T1 2025: ICT724 Intelligent Systems

Tutorial 10

Submiss requirement: submit a report in pdf file or a Word file to Moodle

Deadline: 23:59 Sunday 18/05/2025.

In this tutorial, you will learn how to use the Support Vector Machine (SVM) learning model in Altair AI Studio to perform sentiment analysis.

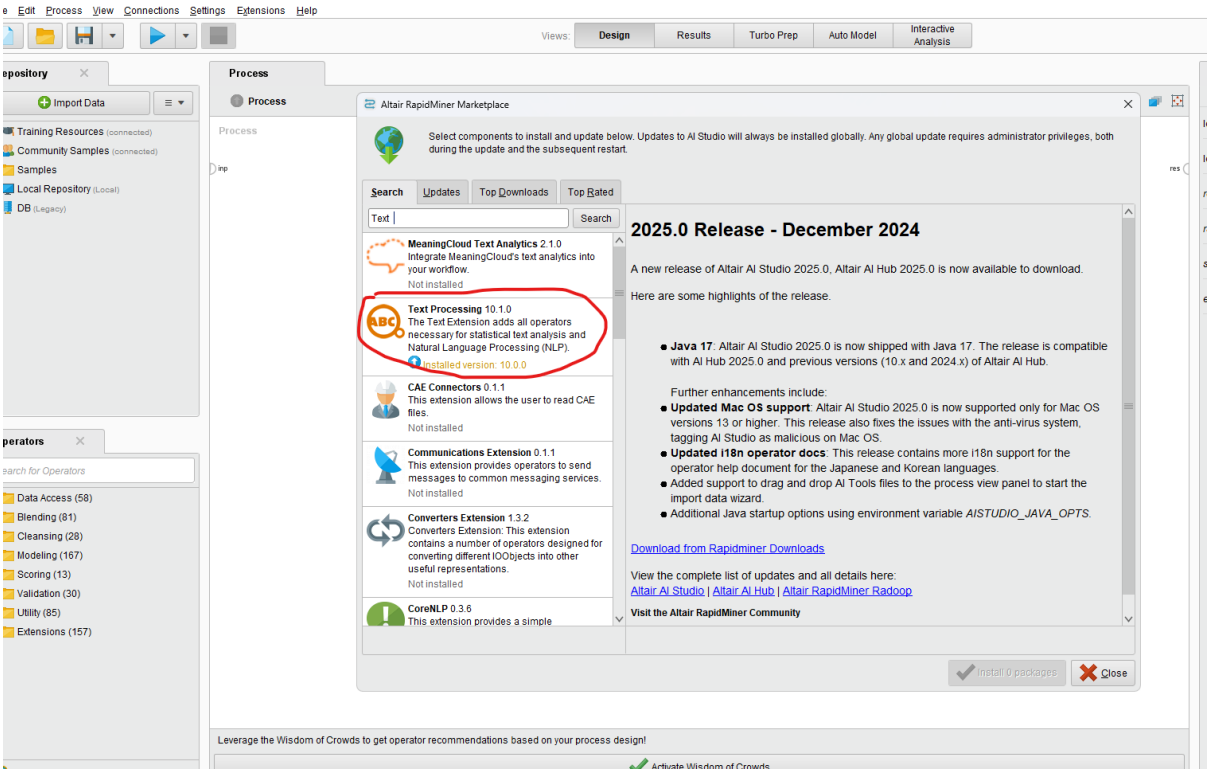
A Support Vector Machine (SVM) is a supervised machine learning model used for both classification and regression tasks. The primary objective of the SVM model is to identify the optimal hyperplane in an N-dimensional space that can effectively partition all data samples into different classes in the feature space. The model ensures that the margin between the closest points of different classes, known as support vectors, is maximized.

For a detailed introduction, refer to Support Vector Machine (SVM) Algorithm.

