

# Temporal Role Annotation and Disambiguation with the help of DBpedia

Maria Koutraki

12th DBpedia Community Meeting, Vienna 10.9.2018

# What is a role?

“the position or purpose that someone or something has in a situation, organization, society, or relationship”<sup>1</sup>

- A role is a position
- Anything (in particular *named entities*) can take over a role

A role is not a named entity, refers to a named entity!

ROLE	PERSON	LOCATION
The Pope	asked Michelangelo,	when the Sistine Chapel ceiling will be ready.

Refers to



Julius II

<sup>1</sup> Cambridge dictionary

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Categories:

- Permanent roles (e.g. human, mother, ...)
- **Temporal restricted roles** (e.g. CEO of a company, Pope, ...)

<sup>1</sup> Cambridge dictionary

# Why (Temporal) Roles?

*shale WSJ*

## Behind the Pope's Embrace of Castro

The warmth and hospitality that Pope Francis showed to Raúl Castro at the Vatican last week has hardly been mentioned for good reason. The dictator went to Rome for a PR boost. The pontiff obliged him.

During their encounter Castro mocked the faith with a quip about returning to the church if the pope behaved. He also mocked every Cuban refugee, dead or alive, by giving the pope, of all things, a piece of art depicting a migrant at prayer.

Pope Francis gave the dictator a copy of his 2013 apostolic exhortation titled "The Joy of the Gospel" in which he sharply criticizes economic freedom. Talk about preaching to the converted. As Raúl put it, "The pontiff is a Jesuit, and I, in some way, am too. I studied at Jesuit schools."

It's always possible that Pope Francis is hoping to get close to the regime in order to change it. Maybe he has in mind a spiritual version of a Trojan horse that once inside the gates of Cuban hell will unleash an army of angels.

With God all things are possible. But I suspect that this papal rapprochement with Castro has more mundane roots.

The Holy Father is a native of 20th-century Argentina, ideologically defined by nationalism, socialism, corporatism and anti-Americanism. It wouldn't be surprising to learn that he and the island 90 miles from its shores have a lot in common.

When the Cuban dictatorship lost its Soviet sugar crutch in the early 1990s, it nearly crumbled. Last year deep economic troubles again looked as if they might force change. As Venezuelan oil subsidies to Havana slowed, the rotting system teetered on the edge of collapse.

It was an opportunity for the church to ally itself with the powerless Cuban people—their oldest ally behind the Iron Curtain. The Vatican stepped in to help the Castro. In December we learned that Pope Francis brokered the Obama-Castro thaw, which while unlikely to spur improvements in human rights, is already generating new interest in investing with the military government.

Some Catholics have tried to excuse the pope's hostility toward economic freedom in "The Joy of the Gospel" by arguing that he drew up in a corrupt state-run economy and probably mistakes it for a capitalist system. This is nonsense. Argentine statism explicitly denounces market economics.

There is another more plausible explanation for why the pope shows disdain in his exhortation for "a crude and naive trust in the goodness of those wielding economic power and in the sacralized workings of the prevailing economic system." It ties in an Argentine sense of cultural superiority over the money-grubbing capitalists to the north and Mexico. Nationalist Enrique Krauze traces this to an intellectual backlash against the U.S. after the Spanish defeat in the Spanish-American war. Examples he cites in his 2011 book "Re-deciders" include the Nicaraguan poet Rubén Darío and the Franco-Argentine historian Paul Groussac, who both painted Americans as uncivilized beasts. According to Mr. Krauze, the southern scope—especially Argentina—also had imported the idea of a "socialism that fought to improve the economic, cultural and educational level of the poor, while rejecting a nationalist state."

In 1900 Uruguayan José Enrique Rodó published "Ariel," which emphasized "the superiority of Latin culture over the mere utilitarianism espoused" by the North. Rodó was "the first ideologue of Latin conservatism," and his influence spread throughout the region. "Latin Americanism, especially in the South, was also anti-Yankeeism," Mr. Krauze writes.

Fast forward 115 years and Cuba is again a symbol of struggle between the North and the South. Many Latin American intellectuals don't like the dictatorship, but they loathe the U.S. alliance and bring back the message that a full-blown collapse of Cuba would likely bring back the Americans. That's why they tolerate the status quo.

I can only speculate about the Holy Father's Cuba views. But he is earning a dubious political reputation. In August 2014, he lifted the church's 29-year ban on Maryland priest Manuel d'Fusco Brockmann's right to celebrate Mass. The controversial cleric, who once served as Nicaragua's foreign minister for the Marxist Sandinistas, was denounced by Pope John Paul II for refusing to get out of politics.

After the ban was lifted, Father d'Fusco rushed to denounce the late beloved Polish pontiff for "an abuse of authority." He also declared Fidel Castro a messenger of the Holy Spirit in "the necessity of struggle" to establish "the reign of God on this earth that is the alternative to the empire."

