Visualization for the dependency tag

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Introduction

Dependency tag can provide a simple description of the grammatical relationships in a sentence.

Previous studies

A: [S1:M-GRET] *Hi everyone.* **[S2:P-STAT]** *I have recently purchased USB flash and I am having trouble renaming it, please help me.*
B: [S3:A-INQU] *What is the size and brand of this flash?*
A: [S4:Q-CLRF] *It is a 4GB SanDisk flash.*
B: [S5:A-SOLU] *Install gparted, select flash drive and rename.*
A: [S6:M-NEGA] *I got to the Right click on partition and the label option was there but grayed out.*
B: [S7:A-SOLU] *Sorry again, I meant to right click the partition and select Unmount and then select Change name while in gparted.*
A: [S8:C-GRAT] *Thank you so much.* **[S9:M-POST]** *I now have an "Epic USB" You Rock!*

Figure 1: Example of a Question Answering Thread in Ubuntu Support Forum

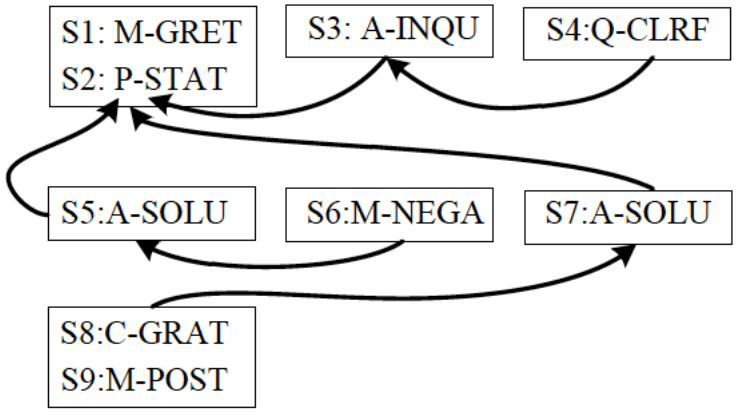


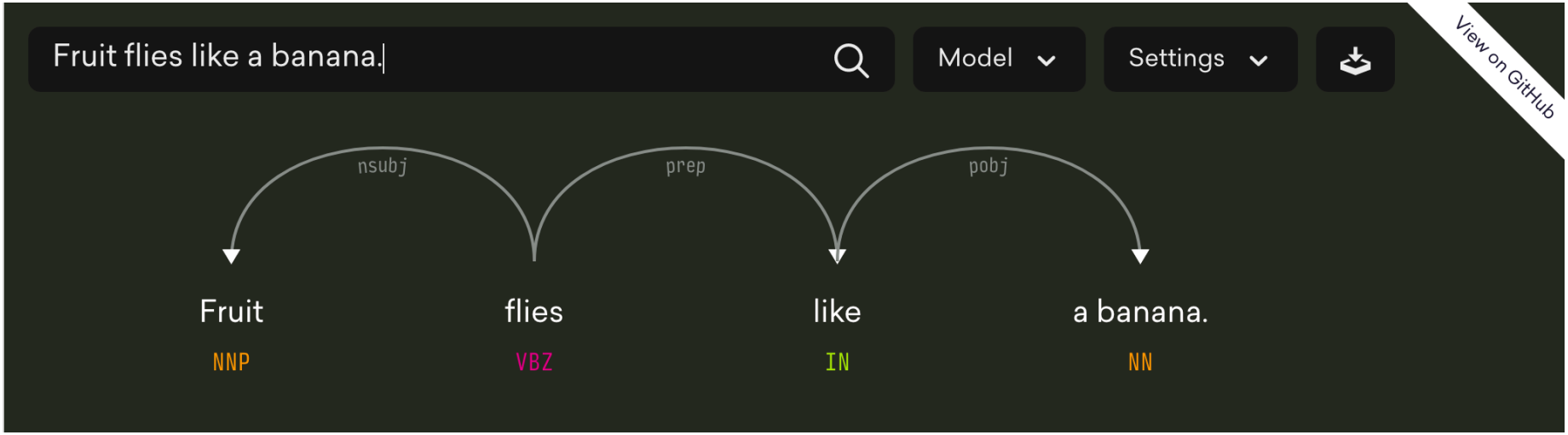
Figure 2: Dependency Structure of the Above Example

Zhonghua Qu and Yang Liu, 'Sentence Dependency Tagging in Online Question Answering Forums', *Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics*, pages 554–562, Jeju, Republic of Korea, 8-14 July 2012.

Research background and purpose

There is no visualization, help users to understand result of dependency tag easily.

