A Computational Analysis of Gratian's *Decretum* (c. 1140)

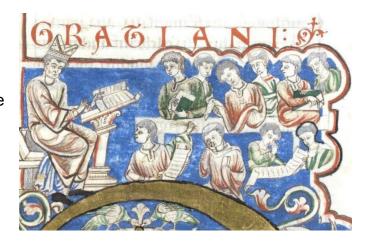**Student Name(s): Jake Bayon**

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Project Abstract:

In the expanse of medieval history, amidst the crisis of the church and state, Gratian emerges as a pivotal yet often overlooked figure, renowned for his pioneering work in canon law. His seminal text, *Concordia Discordantium Canonum* (*The Harmony of Discordant Canons*), commonly known as the *Decretum*, brought order to the cacophony of contradictory laws within the Catholic church that had accumulated over centuries. The discovery of the text's first recension—an earlier edition that is approximately half of the size of its more widely known counterpart—has opened new avenues of inquiry. Our research delves into the evolution of Gratian's magnum opus, particularly exploring the topical differences between its first and second recensions. Through computational analysis techniques such as lemmatization, we aim to unravel the linguistic and doctrinal shifts between these editions of Gratian's work. By mapping Latin words to their root forms, we seek to uncover subtle nuances between the texts, shedding light on its structural evolution and enduring relevance. This interdisciplinary approach merges historical inquiry with technological innovation, offering new insights into Gratian's legacy and his impact on Western law and Catholic ecclesiastical jurisprudence.

THE INVESTITURE CONTROVERSY

1046 - 1122

CONCORDIA
DISCORDANTIUM CANONUM
(Gratian's *Decretum*)   c. 1140

THE FIRST RECENSION

1996

LEMMATIZATION

2024

EXPLORER

GRATIA...

- img
- Resources
- venv
- work
  - corpora
    - final
    - final_lemmas
      - dePen.txt
      - Gratian0.txt
      - Gratian1.txt
      - Gratian2.txt
  - example.py
  - exceptions.txt
  - lemmatize.py
  - README.md
  - works.py
  - .gitignore
  - exceptions.txt
  - Jake.md
  - list_of_lemmas
  - Paul.md
  - practice.py
  - README.md M
  - regex.py

list_of_lemmas

```python
# open Gratian1.txt (for reading)
with open("work/corpora/final_lemmas/Gratian1.txt", "r") as file_1:

    # read line
    first_line_gratian_1 = file_1.readline()


    # split line at every whitespace
    lemmatized_gratian_1 = first_line_gratian_1.split()

# open Gratian2.txt (for reading)
with open("work/corpora/final_lemmas/Gratian2.txt", "r") as file_2:

    # read line
    first_line_gratian_2 = file_2.readline()

    # split line at every whitespace
    lemmatized_gratian_2 = first_line_gratian_2.split()

# identify lemmas in Gratian2 but not in Gratian1
print([word for word in lemmatized_gratian_2 if word not in lemmatized_gratian_1])
```

IMPACT