# Visualización de Datos con Python 3.7 y D3.js

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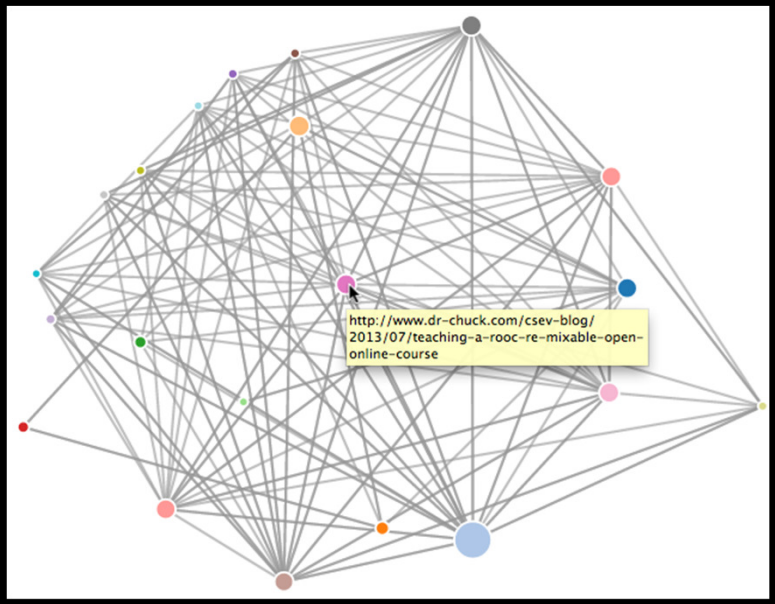
# Caso de estudio: Page Rank

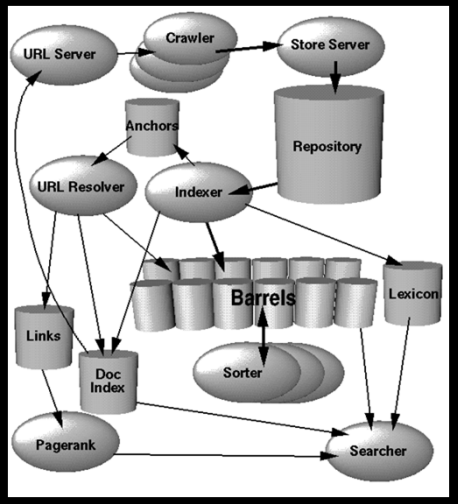
- Escribir un rastreador (crawler) simple de página Web
- Calcular una versión simple del algoritmo Page Rank de Google
- Visualizar la red resultante




http://www.py4e.com/code3/pagerank.zip

# Arquitectura de Motores de Búsqueda

- Rastreo Web (Web Crawling)
- Indexación (Index Building)
- Búsqueda (Searching)




http://infolab.stanford.edu/~backrub/google.html

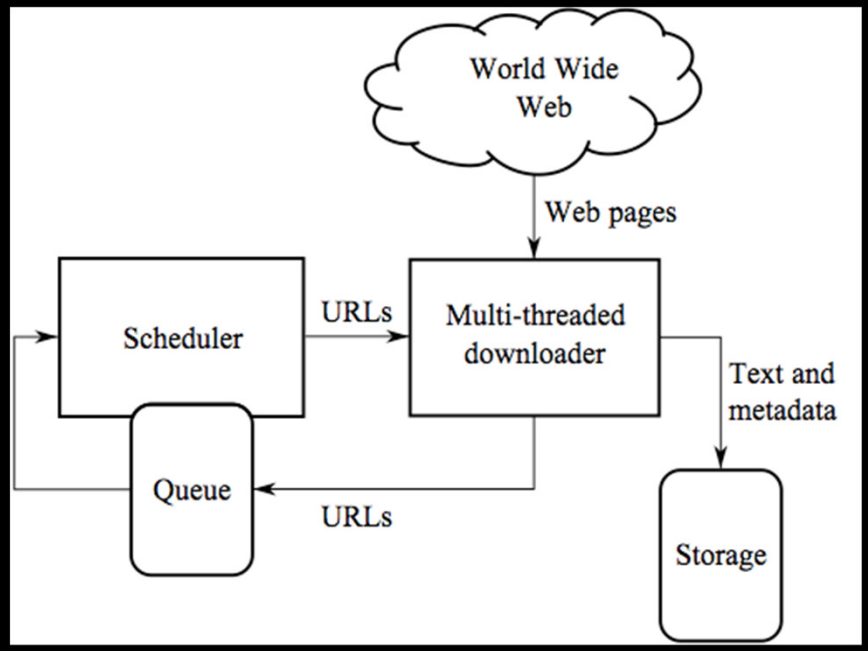
# Rastreador Web (Web Crawler)

