

# Using machine learning techniques to identify Shakespeare's and Fletcher's writing in Henry VIII

25 November 2019, by Bob Yirka



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Petr Plecháč, a researcher at the Czech Academy of Sciences in Prague has used machine-learning techniques to identify which parts of the play "Henry VIII" were written by William Shakespeare and which were written by John Fletcher. He has written a paper describing his findings and has uploaded it to the *arXiv* preprint server.

William Shakespeare lived and worked in the late 1500s to early 1600s, writing such famous works as "Hamlet," "Macbeth" and "Romeo and Juliet." He is also credited with writing "Henry VIII," though most historians agree that he had help doing so. Many believe his collaborator was a playwright by the name of John Fletcher. In this new effort, Plecháč wondered if machine-learning techniques could be used to figure out which parts of the play were written by Shakespeare and which were written by Fletcher.

To test out his idea, he fashioned a [machine-learning algorithm](#) to analyze written works and identify certain characteristics of an individual author's writing style. He trained it on several of Shakespeare's plays from roughly the same [time period](#), such as "The Winter's Tale," "The Tragedy of Cymbeline," "The Tempest," and "The Tragedy of Coriolanus." He then did the same with several works known to have been written by Fletcher—such as "Monsieur Thomas," "Valentinian," "Bonduca" and "The Woman's

Prize." He then set the system to work on "Henry VIII."

Plecháč reports that the [machine-learning](#) techniques did, indeed, attribute some parts of "Henry VIII" to Shakespeare and some to Fletcher. In fact, the algorithm showed that both men contributed equally to the play. And because he programmed the results to appear in a rolling window, he was able to see exactly which parts of the play the algorithm thought were written by each author. He reports that he found that authorship tended to change starting with a new scene. But he also found instances in which one author would begin a scene, only to have it finished by the other.

Plecháč also analyzed some of the works of Philip Massinger, another playwright of the time who some thought might also have contributed to "Henry VIII." The algorithm begged to differ, finding no evidence of his writing in the play.

**More information:** Relative contributions of Shakespeare and Fletcher in Henry VIII: An Analysis Based on Most Frequent Words and Most Frequent Rhythmic Patterns, arXiv:1911.05652 [cs.CL] [arxiv.org/abs/1911.05652](https://arxiv.org/abs/1911.05652)

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