

A.L.C.I.D.E.

Analysis of Language and Content In a Digital Environment

Stefano Menini
menini@fbk.eu

Digital Humanities
Fondazione Bruno Kessler, Trento
<http://dh.fbk.eu>
https://twitter.com/DH_FBK

Online platform to perform temporal, geographical, and linguistic analysis of historical documents.

Explore historical documents



```
graph TD; A[Explore historical documents] --> B[Extract information]; A --> C[Visualise data];
```

Extract information

State of the art
Human Language
Technologies

Visualise data

Intuitive and
understandable
data representation

Strong connection between ICT and humanities research.

Expert users (historians)
involved in the development
of the platform.

A tool that actually meets the needs of historical research.

ALCIDE features

- Perform searches on a specific **temporal span**.
| Every information in ALCIDE is time bounded.
- Interconnection between *distant* and *close reading*
| It is always possible to move from charts and graphic representations to the content of the documents. The system can be used for both **qualitative** and **quantitative** analysis of historical sources
- Data **comparison**
| Comparison of data over different authors and time.

ALCIDE features

- Flexible: can be applied to different corpora and time periods
Possibility to *import corpora*, ALCIDE allows user to analyse any document.
- Intuitive and **easy** to use
Can be accessed entirely via browser. No need to install it. No need to configure it.
- Multilingual
Available in English and Italian