Programa en computador que comprende la Internet (World Wide Web) de una manera metódica y automatizada. Es usado principalmente para crear una copia de todas las páginas visitadas para procesamiento posterior por un motor de búsquedas que indexará las páginas descargadas para proveer búsquedas rápidas.

http://en.wikipedia.org/wiki/Web_crawler

# Web Crawler

- Recupera una página
- Examina la página para encontrar enlaces
- Agrega los enlaces a una lista de sitios “a ser recuperados”
- Repite el proceso...




http://en.wikipedia.org/wiki/Web_crawler

# Políticas de Rastreo Web

- Una política de selección que establece cuáles páginas a descargar,
- Una política de re-visitas que establece cuándo verificar cambios a las páginas,
- Una política de cortesía que establece cómo evitar la sobrecarga de sitios Web, y
- Una política de paralelización que establece cómo coordinar rastreadores Web distibuídos

# robots.txt

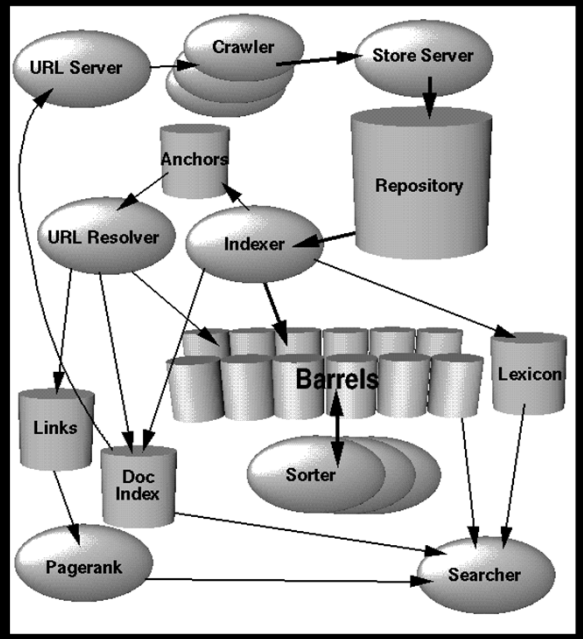
- Una vía para un sitio web de comunicar con los rastreadores web
- Un estándar informal y voluntario


```
User-agent: *
Disallow: /cgi-bin/
Disallow: /images/
Disallow: /tmp/
Disallow: /private/
```

http://en.wikipedia.org/wiki/Robots_Exclusion_Standard
http://en.wikipedia.org/wiki/Spider_trap

# Arquitectura Google

- Web Crawling
- Index Building
- Searching




http://infolab.stanford.edu/~backrub/google.html

# Indexación de Búsquedas

La indexación en motores de búsqueda recopila, analiza, y almacena datos para facilitar la recuperación rápida y precisa de información. El propósito de almacenar un índice es optimizar velocidad y rendimiento en encontrar documentos relevantes para una consulta de búsqueda. Sin un índice, el motor de búsquedas exploraría cada documento en el cuerpo, lo cual requiriría un tiempo y poder de cómputo considerables.

http://en.wikipedia.org/wiki/Index_(search_engine)

