# Cracking the Voynich Code

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## Aim

Determine possible features and relationships of the Voynich Manuscript through data-mining and analyses of basic linguistic features.

## Background

The Voynich Manuscript is an unknown script that has been carbon dated back to the early 15th century [1]. Named after Wilfrid Voynich the manuscript has become a well-known mystery within linguistics and cryptology. It is divided into several different section based on the nature of the illustrations.

## Significance

Generally, the project deals with data acquisition, through data-mining, and analyses. Actual analyses can be expanded to be used in plagiarism detection, machine-runnable translators and search engines.

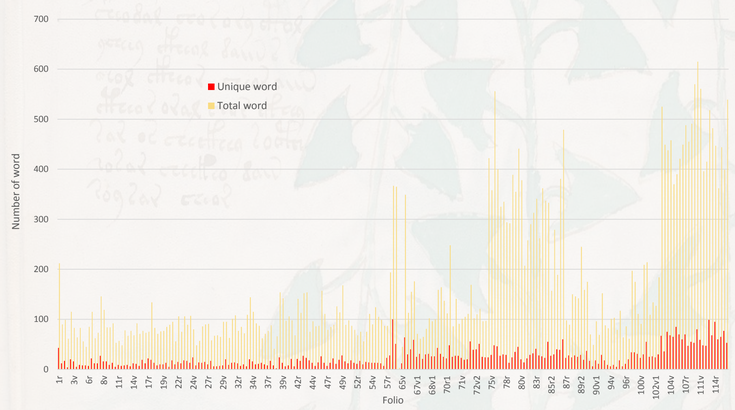
## Methods and Processes

Analyses focused around basic linguistics features such as word and character frequencies, character and word bigrams, and character sequences.

Code was developed to be used in MATLAB and C++ environments.

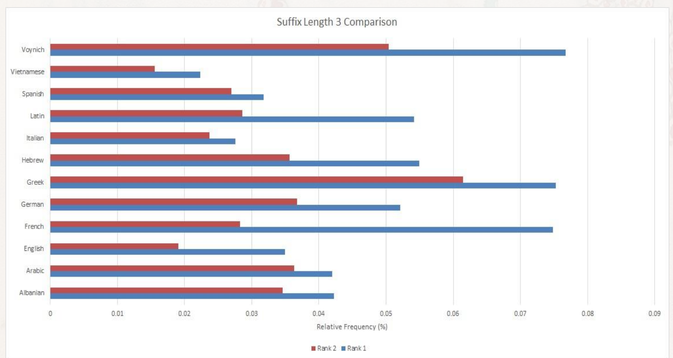
## Illustrations

Comparing the number of total words to the number of unique words on each page. The unique word tokens of a page may be related to the illustration(s) of a page. The unique word token of each section may also correspond to the illustrations of the section.



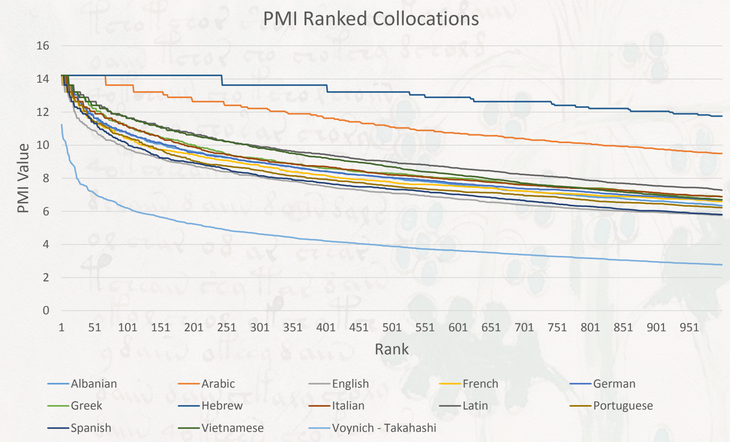

## Suffix Frequencies

Linguistic morphology is full of ambiguities dependent on the language. Using a naïve definition of a suffix, character sequences of various lengths at the end of words from various languages were ranked and compared.




## Collocations

Collocations allow for the analysis of word association through quantitative measures. We applied a Pointwise Mutual Information metric to rank the word-pairs of the Voynich and other languages. The Voynich Manuscript shows a low measure of word association with not close relationship to any tested language.




## Conclusions

Due to the unknown nature and small sample size of the Voynich Manuscript, it is difficult to definitively make any conclusions without further in-depth research.

- Unique words may relate to specific illustrations
- Greek and French show the closest relationship in regards to suffix frequencies
- The Voynich has a weak measure of word association suggesting it may be related to a type of code or be a hoax.

## References

[1] D. Stolte, “Experts determine age of book 'nobody can read',” 10 February 2011. [Online]. Available: http://phys.org/news/2011-02-experts-age.html. [Accessed 12 March 2015]