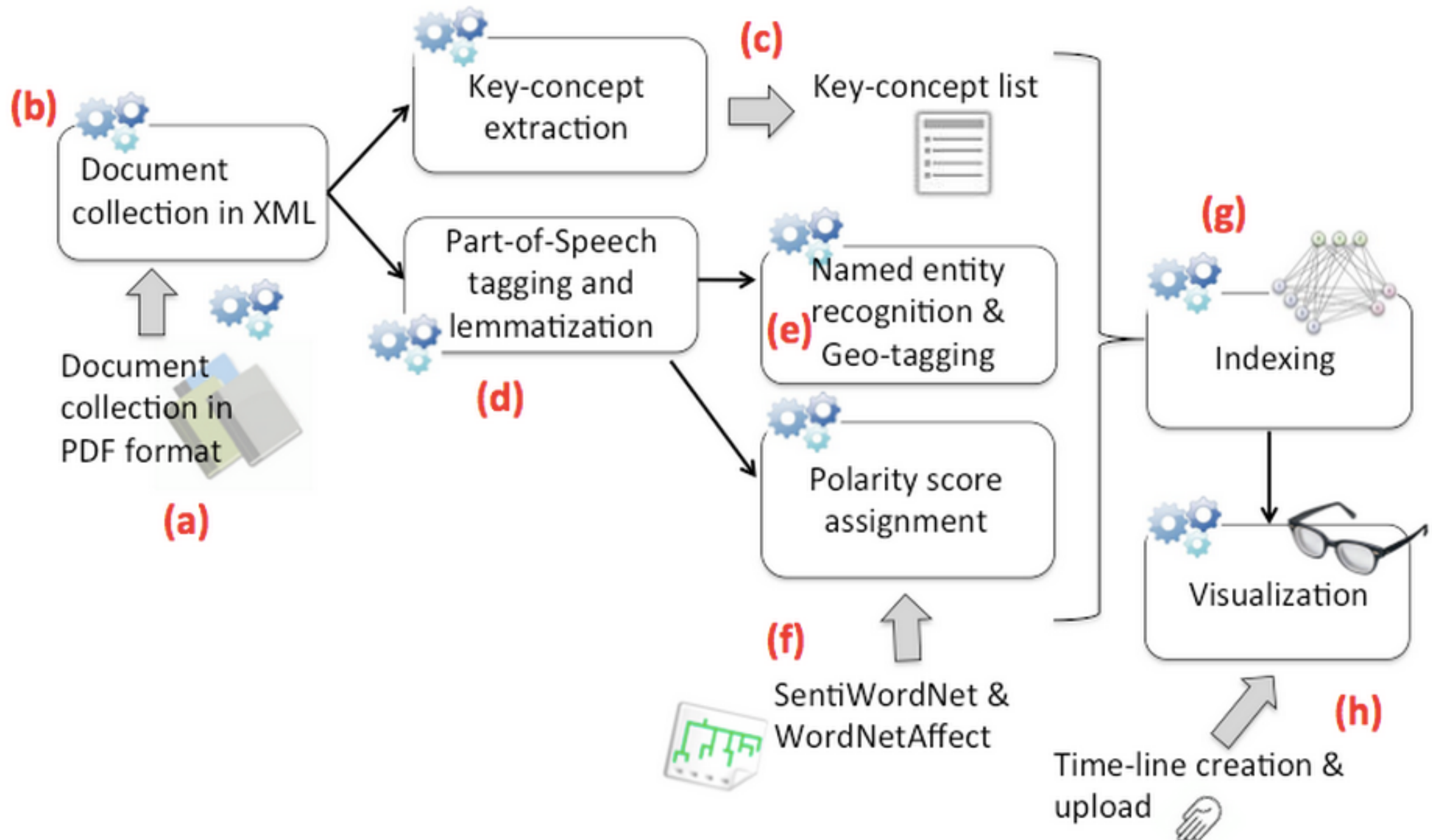
Linguistic Information

Exploit NLP technologies to automatically extract:

- **Part-of-Speech** (nouns, verbs, adjectives)
- **Lemmata** (canonical form)
- **Named Entities** (persons, locations, organizations)
- **Co-occurrences**: cold + war / nuclear + war
- **Keywords** (main concepts)
- **Sentiment** (positive, negative and neutral)

Every information is **time** bounded.

Workflow



Case Study



1960 USA Presidential campaign speeches: **Nixon** and **Kennedy**

- 900 speeches transcriptions.
- More than 1.5 million words.
- Two different authors, from the same period, speaking of the same topics.

Interface

A.L.C.I.D.E. - Analysis of Language and Content In a Digital Environment

De Gasperi Kennedy Nixon IRVAPP_Corpus

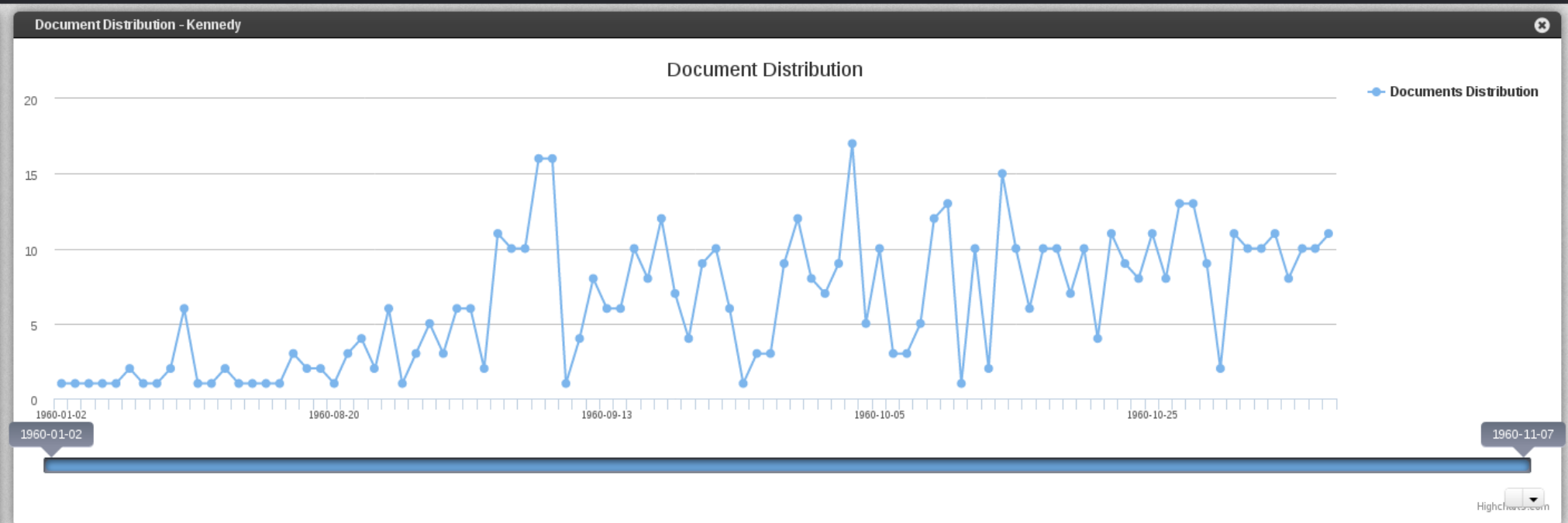
Distribution Geographical Lemma Distribution Full Text Search Keywords Person Co-Occurrences