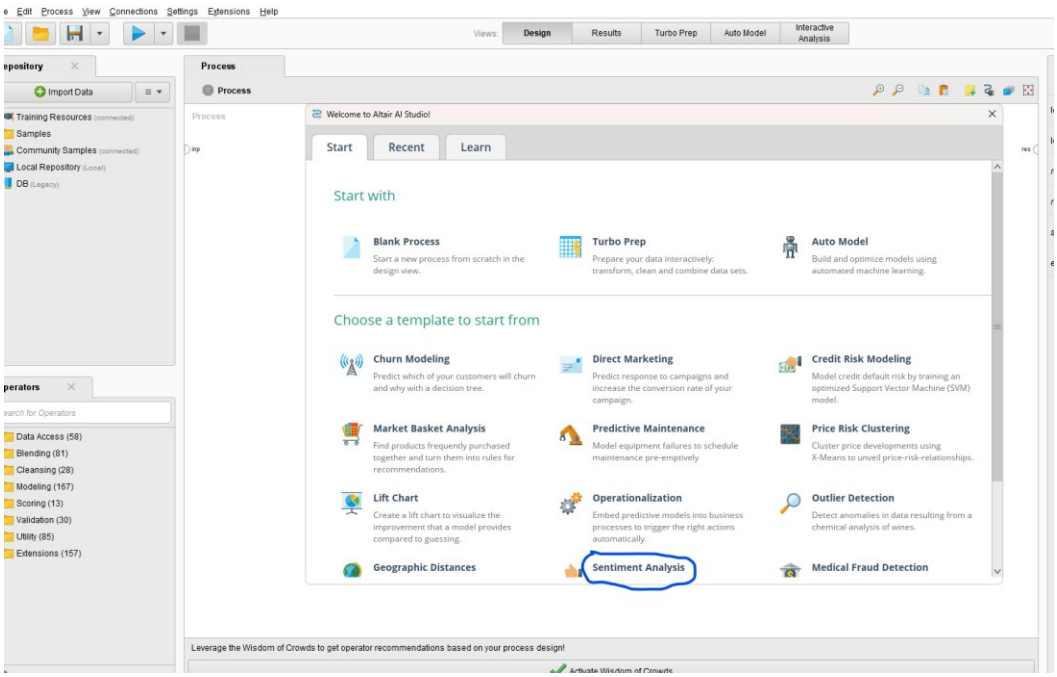
Sentiment analysis is the process of analyzing digital text to determine if the emotional tone of the text is positive, negative, or neutral. Today, companies have large volumes of text data like emails, customer support chat transcripts, social media comments, and reviews. Sentiment analysis tools can scan this text to automatically determine the author's attitude towards a topic. Companies use the insights from sentiment analysis to improve customer service and increase brand reputation.

Exercise 1. Follow the instructions below:

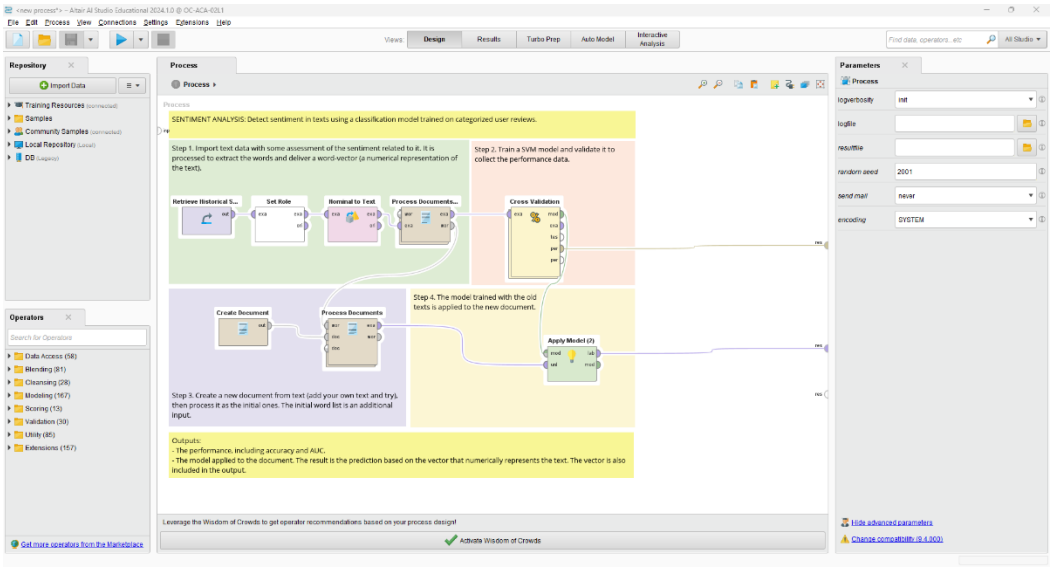
1. Run Altair AI Studio.
2. Download the Text Processing package as follows:
   i) Click on "Extensions", then "market Place".
   ii) Type "Text" in the search box as shown in the following screenshot:



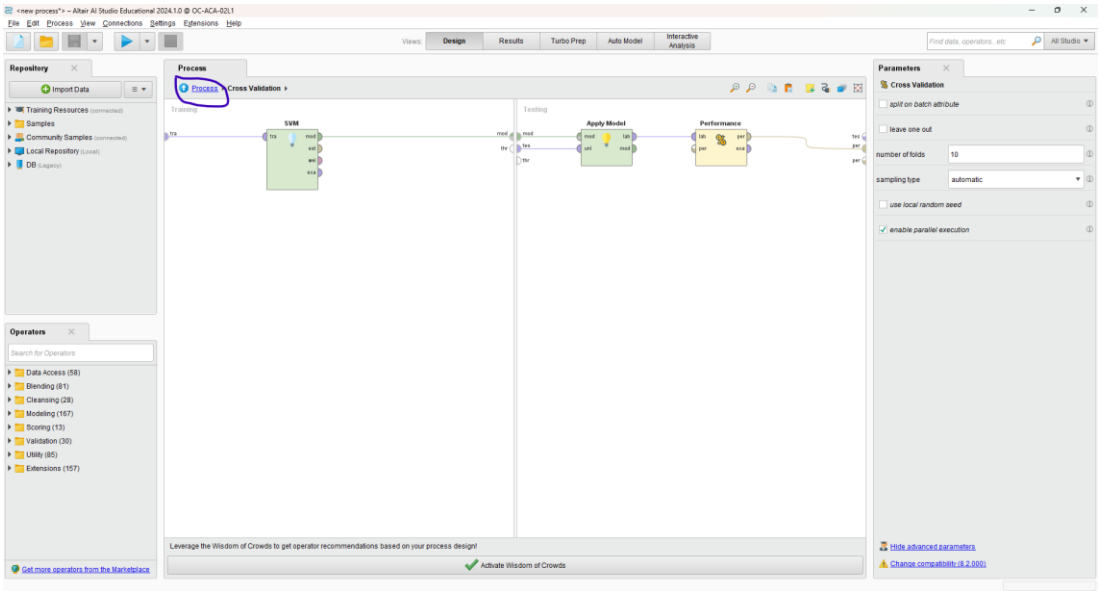
3. Download the text processing package and install it.
4. After the AI Studio restarts, you will find the following window:



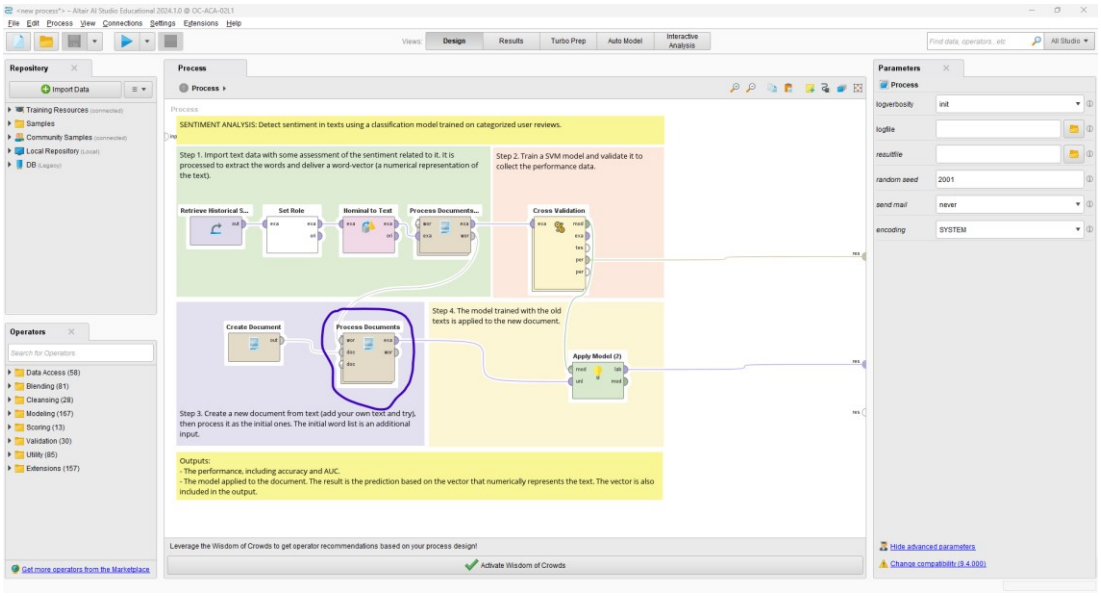
5. Left click on “Sentiment Analysis”, you will see the following window for the sentiment analysis process using SVM:



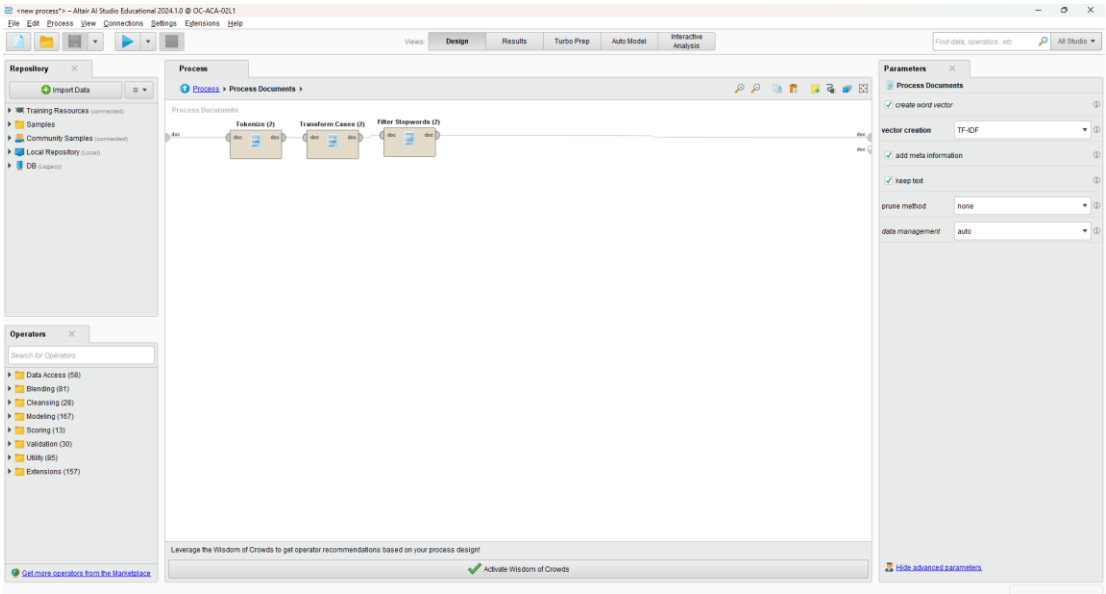
6. In the process, the Cross Validation operator is a composite one containing a SVM operator, an Apply Model operator and a Performance operator. Double click on it, you will see its component operators as shown below:



7. Left click on “process” to go back to the process view:



8. The Process Documents operator is also a composite operator. Double click on it, you will see the following window:



Examine all the operators of the sentiment analysis process to understand how the process works. **Write a report to explain how the sentiment analysis process works step by step. For each step, use a screenshot to assist your descriptions.**