

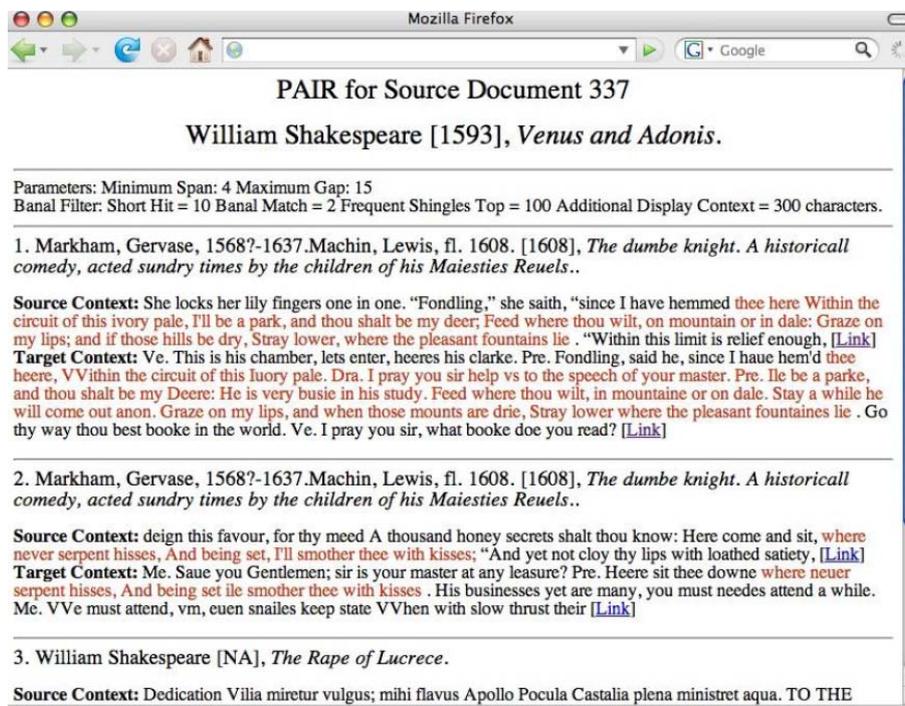
## Proposal: Historical Text reuse (in Swedish Literature)

**Keywords:** sequence alignment; plagiarism; bitext alignment; intertextuality; historical text reuse; longest common substring(s); paraphrase; culturomics; evaluation

**Goal:** the goal of the Master thesis will be to apply (implement or adapt) techniques (e.g., borrowed from the field of bioinformatics) to identify lexically-similar passages (i.e. phrases, sentences, quotes, paraphrases) across collections of Swedish literary texts. Such techniques can use any suitable algorithms for that purpose, but preferably sequence alignment (Horton et al., 2010; Ganascia, 2011) and present/visualize the results in a user friendly (and navigable) way.

**Background:** according to Wikipedia <[http://en.wikipedia.org/wiki/Sequence\\_alignment](http://en.wikipedia.org/wiki/Sequence_alignment)> a sequence alignment *in bioinformatics* "is a way of arranging the sequences of DNA, RNA, or protein to identify regions of similarity that may be a consequence of functional, structural, or evolutionary relationships between the sequences". However, sequence alignments are also used for non-biological sequences, such as those present in natural language and also used for plagiarism detection (Clough, 2003).

**Problem description:** using the material in the Swedish Prose Fiction 1800-1900 database (SPF) and/or the Swedish Literature Bank (Litteraturbanken) you should implement or adapt and apply sequence alignment (and/or related algorithms) in order to detect common passages across the content of the collections (if they exist) and present them in a user friendly way, e.g. through web pages, or similar, with appropriate links of the original documents so that a literary scholar can easily navigate and further explore whether the algorithm has truly detected "text reuse" (e.g. long quotations) or perhaps "errors" produced by the process.



Mozilla Firefox

PAIR for Source Document 337

William Shakespeare [1593], *Venus and Adonis*.

Parameters: Minimum Span: 4 Maximum Gap: 15  
Banal Filter: Short Hit = 10 Banal Match = 2 Frequent Shingles Top = 100 Additional Display Context = 300 characters.