File List - Kennedy

Sort by: Original Book Order

FILES

- Fair Labor Standards Speech by Senator John F. Kennedy, Delivered in the Senate
- Letter to Rabbi Israel Goldstein by Senator John F. Kennedy
- Statement of Senator Kennedy on the Announcement of Representative Chester Bowles
- Statement of Senator John F. Kennedy on Rep. Aime J. Forand as National Chairman, Senior Citizens-For-Kennedy Committee, Washington, DC
- Statement of Senator John F. Kennedy on the Action of the Finance Committee on Medical Care of the Aged, Washington, DC
- Speech of Senator John F. Kennedy, Memorial Program, 25th Anniversary of Signing of Social Security Act, Hyde Park, NY
- Speech by Senator John F. Kennedy Delivered in the Senate on "Airlift Africa"
- Text of a Letter by Senator John F. Kennedy to Senator Clinton Anderson
- Text of the Telephone Message Sent by Senator John F. Kennedy to the National Association of County Officials Meeting Miami, FL
- Press Release of Senator John F. Kennedy, on Minimum Wage Bill, Washington, DC
- Press Release of Senator John F. Kennedy on National Committee of Business and Professional Men and Women for Kennedy and Johnson, Washington, DC
- Press Release of Senator John F. Kennedy on Farmers for Kennedy-Johnson, Washington, DC
- Press Release of Senator John F. Kennedy on Sen. George Smathers as Assistant Democratic National Chairman
- Background Memorandum Prepared by Senator Kennedy's Office
- Texts of a Democratic Farm Policy Statement by Senator John F. Kennedy, Together with His Introductory Comments, and of a Statement of His Own On the Same Subject, Hyannis Port, MA
- Press Conference of Senator John F. Kennedy at the Truman Library, Independence, MO
- Statements of Senator John F. Kennedy and Senator Lyndon B. Johnson at the Farm Conference, Des Moines, IA
- Remarks of Senator John F. Kennedy, Des Moines, IA, Kennedy-Johnson Midwest Farm Conference
- Press Conference of Senator John F. Kennedy in the Auditorium at Des Moines, IA
- Press Release of Senator John F. Kennedy on Anderson-Kennedy Amendment, Washington, DC
- Statement by Senator John F. Kennedy on the Senate Floor on Medical Care for the Aged
- Telegram to the 61st Encampment of the Veterans of Foreign Wars by Senator John F. Kennedy
- Press Release of Senator John F. Kennedy on Inability to Attend VFW Convention, Washington, DC



Interface

A.L.C.I.D.E. - Analysis of Language and Content In a Digital Environment

De Gasperi Kennedy Nixon IRVAPP_Corpus

Distribution Geographical Lemma Distribution Full Text Search Keywords Person Co-Occurrences

File List - Kennedy

Sort by: Original Book Order 1 2 Search...

