65325 82336

Roman Pottery.docx

Assignment

Class

University

Document Details

Submission ID

trn:oid:::1:2929185666

Submission Date

May 23, 2024, 11:00 PM UTC

Download Date

May 23, 2024, 11:00 PM UTC

File Name

AgADwhcAAvFbgFI

File Size

42.0 KB

7 Pages

572 Words

3,089 Characters

How much of this submission has been generated by AI?

0%

of qualifying text in this submission has been determined to be generated by AI.

Caution: Percentage may not indicate academic misconduct. Review required.

It is essential to understand the limitations of AI detection before making decisions about a student's work. We encourage you to learn more about Turnitin's AI detection capabilities before using the tool.

Frequently Asked Questions

What does the percentage mean?
The percentage shown in the AI writing detection indicator and in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was generated by AI.

Our testing has found that there is a higher incidence of false positives when the percentage is less than 20. In order to reduce the likelihood of misinterpretation, the AI indicator will display an asterisk for percentages less than 20 to call attention to the fact that the score is less reliable.

However, the final decision on whether any misconduct has occurred rests with the reviewer/instructor. They should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in greater detail according to their school's policies.

How does Turnitin's indicator address false positives?
Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be AI-generated will be highlighted blue on the submission text.

Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.

What does 'qualifying text' mean?
Sometimes false positives (incorrectly flagging human-written text as AI-generated), can include lists without a lot of structural variation, text that literally repeats itself, or text that has been paraphrased without developing new ideas. If our indicator shows a higher amount of AI writing in such text, we advise you to take that into consideration when looking at the percentage indicated.

In a longer document with a mix of authentic writing and AI generated text, it can be difficult to exactly determine where the AI writing begins and original writing ends, but our model should give you a reliable guide to start conversations with the submitting student.