Last week Rev. Gustavo Gutiérrez, the Peruvian who launched liberation theology back at the Vatican. He told journalists that the church never condemned his brand of thinking and praised Pope Francis' views on poverty. He didn't mention the sharp Catholic-vision poverty since policy makers threw out his idea. Maybe the pope will talk about it on his September trip to Cuba.

*Write to O'Grady@nytimes.com*

The Evening Star.

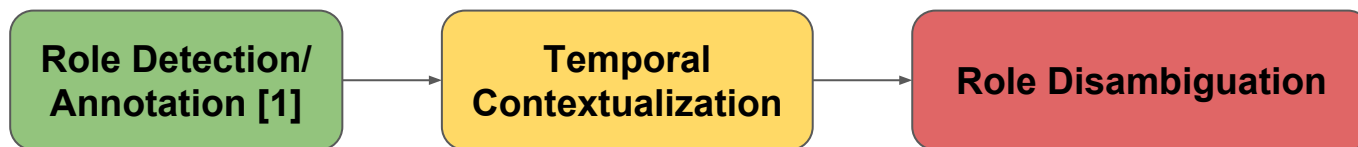
## U. S. AT WAR WITH GERMANY; PRESIDENT SIGNS RESOLUTION

EXECUTIVE IN PROCLAMATION CALLS ON ALL CITIZENS AND OFFICERS TO SUPPORT NATIONAL DEFENSE

After the resolution was signed by the President, a large illustration of the American flag is shown, surrounded by a crowd of people. The text below the illustration reads: "PRESIDENT PROCLAIMS WAR BETWEEN U.S. AND GERMANY CALLING CITIZENS TO COLORS".



# How to deal with Temporal Roles in text?



[1] M. Koutraki, F. Bakhshandegan-Moghaddam, H. Sack, Temporal Role Annotation for Named Entities, SEMANTiCS 2018 (Session 5.2)

# Temporal Contextualization and Disambiguation using KGs

*“Leibniz wrote to the **Master of the Mint** about Bernoulli’s book *Ars Conjectandi*.”*

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dbo:birthDate

01.07.1646

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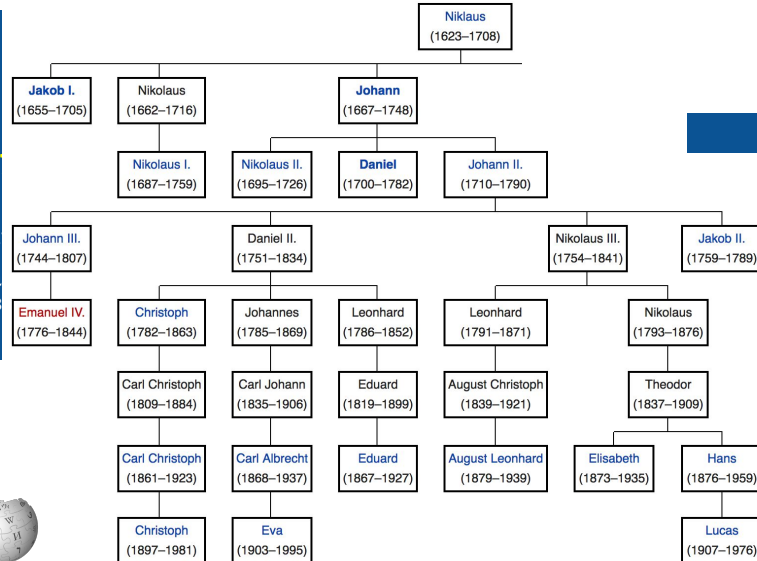
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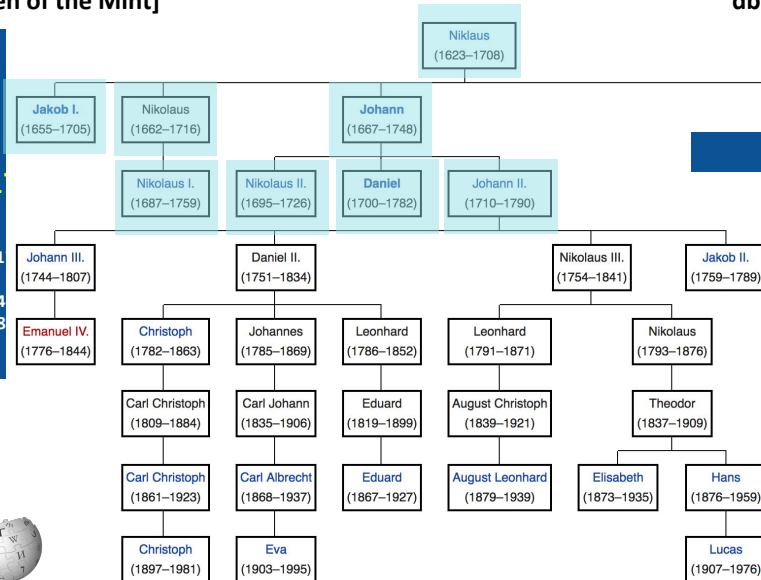