FILES SHOW DATE

- Speech of Senator John F. Kennedy, Chicago Auditorium, Chicago, IL
- Speech of Senator John F. Kennedy, Fieldhouse, University of Wisconsin, Madison, WI
- Speech of Senator John F. Kennedy, Fieldhouse, University of Wisconsin, Madison, WI
- Speech of Senator John F. Kennedy, Milwaukee, WI
- Press Conference of Senator John F. Kennedy, Anchorage, AK, Westward Hotel

Co-Occurrences - Kennedy

atomic

Search Range 60 ↺ ↻

Data Type:

☒ Expressions ☐ Persons ☐ Geo Names ☐ Organization

Colorize by Dimension Polarity Save as PDF

1960-01-02 1960-11-07

Show/Hide

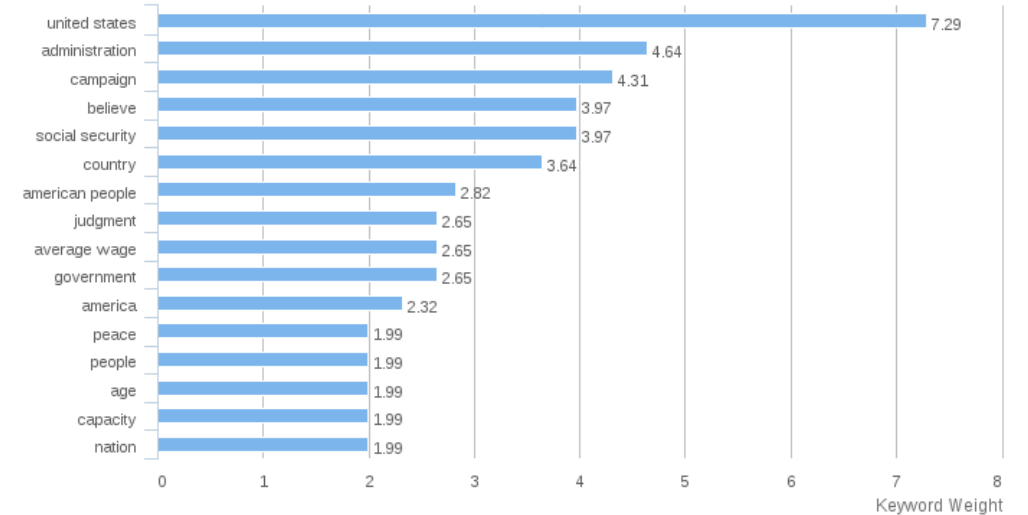
Speech of Senator John F. Kennedy, Chicago Auditorium, Chicago, IL