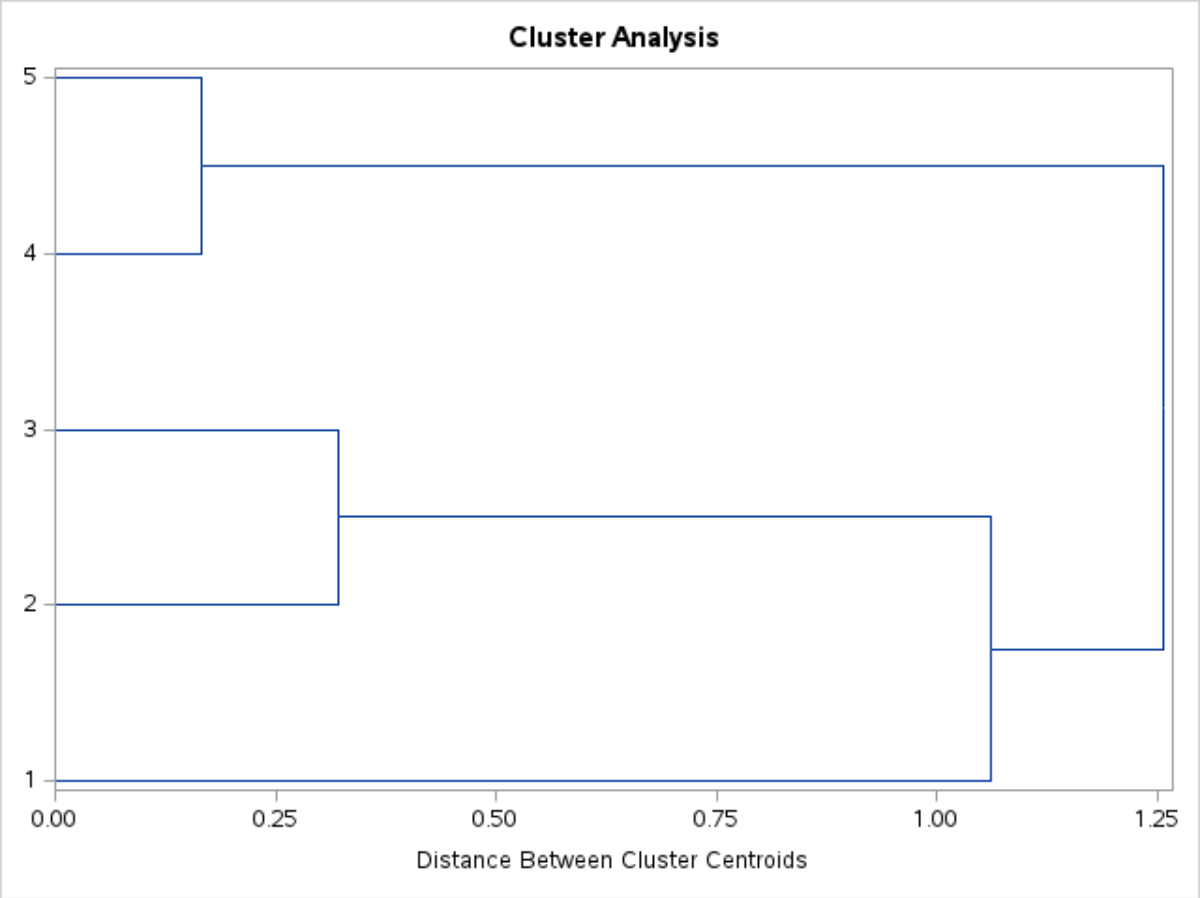
Pottery

Question a

In the field of statistics, computer science, mathematics etc, distance matrix is defined as a square matrix containing the distances of pairwise observations in the data. There exist different methods for calculating distance matrix such as Manhattan, Cosine similarity and Euclidean. The choice of the method to use mainly relies on the data being analyzed, research context and the objective to be achieved.

Figure 1.0

Dendrogram



Determining the optimal number of clusters to use, requires a comprehensive analysis of the dendrogram produced. Upon analysis, the optimal number of clusters I would use is 2. This is supported by the fact that the most significant jumps occur between a distance of around 1.0 and 1.3 on the dissimilarity scale. Cutting the dendrogram just before this jump (around a distance of 1.0), it would result in a clear separation of clusters. Additionally, the largest gap in the dendrogram occurs just before a distance of 1.25, indicating a natural division into 2 clusters and this choice balances the need for simplicity with the desire to capture significant dissimilarities in the data. With 2 clusters, the most distinct separation in the data is captured.

Question b

Multidimensional Scaling (MDS) visualization results below determines the distinctiveness of Romano-British pottery samples based on their chemical analysis. The 45 pots of pottery samples were made in three different regions: Region 1 (Kiln 1), Region 2 (Kilns 2 and 3), and Region 3 (Kilns 4 and 5)

Figure 2.0

MDS plot

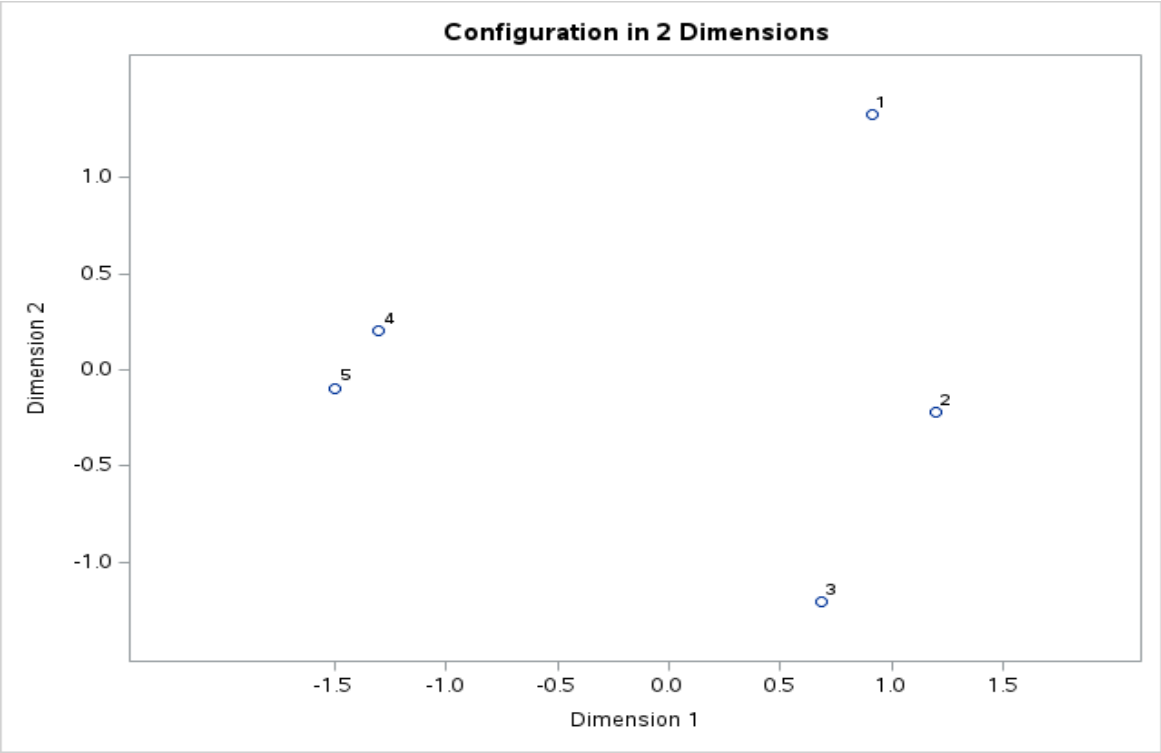
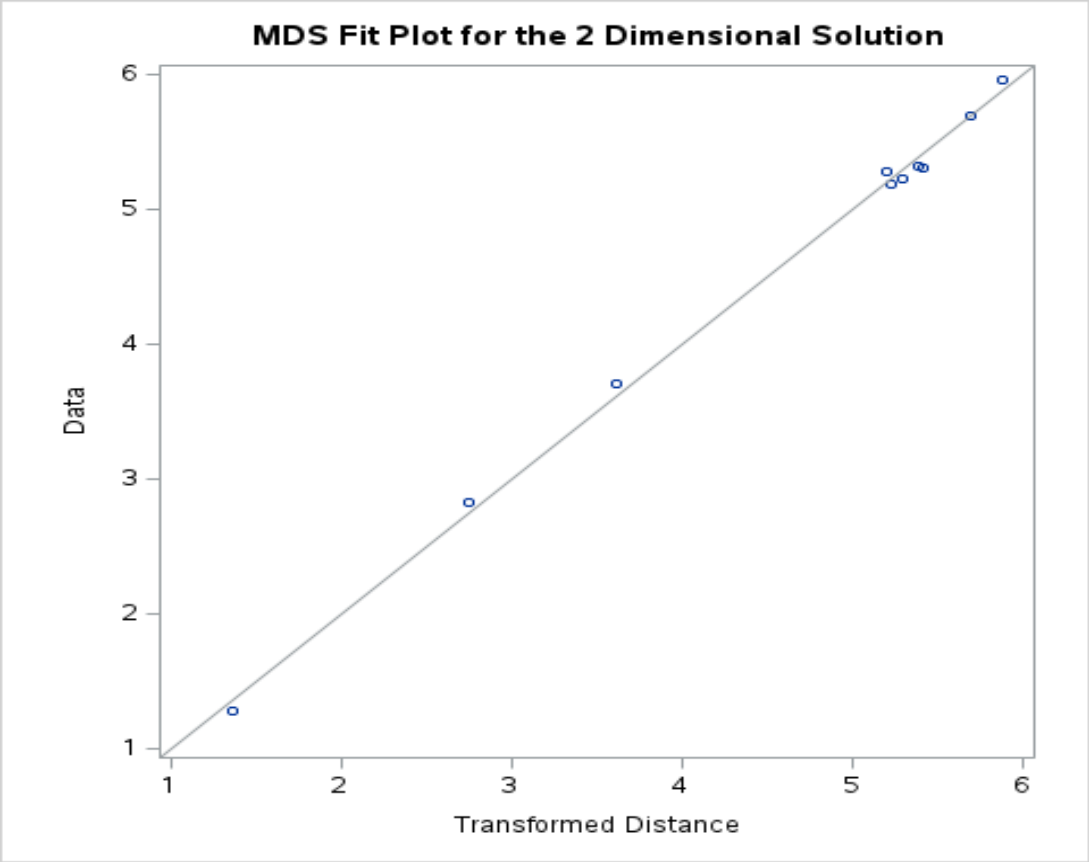