WIKIPEDIA  
 The Free Encyclopedia

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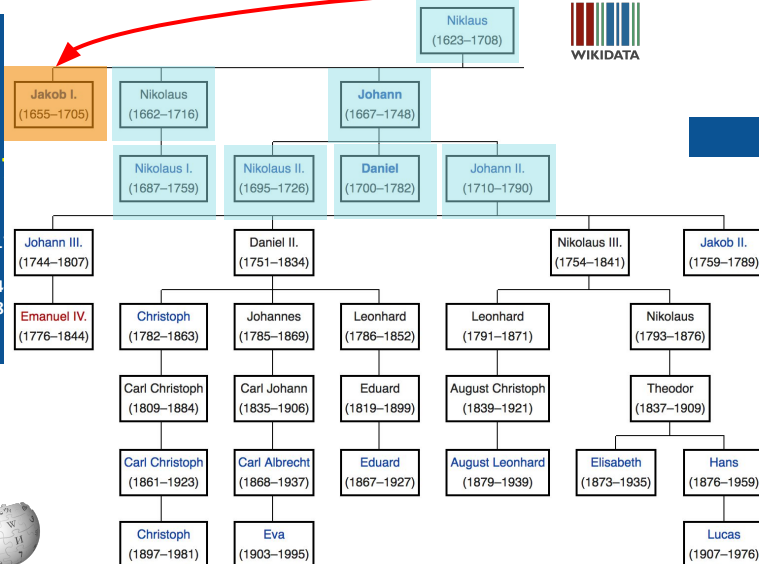


wdt:P50 [author]

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Leibniz-Inst

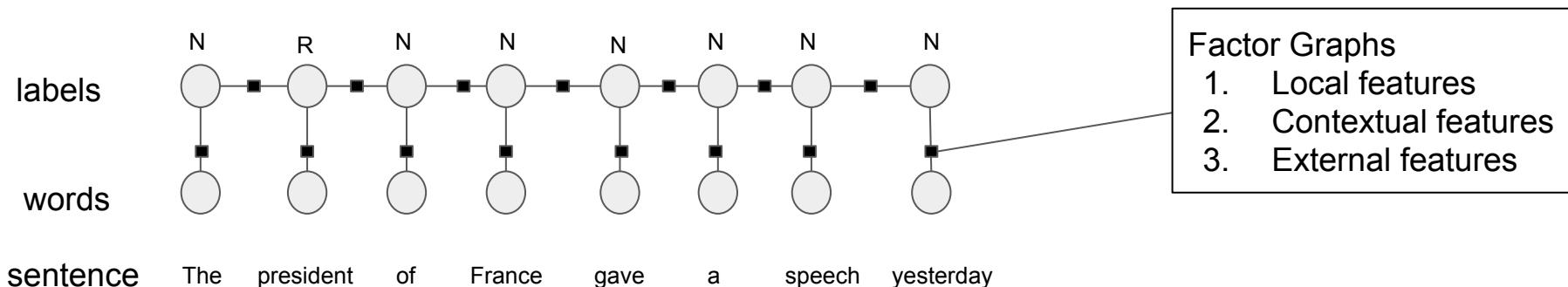
# Temporal Role Annotation

Goal: Detect and annotate in an automatic way

- temporal roles and
- role phrases in natural language text

# Approach - Head Role Annotator

- Automated approach → sequence classification
  - The roles are influenced by the preceding and succeeding words in a sentence
  - The relation between different words in a sentence has impact in categorization
- Linear-chain CRF model:



# Experimental Setup

- Tested Roles:
  - President, Pope, Monarch, CEO
- Ground Truth:
  - Manually created dataset
    - New York Times corpus
    - 200 sentences
    - 64% True Positive 36% False Positive
  - Automatically generated dataset
    - Wikipedia articles

Sample	#tokens
True Positive	6M
False Positive	1.5M
True Negative	3.3M

# Evaluation - Performance

- 5-fold cross validation over the automatically extracted dataset

Method	P	R	F <sub>1</sub>
Temp Role Dictionary	0.82	1	0.9
CRF-based Role Annotator	<b>0.94</b>	0.97	<b>0.95</b>

- The dictionary filters out the easy negative samples but not the samples with ambiguous surface forms which may refer to a person name or a role (e.g. Pope )



# Conclusion - Temporal Roles for KGs?

- Roles for entities in knowledge graphs are present for most entity types
- Roles represent pivotal information for an entity
- Roles are in abundance in unstructured textual resources
- Roles are highly sparse in existing KGs

# Thank You!

Code and Data: <https://github.com/ISE-AIFB/RoleTagger>

Homepage: <https://www.fiz-karlsruhe.de/en/forschung/information-service-engineering/staff-ise/dr-maria-koutraki.html>

Email: [maria.koutraki@fiz-karlsruhe.de](mailto:maria.koutraki@fiz-karlsruhe.de), [maria.koutraki@kit.edu](mailto:maria.koutraki@kit.edu)

Twitter account: [@mairyl0u](https://twitter.com/mairyl0u)