Chicago, IL, 1960-11-04

Senator KENNEDY. Mayor Daley, my distinguished colleagues in the Congress, my friend and Colleague in the U.S. Senate and the next Senator from Illinois, Senator Paul Douglas [applause], the next Governor of the State of Illinois, Otto Kerner [applause], ladies and gentlemen, I come here tonight in the closing days of this Campaign and ask your help. [Applause.] In 3 days, on Tuesday, November 8, this campaign will come to an end, and then the people of the United States must make their judgment, not only between the two candidates, not only between our two parties, but also between the two philosophies of government which we represent, the two views we have of our country's future, and our message. [Applause.] I want to make very clear that contrary to what you may have come to think this week, we are not electing a committee for President of the United States. [Applause.] I have seen pictures in the paper of the rescue squad. [Response from the audience.] Nelson Rockefeller, Thomas F. Dewey [response from the audience], Cabot Lodge [response from the audience], and I understand they are adding Alf Landon to their strategy board this weekend on how to win their campaign. [Response from the audience.] I want to make it very clear that they are not all running for the Presidency. Mr. Nixon is running. He is the one the people have [response from the audience] you have to choose between Mr. Nixon and the Republican Party and Mr. Kennedy and the Democratic Party. [Applause.] You have all seen elephants in the circus, and you have seen how they grab the tail of the elephant in front of them, and they pull themselves around that way. [Applause.] Mr. Nixon grabbed that tail in 1952 and 1956, but now he is running, not President Eisenhower but Mr. Nixon. [Response from the audience.] I fly back to the East to finish the last 3 days of this campaign and then I await the results in Massachusetts with my wife and my daughter. [Applause.] Whatever the outcome may be, whatever the outcome may be, I shall not forget the last few months. It has taken me to every section of the United States, and I have visited the famous, ancient places of Valley Forge, Hyde Park, Warm Springs, Springfield, Ill., and the Alamo. I have seen our Nation's last frontier in Alaska and this morning I saw our Nation's first frontier in Virginia. I have seen America, and I am proud to be an American. [Applause.] There are some who say that presidential campaigns are outmoded, they last too long, they are expensive, they are too arduous, they test popularity, not principle, they require endurance, not insight. How much better it would be, they say, for the candidates to stay home, to keep quiet, depend as in the old days on party managers to circulate the party record. But I disagree. I believe the nature of the campaign tells you something about the nature of the candidate. [Applause.] I believe that the level of daily speeches of a candidate tells you something about what kind of a President he would make. [Applause.] If a candidate for the Presidency cannot stand the pressure of a campaign or of a fifth debate, he cannot withstand the pressures of the Presidency. [Applause.] If he cannot inspire confidence among the American people in the 4 months preceding election, he cannot maintain their confidence in the 4 years of office. [Applause.] In this campaign, I have tried to do the following things: First, I have tried to tell the truth to the American people, whether that truth [applause] whether that truth was pleasant or not. I sought to serve the American people, not to please them. [Applause.] I did not reassure the voters that our prestige was at an all time high, because that would not have been true. And anti-American riots in Tokyo and Caracas, American defeats in the U.N. and the Organization of American States, and speeches in Panama and in Havana, made those clear long before the USIA polls were leaked to the press. [Applause.] I did not tell the voters that regardless of what kind of an effort we make in the next 12 months we were bound to remain first militarily, because that would not necessarily have been true. We are now entering the age of the missile gap, when our nuclear striking power, backed up by larger, more mobile conventional forces, may no longer necessarily convince the Russians of our capacity to survive a surprise attack and also be able to strike back at their willingness to fight. Nor did I reassure the voters that we were enjoying "unprecedented prosperity," because that would not have been true. [Applause.] There is no point in telling the more than 5 million unemployed Americans, the 3 million Americans who work part time, the farmers with the declining income or the coal miner in southern Illinois or in Kentucky or West Virginia or Pennsylvania, who has been out of work for months, that he never had it so good. [Applause.] This country will never get action unless we first face the truth. [Applause.] Secondly, I have tried in this campaign to set before the American people their unfinished agenda, the task which Franklin Roosevelt could not have foreseen in the 1930's, the task which President Truman could not complete by 1953. We have, for example, a minimum wage of \$1 an hour, and there are millions of Americans who do not even receive it. I believe \$1.25 an hour is necessary. [Applause.] We have a social security system, but it pays the 16 million Americans who live over the age of 65, it pays them an average social security check of less than \$72 a month. I believe that medical care for the aged tied to social security must be passed by the next Congress. [Applause.] We have 15 million American homes in the United States that are substandardized, 5 million American homes in the cities of the United States that lack plumbing of any kind, and yet in spite of the fact that our population is steadily increasing, this year, in September, we built 30 percent less homes than we did a year ago. I believe we are going to do better. [Applause.] We need legislation to help those Americans who live in those areas of chronic depression. The Congress twice under the leadership of Senator Douglas has tried to pass a bill to assist them, and twice this administration has vetoed it, and next year the President will sign it. [Applause.] And then we have millions of Americans whose full and equal rights under the Constitution, regardless of their race or their creed or color has been recognized in law but unfulfilled in fact. These are some of the items left over for the 1960's, and it is to this agenda that we shall devote ourselves in January of 1961. [Applause.] Thirdly, I have in this campaign not merely attempted to prolong the present but look forward to the future. If we are to educate all of our children in the next 10 years, who will be going to our schools and applying to our colleges, we will need more teachers than we now have in the service by double. [Applause.] And we want to make sure that they are well compensated and well trained. [Applause.] By 1970, there will be twice as many of your sons and daughters, twice as many, applying for admission to colleges as applied this year, and we have to make it possible for them to have the education they deserve, we are going to have to build as many college dormitories and classrooms in the next 10 years as we built in the last 200. These are some of the problems that these United States of ours faces, some of the opportunities. I want to make it clear as an American that I am not satisfied to have 35 percent of our brightest boys and girls who