Visualization(Explosion-displaCy)



https://demos.explosion.ai/displacy/

Visualization(Stanford-CoreNLP)

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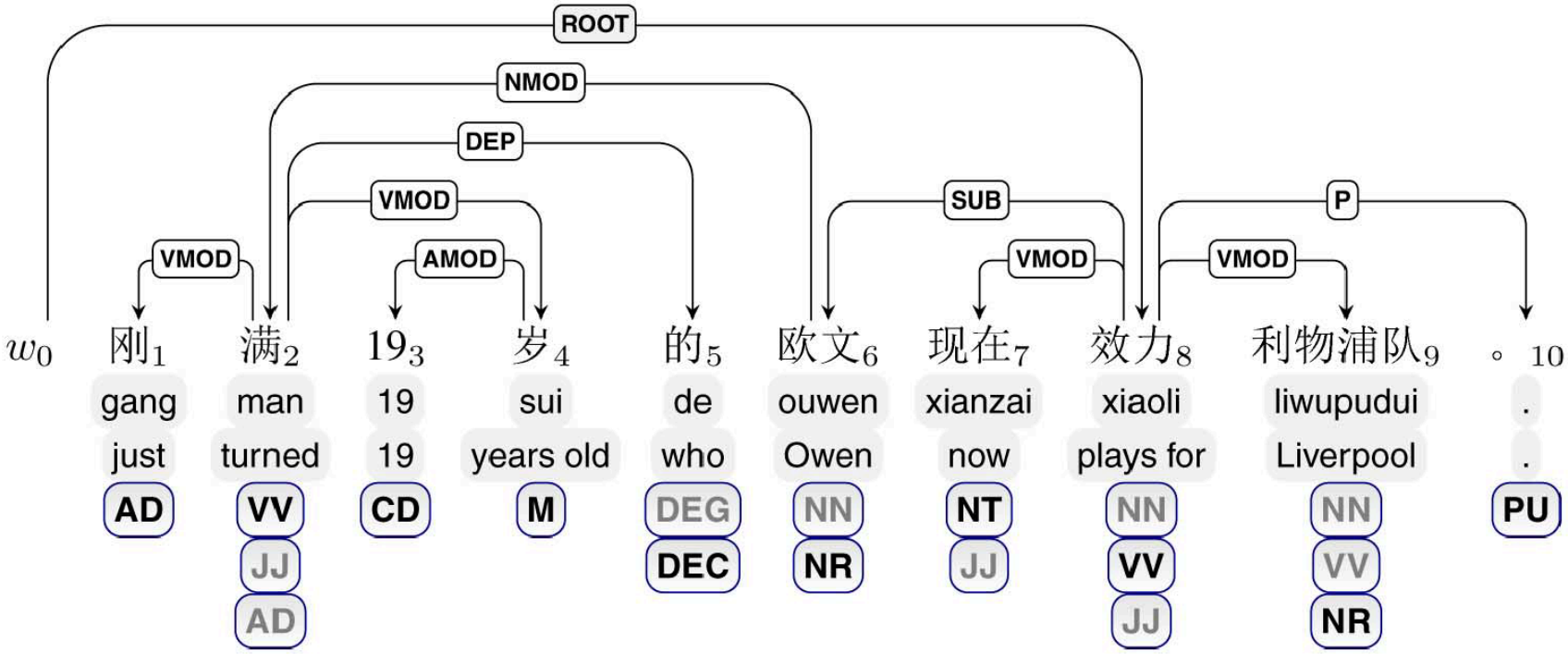
dependency graph:
-> flies/VBZ (root)
  -> Fruit/NNP (nsubj)
  -> banana/NN (nmod:like)
    -> like/IN (case)
    -> a/DT (det)
  -> ./. (punct)
```

https://stanfordnlp.github.io/CoreNLP/

