Automating website QA with Quotemine

Open Source Web Crawler

Michael Nolan, PhD
Cerium Software LLC

Today's Topics

- What is Quotemine?
- QA with QuoteMine
  - Setting up your tests
  - Site Health: Broken Links/Site Structure
  - Regex searches
  - Caching/SEO
  - Load Testing / Continuous monitoring
- Future work and additional use cases

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What is Quotemine?

- Python Web Crawler
  - Uses Requests, LXML, BeautifulSoup
  - Systematically crawls all pages in a domain
- Main crawler is pluggable
  - Add/remove/config plugins as needed
- Basic report generation
  - CSV reporting tool to perform basic categorization and statistics

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Quotemine's history

- Pre-Quotemine: Work at ReachLocal
  - QA scripting for company websites & forms
  - International SEO
- First development and use
  - Content replacement on erc-assoc.org
  - “Which 70 of 2,300 pages have this name?”
- Open Source Project
  - Launched Dec. 29, 2015
  - Media coverage & sentiment study

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Quotemine hook system

Miner step	Hooks
Import/Load	Process
	Postprocess
Mine	Preprocess
	Process
	Postprocess
Process URL	Parse
	Postprocess
Process Data	Process
Generate Reports	Preprocess
	Process
	Postprocess
Export/Save data	Preprocess
	Process
	Postprocess
Reset Data	

Quotemine PageParser hooks

Parser Step	Hooks
Parse document	Parse Tag
	Parse data in tag

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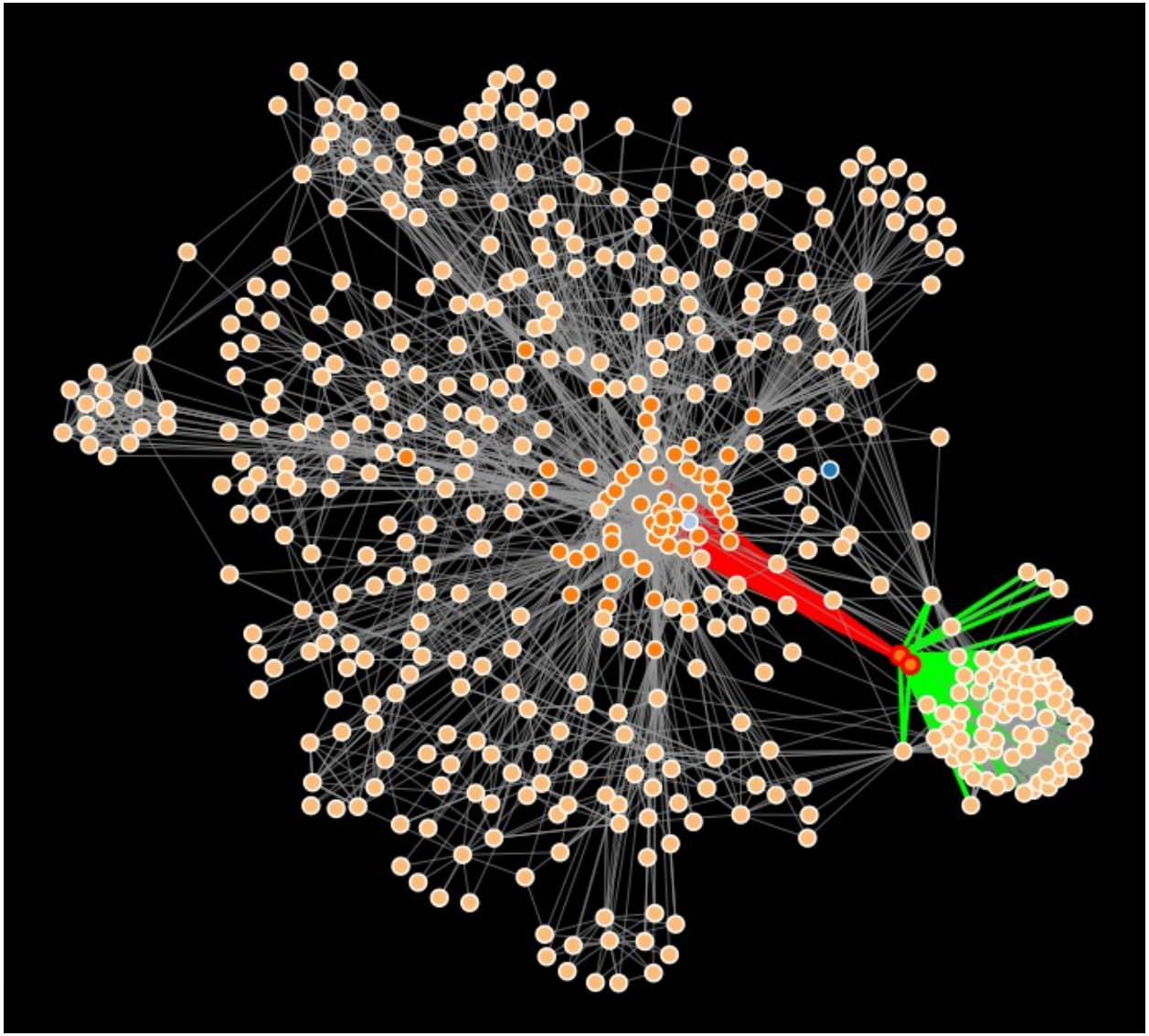
Quotemine Data Examples