1. Markham, Gervase, 1568?-1637.Machin, Lewis, fl. 1608. [1608], *The dumbe knight. A historிக்க comedy, acted sundry times by the children of his Maiesties Reuels..*  
**Source Context:** She locks her lily fingers one in one. "Fondling," she saith, "since I have hemmed **thee here** Within the circuit of this Ivory pale, I'll be a park, and thou shalt be my deer; Feed where thou wilt, on mountain or in dale: Graze on my lips; and if those hills be dry, Stray lower, where the pleasant fountains lie . "Within this limit is relief enough, [[Link](#)]  
**Target Context:** Ve. This is his chamber, lets enter, heeres his clarke. Pre. Fondling, said he, since I haue hem'd **thee heere**, VVithin the circuit of this Iuory pale. Dra. I pray you sir help vs to the speech of your master. Pre. Ile be a parke, and thou shalt be my Deere: He is very busie in his study. Feed where thou wilt, in mountaine or on dale. Stay a while he will come out anon. Graze on my lips, and when those mounts are drie, Stray lower where the pleasant fountaines lie . Go thy way thou best booke in the world. Ve. I pray you sir, what booke doe you read? [[Link](#)]
2. Markham, Gervase, 1568?-1637.Machin, Lewis, fl. 1608. [1608], *The dumbe knight. A historிக்க comedy, acted sundry times by the children of his Maiesties Reuels..*  
**Source Context:** deign this favour, for thy meed A thousand honey secrets shalt thou know: Here come and sit, **where neuer serpent hisses, And being set, I'll smother thee with kisses**; "And yet not cloy thy lips with loathed satiety, [[Link](#)]  
**Target Context:** Me. Saue you Gentlemen; sir is your master at any leasure? Pre. Heere sit thee downe **where neuer serpent hisses, And being set ile smother thee with kisses** . His businesses yet are many, you must needs attend a while. Me. VVe must attend, vm, euen snailles keep state VVhen with slow thrust their [[Link](#)]
3. William Shakespeare [NA], *The Rape of Lucrece*.  
**Source Context:** Dedication Vilia miretur vulgus; mihi flavus Apollo Pocula Castalia plena ministret aqua. TO THE

Example figure from the "Sequence alignment and the discovery of intertextual relations"  
by Mark Olsen.

As a special case you may instead choose to compare the written production of famous Swedish authors, such as August Strindberg's (born 1849) production, with all available material in SPF and Litteraturbanken (e.g., suitable material could be everything published from few years after August Strindberg's birth and back in time).

## Evaluation

Text re-use is a broad and potentially vague area of research, and gold standards are scarce or not at all available (at least not for Swedish) in this area. Nevertheless, there are thinkable ways to perform a comprehensive evaluation for the results. For instance, in a comparable problem, in Information Retrieval, researchers have developed an evaluation method in terms of 11-points interpolated average precision (Manning et al., 2009:159) that can provide useful insights. Therefore, in this project you need also to consider and apply a method to evaluate the results you will acquire, in order to obtain an objective "big picture" view of the algorithm's performance.

**Recommended skills:** good programming skills in a script programming language, Python or Perl or and/or java (or other programming language you prefer) and (b) familiarity with XML and particularly the Text Encoding Initiative (TEI; <<http://www.tei-c.org/index.xml>>) structure (SPF and Litteraturbanken are encoded in TEI).

**Note:** The student that will take the assignment can either use or adapt existing software such as the "PAIR system" (Pairwise Alignment for Intertextual Relations) <<http://code.google.com/p/text-pair/>>; the MEDITE system <[http://www-poleia.lip6.fr/~ganascia/Medite\\_Project](http://www-poleia.lip6.fr/~ganascia/Medite_Project)>; the eTRACE (Büchler et al., 2014) or, even better, implement their own system.

## References

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- Litteraturbanken: <<http://litteraturbanken.se/#!/start>>
- SPF: <<http://spf1800-1900.se/#!/start>>
- ...

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