Visualization(Zhenghua Li. et al.)



Zhenghua Li, Min Zhang, Wanxiang Che, Ting Liu, and Wenliang Chen, 'Joint Optimization for Chinese POS Ta gging and Dependency Parsing', *IEEE/ACM TRANSACTIONS ON AUDIO, SPEECH, AND LANGUAGE PROCE SSING,* VOL. 22, NO. 1, JANUARY 2014

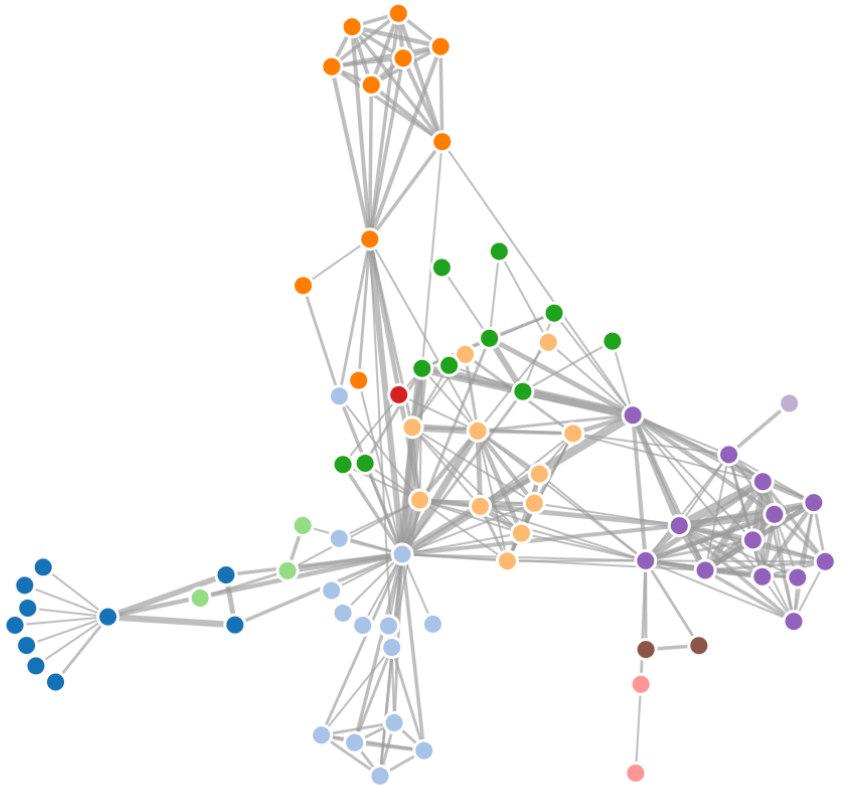
Development

We can make visual system for the ‘dependency tag’ with several visualization techniques.

