear to understand and well represented, when the number of nodes was small. In the case of Visualizing wordnet structure, Jaap Kamps, as the number of nodes grew large, the graph turned cluttered.

Abrate et al., in WordNet Atlas: a web application for visualizing WordNet as a zoomable map, address the layout of nodes for better perception. They draw the wordnet out as a spatially arranged radial graph, with nodes arranged in concentric circles. This made large data sets more manageable and easier to navigate. One drawback, however, was that all the spatial location data had to be pre-calculated without real-time updates.

We intend to work on visualizing the etymology in a cleaner and well-formatted manner. Also, we intend to provide the users a level of control over the visualization that allows them to manipulate the view to understand the data better.

References:

Inspiration:

De Melo, G. (2014). Etymological Wordnet: Tracing The History of Words. In *LREC* (pp. 1148-1154).

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Visualizing large sets of language data:

Abrate, M., Bacciu, C., Marchetti, A., & Tesconi, M. (2012). WordNet Atlas: a web application for visualizing WordNet as a zoomable map. In *GWC 2012 6th International Global Wordnet Conference* (p. 23).

http://www.iit.cnr.it/sites/default/files/gwa2012_submission_65.pdf

Kamps, J., & Marx, M. (2002). Visualizing wordnet structure. In *Proc. of the 1st International Conference on Global WordNet* (pp. 182-186).

<http://humanities.uva.nl/~kamps/webart/publications/2002/kamp:visu02.pdf>

Kievit-Kylar, B., & Jones, M. N. (2012). Visualizing multiple word similarity measures. *Behavior research methods*, 44(3), 656-674. http://www.indiana.edu/~clcl/Papers/KK_Jones_2012.pdf

Smith, A., Chuang, J., Hu, Y., Boyd-Graber, J., & Findlater, L. (2014). Concurrent Visualization of Relationships between Words and Topics in Topic Models. *Sponsor: Idibon*, 79.

<http://nlp.stanford.edu/events/illvi2014/papers/smith-illvi2014a.pdf>

Collins, C. (2006). Wordnet explorer: Applying visualization principles to lexical semantics. *Computational Linguistics Group, Department of Computer Science, University of Toronto, Toronto, Ontario, Canada*.

https://www.researchgate.net/profile/Christopher_Collins5/publication/228400344_Wordnet_explorer_Applying_visualization_principles_to_lexical_semantics/links/02e7e523b459e66867000000.pdf

Visualizing graphs or networks:

Lamping, J., & Rao, R. (1996). The hyperbolic browser: A focus+ context technique for visualizing large hierarchies. *Journal of Visual Languages & Computing*, 7(1), 33-55.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.451.5106&rep=rep1&type=pdf>

Bastian, M., Heymann, S., & Jacomy, M. (2009). Gephi: an open source software for exploring and manipulating networks. *ICWSM*, 8, 361-362.

<http://www.aaai.org/ocs/index.php/ICWSM/09/paper/viewFile/154./1009>

Visual Dictionary Interfaces:

Interactive dictionary: <http://visuwords.com>

Wordnet Connect: <http://dingo.sbs.arizona.edu/~Sandiway/wnconnect/index.html>

Thinkmap (thesaurus + visualization tool) <http://www.thinkmap.com/>

Visual Wordnet: <http://kylescholz.com/projects/wordnet/?text=link>

Visualizing a given text: <http://voyant-tools.org/>

Visual thesaurus: <https://www.visualthesaurus.com>

<http://www.lexipedia.com/>

<https://www.wordnik.com>