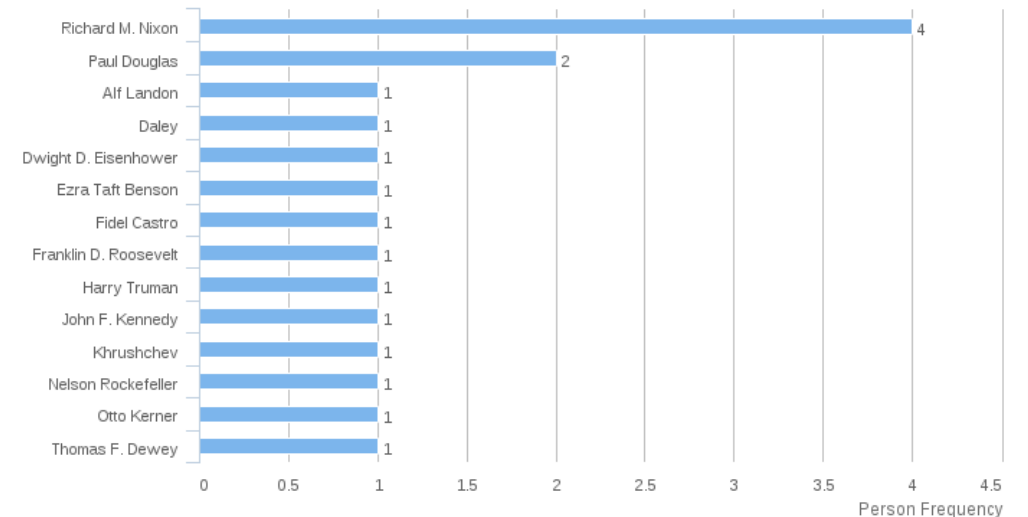
Text Classification

Keywords



■ Relevance

Persons



■ Frequency

Person Name - Nixon

Edit

Persons

Person Frequency

Person Distribution

1960-08-01 1960-08-27 1960-09-19 1960-09-30 1960-10-11 1960-10-23 1960-11-02 1960-11-07

Word Cloud Names: Richard, Dwight D., Nikita Kh, John F. I, Andrew Jackson, Patri, Harry, Thon, Ken, Woodrow Wilson, Fidel, Henry Cabot Lodge, Nelson Rockefeller, Mao Tse-tung, Thomas Jefferson, Vladimir Wilson, Hitler, Macmillan, Ezra Taft Benson, Adenauer, Adlai Stevenson, Ken Keating, Bill Stratton.

Person	Frequency
Nikita Khrushchev	873
Dwight D. Eisenhower	680
John F. Kennedy	619
Richard M. Nixon	473
Patricia Nixon	228
Harry Truman	157
Fidel Castro	120
Henry Cabot Lodge	67
Nelson Rockefeller	59
Andrew Jackson	37
Mao Tse-tung	37
Thomas Jefferson	33
Vladimir Wilson	32
Hitler	30
Macmillan	26
Ezra Taft Benson	25
Adenauer	22
Adlai Stevenson	22
Ken Keating	22
Bill Stratton	20

Person Distribution Data (Dwight D. Eisenhower):

Date	Frequency
1960-08-01	0.1
1960-08-05	0.1
1960-08-10	0.1
1960-08-15	0.1
1960-08-20	0.1
1960-08-25	0.1
1960-08-27	0.1
1960-09-01	0.1
1960-09-05	0.1
1960-09-10	0.1
1960-09-15	0.1
1960-09-19	0.1
1960-09-23	0.1
1960-09-27	0.1
1960-10-01	0.1
1960-10-05	0.1
1960-10-09	0.1
1960-10-13	0.1
1960-10-17	0.1
1960-10-21	0.1
1960-10-25	0.1
1960-10-29	0.1
1960-11-02	0.1
1960-11-06	0.1
1960-11-10	0.1
1960-11-14	0.1
1960-11-18	0.1
1960-11-22	0.1
1960-11-26	0.1
1960-11-30	0.1

Interface

A.L.C.I.D.E. - Analysis of Language and Content In a Digital Environment

Distribution
Geographical
Lemma Distribution
Full Text Search
Keywords
Person
Co-Occurrences

File List - Kennedy
Sort by: Original Book Order
Search...