Related techniques

Force-Directed Graph

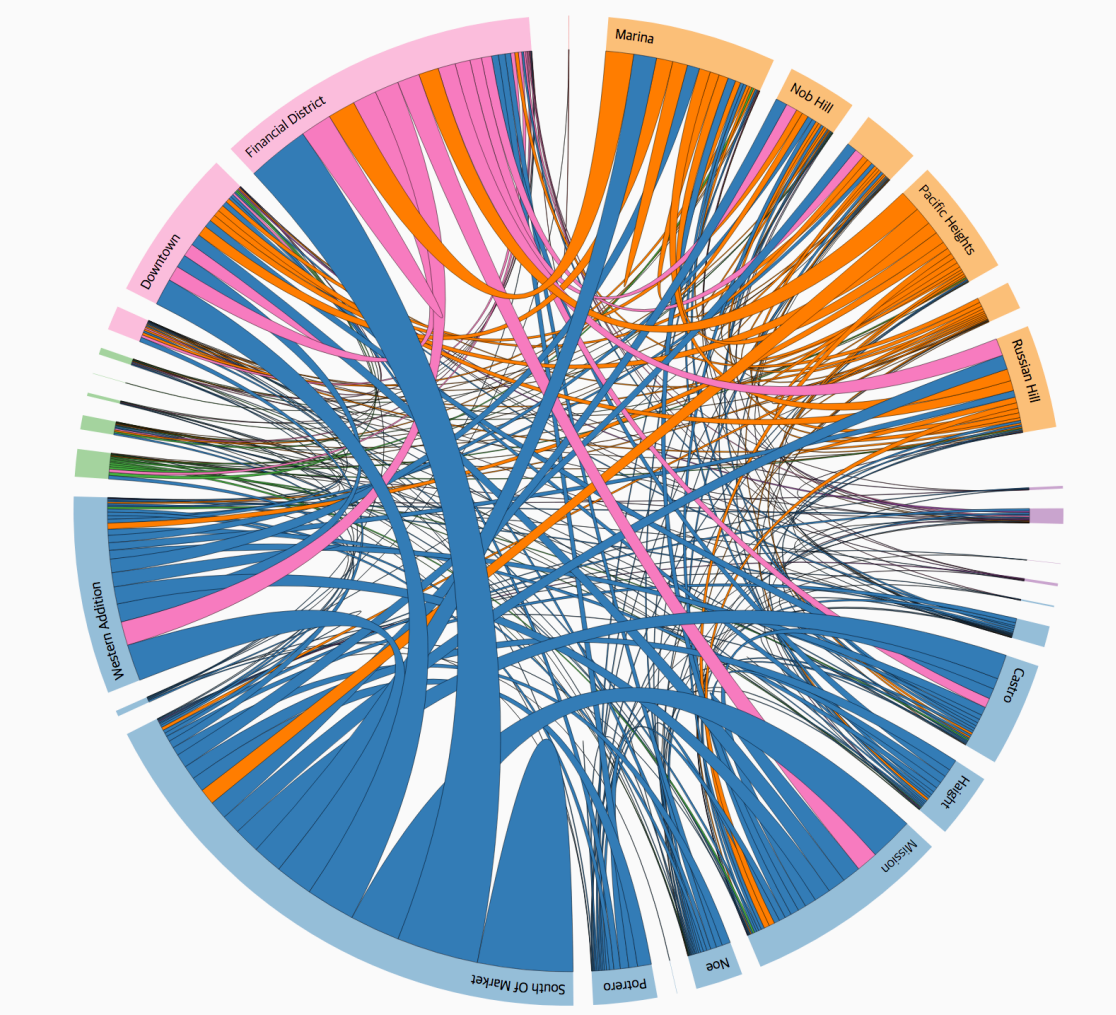
https://bl.ocks.org/mbostock/4062045



Related techniques

Chord Diagram

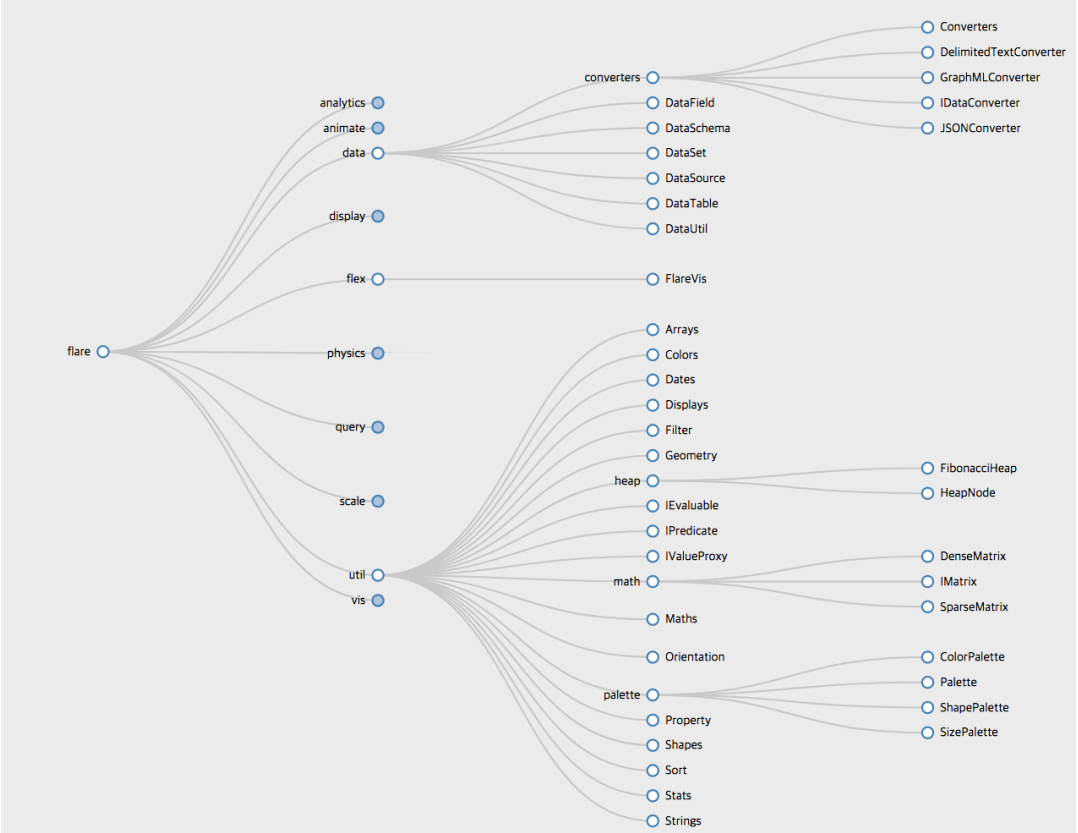
https://bost.ocks.org/mike/uberdata/



Related techniques

Node-Link Tree

http://bl.ocks.org/robschmuecker/7880033



Q&A

Thank you for listening.

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