EPA.gov linkmap

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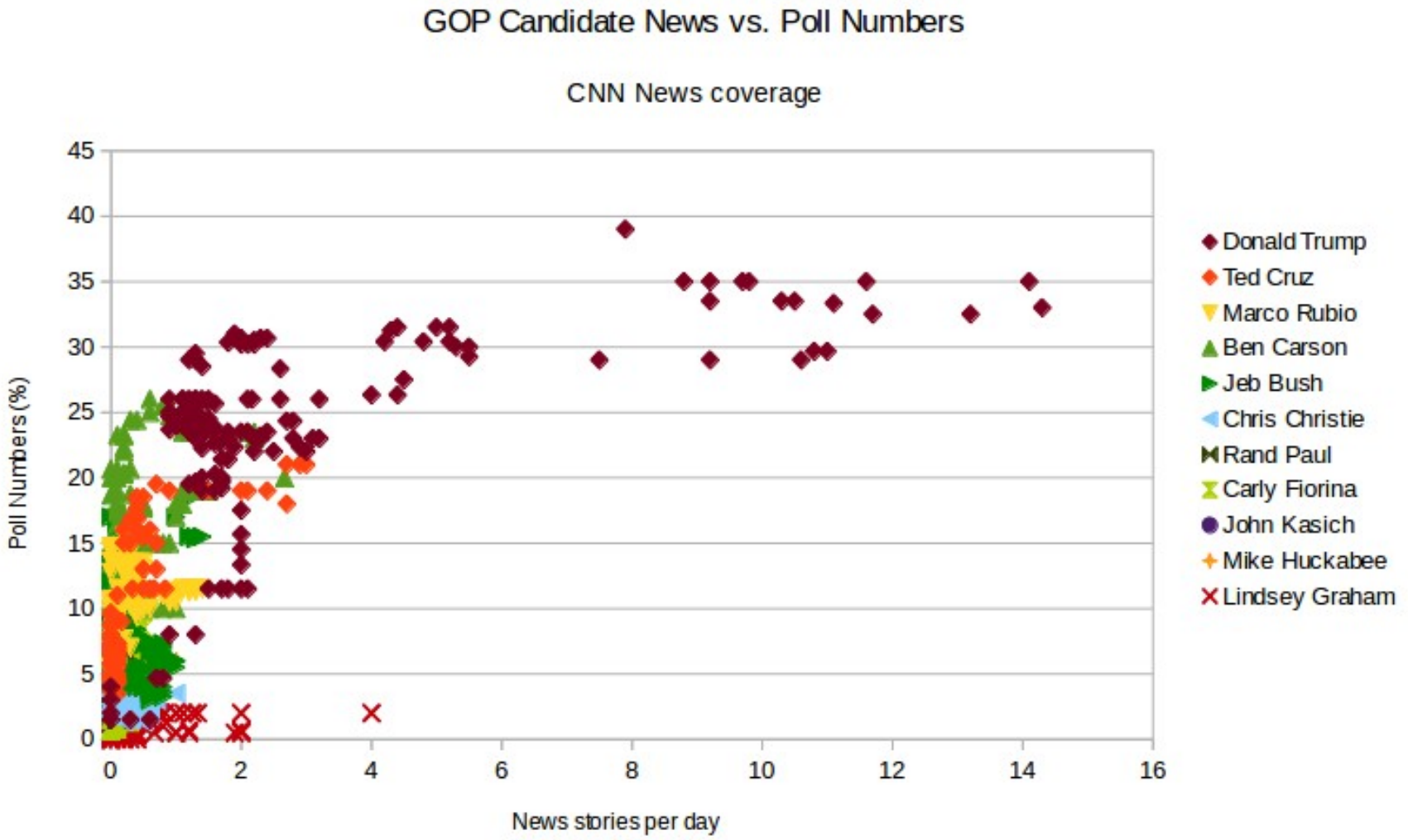