Figure 3.0

MDS fit plot



Points labelled 1 are grouped in the top right area of the plot. The tight clustering of these points suggests that the pottery samples from Kiln 1 share a distinct chemical composition, differentiating them from samples in other regions. Region 1 therefore appears to be chemically distinct from regions 2 and 3.

Points 2 and 3 are situated in the lower right and bottom center of the plot. Overlapping is identified between kiln 2 and 3 implying that their chemical properties are similar. Despite this internal similarity, the points are separate from those of Kiln 1, indicating that Region 2 is distinct from Region 1. However, the similarity between Kilns 2 and 3 within Region 2 suggests they are not distinct from each other but are collectively distinct from other regions.

Points 4 and 5 are clustered towards the left side of the plot. This clustering indicates that the pottery samples from Kilns 4 and 5 share a similar chemical composition. The clear separation from points labeled 1, 2, and 3 indicates that Region 3's pottery samples are chemically distinct from those in both Region 1 and Region 2. Kilns 4 and 5 are not distinct from each other within Region 3 but collectively form a distinct group.

In summary, the Multidimensional Scaling results (MDS) indicate that Region 1 is distinctive, Region 2 is somewhat distinctive internally but separate from region 1, and region 3 is distinct from both Regions 1 and 2.

References

Recchia, A. (2010). Contiguity-Constrained Hierarchical Agglomerative Clustering UsingSAS. *Journal of Statistical Software*, *33*(Code Snippet 2). https://doi.org/10.18637/jss.v033.c02

Slavíček, K., Těsnohlídková, K., Košťál, M., Václavíková, D., & Trnová, K. (2024). Pottery kiln from the second half of the 13th century in Žďár nad Sázavou – Staré Město (Czech Republic). *Archeologické Rozhledy*, *75*(4), 403–438. https://doi.org/10.35686/ar.2023.28

Zhang, Y., & Ding, C. (2022). Using MDS preference plot as visual analytics of data: A machine learning approach. *Methodological Innovations*, *16*(1), 67–77. https://doi.org/10.1177/20597991221144574