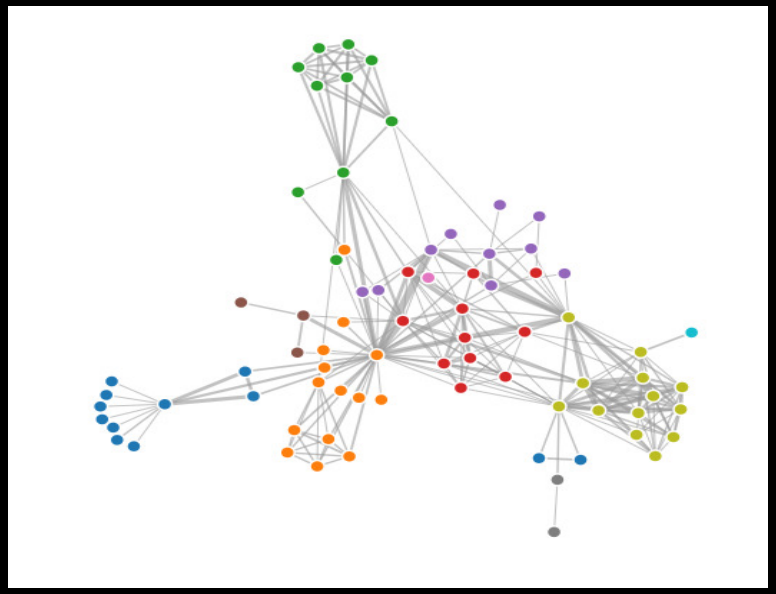
# D3.js

“D3.js es una biblioteca de JavaScript para manipular documentos basados en datos. D3 ayuda a dar vida a los datos usando HTML, SVG y CSS. El énfasis de D3 en los estándares web le brinda todas las capacidades de los navegadores modernos sin atarse a un marco propietario, que combina componentes de visualización potentes y un enfoque basado en datos para la manipulación DOM.”