Quotemine Data examples

	A	B	C	D
1	author	title	Donald Trump	Donald Trump
2	Michael Tanner	Greece and America -- Too Similar for Comfo	negative	-0.640691
3	Kevin D. Williamson	Donald Trump's 2016 Debate Lies: He Did G	negative	-0.539474
4	David French	Ted Cruz Defeats Donald Trump in GOP Deb	negative	-0.43995
5	Veronique Rugy Brenda	The Corner | National Review Online	negative	-0.434278
6	Andrew C. Mc Carthy	Hillary Clinton's E-mail -- Felony Violations	negative	-0.432525
7	Andrew C. Mc Carthy	Hillary Clinton's E-mail -- Felony Violations	negative	-0.432525

	A	B	C	D
1	author	title	Donald Trump	Donald Trump
2	Jim Geraghty	Donald Trump's Rise Foreshadowed by CPA	positive	0.528398
3	Donald R. Brand David I	Donald Trump	positive	0.322581
4	Donald R. Brand David I	Donald Trump	positive	0.322581
5	Victor Davis Hanson	Donald Trump	positive	0.259788
6	Victor Davis Hanson	Donald Trump	positive	0.259788
7	Elaina Plott	Speaker Ryan Chats with Former Speaker N	positive	0.181751
8	Mona Charen	Donald Trump	positive	0.177872

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QA with Quotemine

- Quotemine is primarily a **content** analyzer
  - Examines client-side content
  - Cannot see orphaned content, PHP code
    - Combine with New Relic, etc.
- Custom plugins
  - Analyze request
  - Combine with Selenium/Ghost.py to execute JS
  - Send content to 3rd party API for storage/analysis
  - Make additional GET and POST requests

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Setting up your QA project

What are you looking for?

- Broken Links
- Content/URLs that shouldn't be exposed
- Hard-to-find pages
- Slow/uncached pages
- Background process load

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Quotemine workflow

- Build URL list
  - Manual feed homepage or load save file/template
- Crawl site
  - Grab metadata, load performance, content of interest
- Generate reports
  - CSV output of all data by URL/revision
  - Category reports with CSVManager
- Export Save file

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Broken/exposed links

- Miner Core
  - Gets HTTP status of links
- LinkFilter
  - Link discovery engine; finds and categorizes URLs
  - Determines click depth
  - Generates a structure map of URLs by section
- SiteMapper
  - Generates visualizations of site structure
  - Maps click depth and gateway pages

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Exposed Content

- Miner Core
  - Grabs text from each request for analysis
- TextAnalyzer
  - Can parse all words into word counts/densities
  - Regex-based searches of tag content or full pages
- SentimentAnalyzer
  - Feeds content to IBM Watson API
- AuthorFilter/DateFilter
  - Purpose built for extracting page author/post date

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Hard-to-find/should-be-hidden pages

- Miner Core
  - Logs redirects
- LinkFilter
  - Lists all found URLs, and pages on which they are located
  - Also reads links in metadata (i.e. short form)

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Slow pages

- Miner Core
  - Logs page load times
  - Use repeat_mine() to test caching
- HeaderFilter
  - Reads request headers
  - Useful for grabbing Drupal and Varnish Cache Information
- Pair with Charles Proxy for more load info

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Slow processes

- Pair QuoteMine with New Relic
  - QuoteMine mimics anonymous user behavior
  - Use multiple instances to increase load
- Linkfilter configuration
  - Limit allowed URLs to specified site sections
  - Include/exclude URLs by type
    - Internal, External, and File type URLs

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Continuous Monitoring

- repeat_mine() function
  - Repeat runs on an interval basis
  - Optionally break reports into time periods
  - Tweak timings to maintain continuous monitoring for extended periods

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Additional Use Cases

- Content scraping and analysis
  - News topic coverage
  - Mapping topics to authors
  - Sentiment analysis
- Web-based databases
  - Pull down online databases which don't have a download option

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Future Work

- Ghost.py/Selenium integration
  - Execute JS to load dynamic content
  - Screen capture
  - Interact with content (test forms/AJAX)

- Expanding BeautifulSoup integration
  - Use CSS selectors instead of traversing HTML structure

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Thank you for your time!

- My email
  - mike@ceriumsoft.com
- QuoteMine repo:
  - http://bit.ly/cerium-quotemine

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