FILES

Remarks of Senator John F. Kennedy, 90th Street Rally, New York, NY

Remarks of Senator John F. Kennedy, New York State Democratic Committee, Commodore Hotel, New York, NY

Remarks of Senator John F. Kennedy Outside of Coliseum, New York, NY

Excerpts of Remarks by Senator John F. Kennedy, New York Coliseum, New York, NY

Speech by Senator John F. Kennedy, to the Associated Business Publications Conference, Biltmore Hotel, New York, NY

Question and Answer Period Following Speech of Senator John F. Kennedy, Association of Business Publications, Biltmore Hotel, New York, NY

Speech by Senator John F. Kennedy, National Council of Women, Inc., Waldorf-Astoria Hotel, New York, NY

Speech by Senator John F. Kennedy Prepared for a Dinner Held by the Democratic National and State Committees, Waldorf-Astoria Hotel, New York, NY

Speech of Senator John F. Kennedy, National Conference on Constitutional Rights and American Freedom, Park-Sheraton Hotel, New York, NY

Excerpts of Remarks of Senator John F. Kennedy, Public Rally, Hotel Theresa, New York, NY

Remarks of Senator John F. Kennedy, City Hall Steps, New York, NY

Remarks of Senator John F. Kennedy, Entrance of Union Hall, New York, NY

Remarks of Senator John F. Kennedy, Auditorium, Union Hall, New York, NY

Speech of Senator John F. Kennedy, Al Smith Memorial Dinner, Waldorf-Astoria Hotel, New York, NY

Remarks of Senator John F. Kennedy, Pat Clancy Dinner, Astor Hotel, New York, NY

Speech of Senator John F. Kennedy, Madison Square Garden, Brotherhood of Electrical Workers, New York, NY

Telegram from Senator John F. Kennedy in New York, NY, to Vice President Richard M. Nixon

Statement by Senator John F. Kennedy on Telephone Call To Mrs. Martin Luther King, at Impromptu Press Conference, New York, NY

Remarks of Senator John F. Kennedy, I.L.G.W.U. Rally, New York, NY

Remarks of Senator John F. Kennedy, ILGWU Rally, New York, NY

Remarks of Senator John F. Kennedy, Union Square, New York, NY, Amalgamated Clothing Workers Rally

Remarks of Senator John F. Kennedy, Trade Union Council of Liberal Party, New York, NY

Remarks of Senator John F. Kennedy, Stuyvesant Town Rally, New York, NY

Remarks of Senator John F. Kennedy, New York University, Washington Square, New York, NY

Telegram from John F. Kennedy to National Maritime Union 12th Convention, New York, NY

Geographical Distribution - Kennedy

Geographical Distribution - Nixon

Work in progress

Points of view comparison.