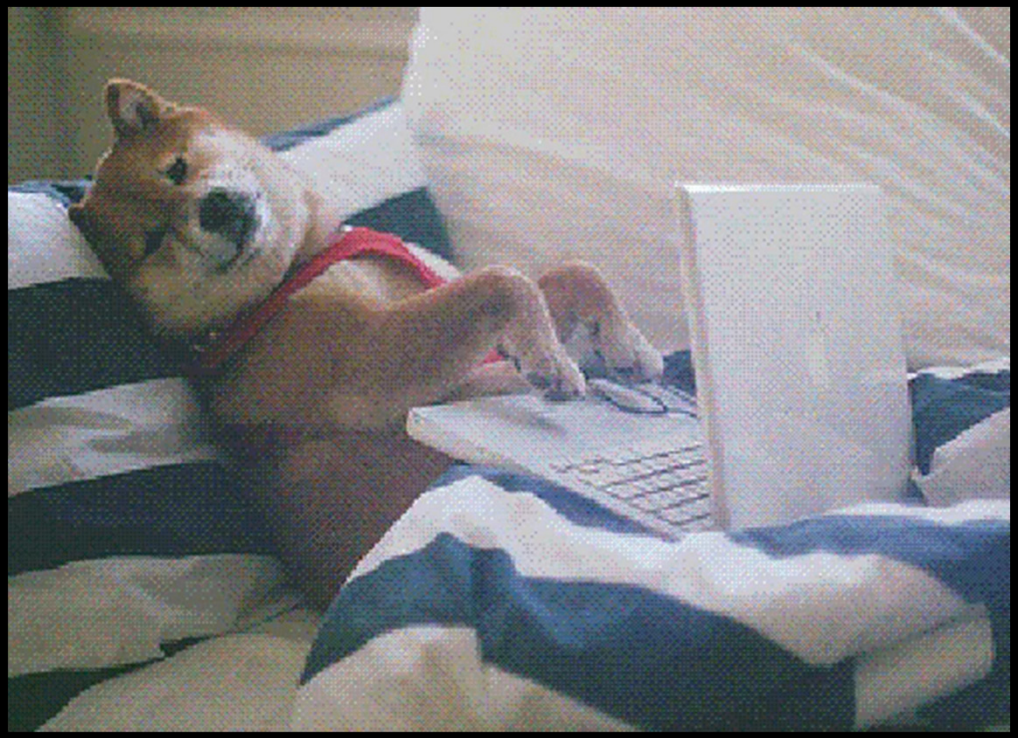
https://d3js.org/

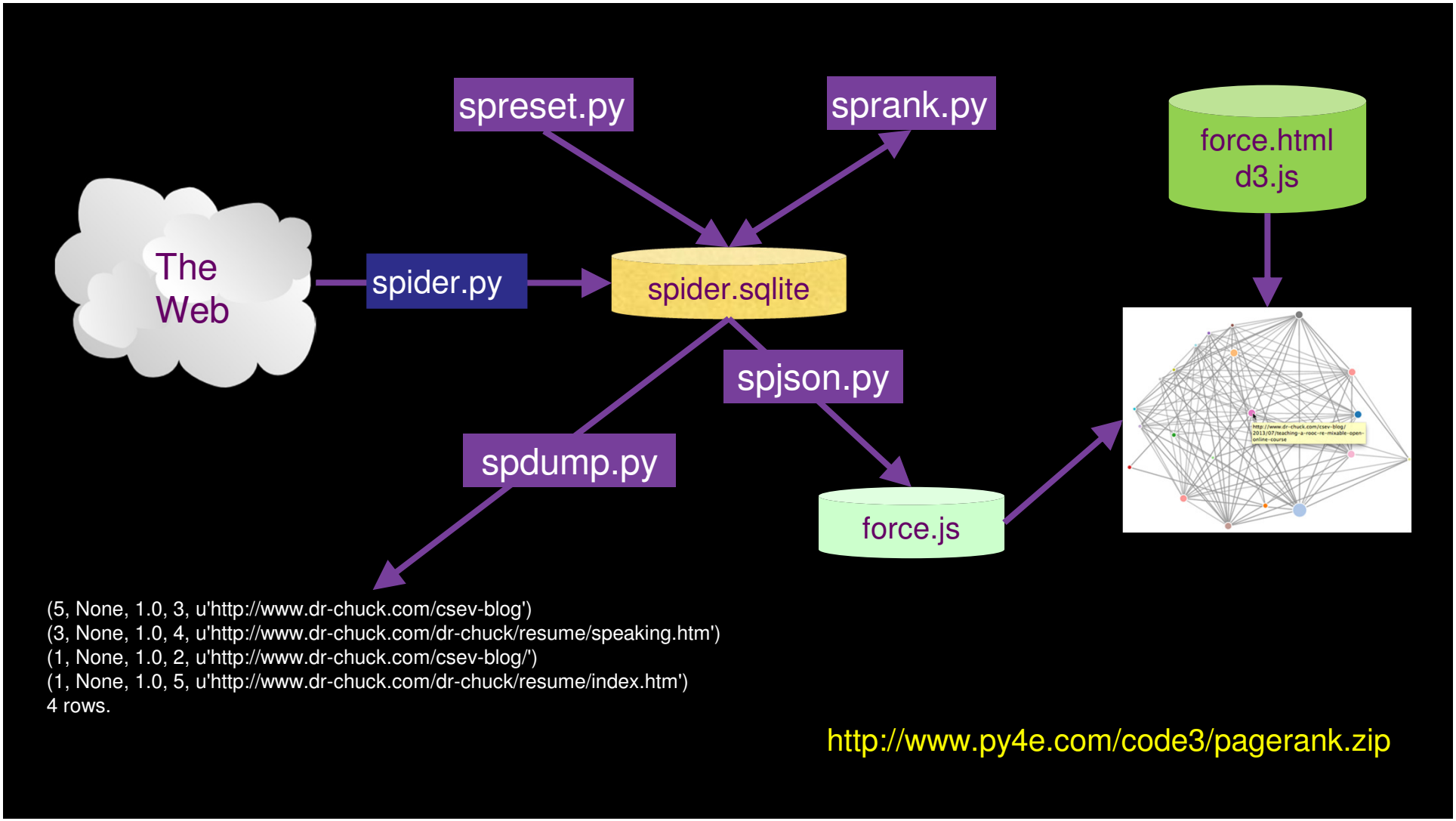
# Aplicaciones en grafos dirigidos

Red de co-ocurrencias entre caracteres en la novela “Los Miserables”



https://observablehq.com/@d3/force-directed-graph



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4 rows.

http://www.py4e.com/code3/pagerank.zip

# Prueba del PageRank para la URL http://python-data.dr-chuck.net

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100 9.480864938011857e-18
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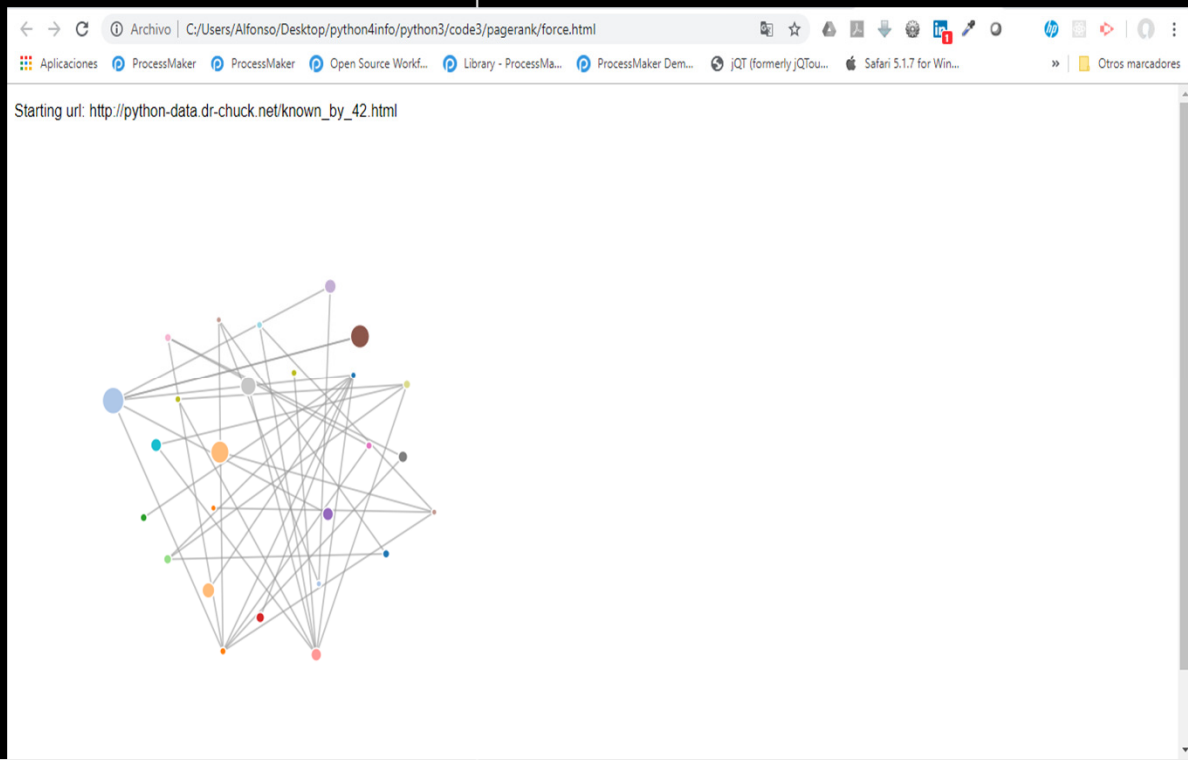

# Prueba del PageRank para la URL https://www.javeriana.edu.co

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6, 0.458554477664786114, 0.4588287184248231 5, 388, 'https://www.javeriana.edu.co/pesquisa/tag/agrocadena')
100 rows.
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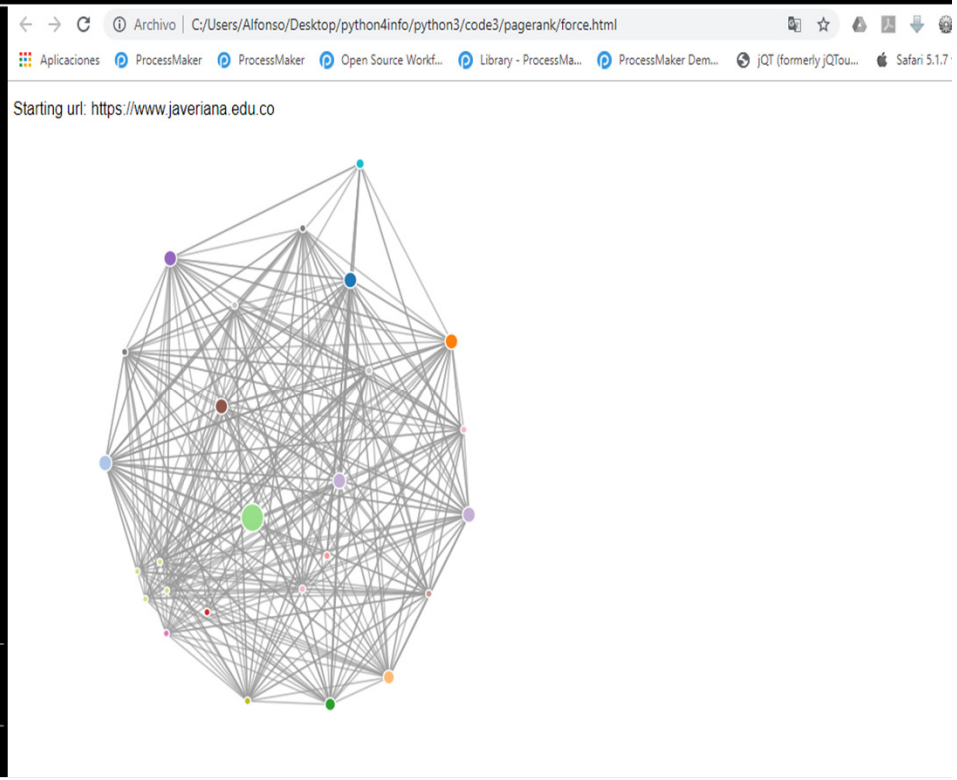

# Referencias y recursos adicionales

- https://www.py4e.com/html3/16-viz
- http://www.dr-chuck.com/
- https://www.youtube.com/playlist?list=PLIRFEj9H3Oj7Bp8-DfGpfAfDBiblRfl5p
- http://infolab.stanford.edu/~backrub/google.html
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# Acknowledgements / Contributions



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