- Between authors

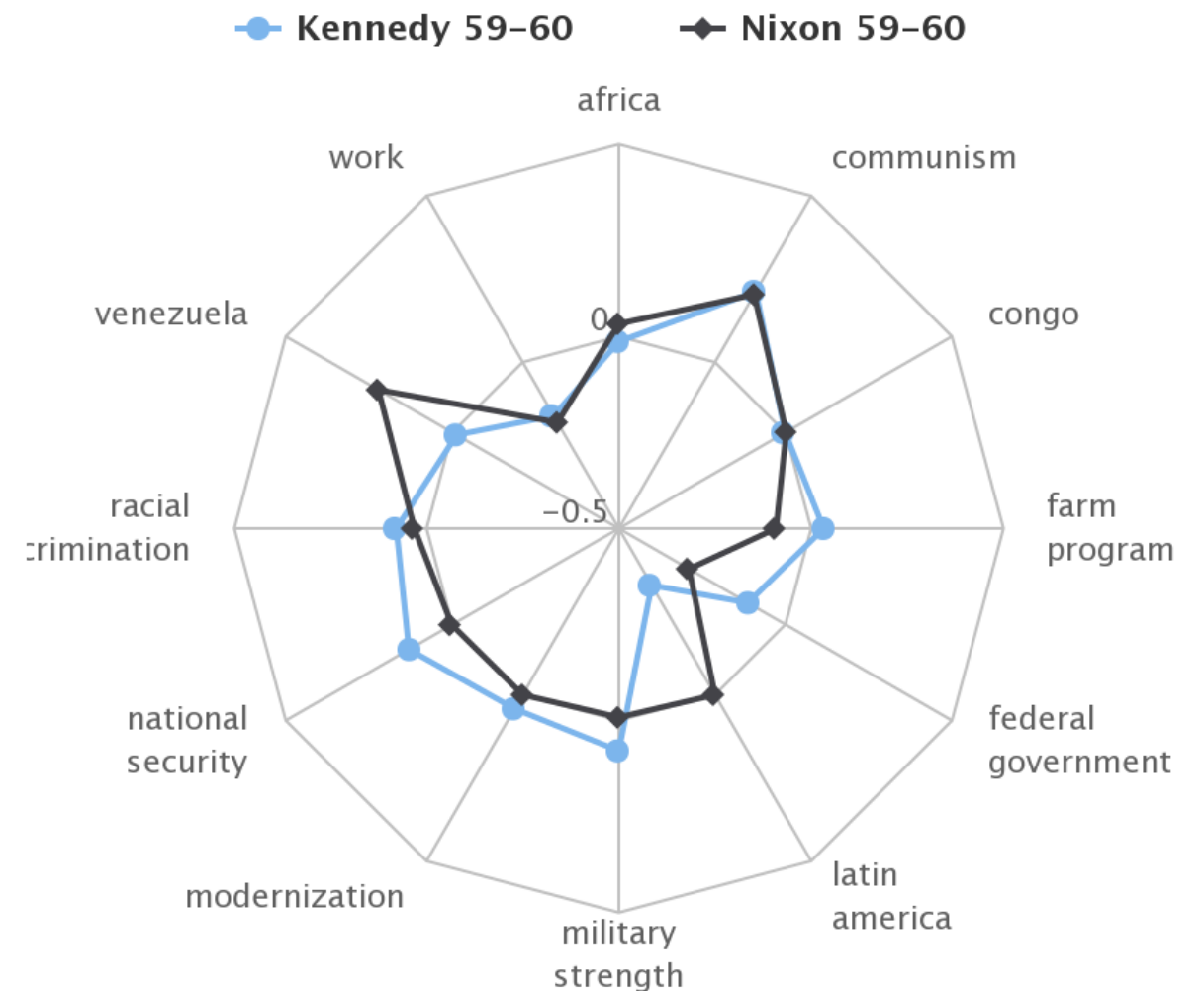
Similarity between points of view on a **topic**.

- With respect to the public opinion:

Diachronic: innovation and impact of ideas.

Synchronic: alignment with the public opinion.

Nixon-Kennedy vs Google N-grams



Final considerations

Tools and visualizations should **support and not replicate** historians interpretative reasoning

Help to deal with the increasing amount of digital data available.

ALCIDE offers functions - **powerful and easy to use** - that aim to support historians to **discover new insights** and to **confirm hypotheses**.

Video **demo** of ALCIDE available at <http://dh.fbk.eu/projects/>

Thank you!

Resources

TextPro (Pianta et al., 2008)

KX (Pianta and Tonelli, 2010)

EntityPro (Pianta et al., 2008)

StanfordNRE (Finkel et al. 2005)

SentiWords (Guerini et al., 2013)

WordNet-Affect (Strapparava and Valitutti, 2004)

SentiWordNet (Baccianella and Sebastiani, 2010)

OpenStreetMap (<http://www.openstreetmap.org/>)

ArcGIS (geocode.arcgis.com)

Resources

Java Libraries

- Google Guava : File and string manipulation and data structures
- Apache commons-io : file manipulation
- Apache commons-lang : string manipulation
- Apache commons-collections: data structures

Javascript Libraries

- Jquery: DOM manipulation
- leaflet.js: geographic map integration
- highcharts: charts render
- d3.js: data visualization framework
- gridster and isotope: layout design

CSS & Design:

- bootstrap framework
- font-awesome
- glyphicons