

Experiment No. 9

Aim : Study and Installation of Weka AI tool

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Theory:



What is Weka?

Weka (Waikato Environment for Knowledge Analysis) is a popular suite of machine learning software written in Java. It is developed by the University of Waikato, New Zealand.

♦ Key Features:

- GUI-based and user-friendly
- Supports various machine learning algorithms (classification, regression, clustering)
- Data pre-processing tools
- Visualization tools

- Supports scripting and Java API for developers

◇ Applications:

- Academic research
- Data mining projects
- Rapid prototyping of ML models
- Teaching and learning machine learning concepts

◇ Core Components:

1. **Explorer** – Main GUI for data analysis
2. **Experimenter** – For running experiments and comparing algorithms
3. **Knowledge Flow** – Visual pipeline-style interface for data flow
4. **Simple CLI** – Command-line interface

Installation of Weka:

Step-by-step Instructions:

◇ For Windows:

1. **Go_to_Official_Website**

► <https://www.cs.waikato.ac.nz/ml/weka/>



2. **Click on the "Download" tab**
3. **Choose Windows Installer (.exe file)**
4. **Download_and_run_the_installer**
 - Follow the setup wizard steps (Next → Install → Finish)
5. **Launch Weka** from the Start Menu or desktop icon.

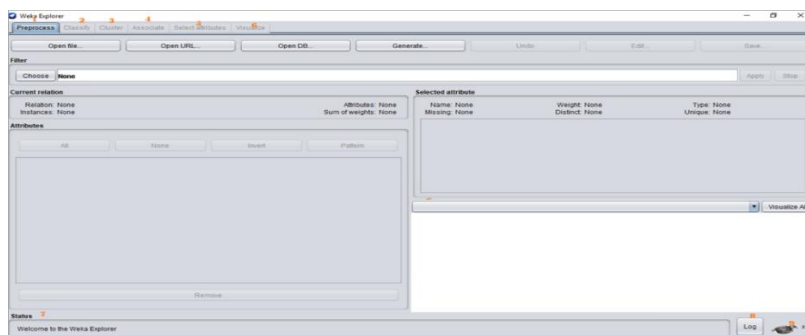
Running Your First Machine Learning Model in Weka:

◇ Step 1: Open Weka:

- After installation, launch the **Weka GUI Chooser**.

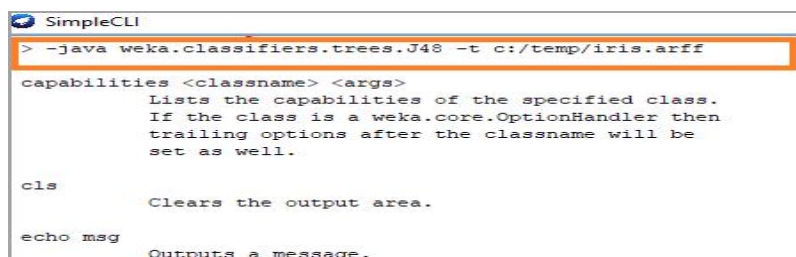


◇ Step 2: Open "Explorer":



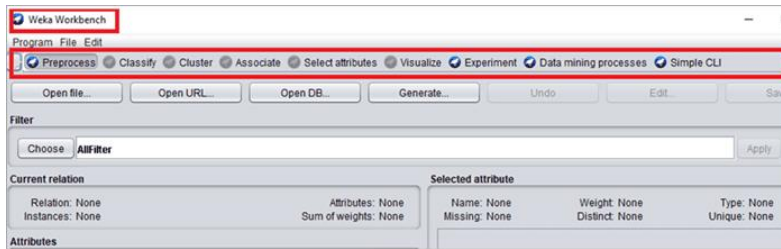
◇ Step 3: Load a Dataset:

- Click **Open File**
- Navigate to: /data/iris.arff
- This is a sample dataset with flower measurements.



◇ Step 4: Choose a Classifier:

- Go to the "Classify" tab
- Click "Choose" → trees → select J48 (decision tree)



♦ Step 5: Click "Start":

- Weka will train the model and show results like:
 - Accuracy
 - Confusion Matrix
 - Precision, Recall, F-measure

Advantages of Using Weka:

- ☒ Easy to use, even for beginners
- ☒ Excellent for quick testing and prototyping
- ☒ Includes many algorithms without needing to code
- ☒ Good for educational and research purposes

Limitations of Weka:

- ☒ Not suitable for very large datasets (in-memory only)
- ☒ Limited support for deep learning
- ☒ GUI can feel outdated

Conclusion:

- Weka is a valuable tool for anyone learning or experimenting with machine learning. It simplifies data pre-processing, model training, and evaluation through its user-friendly interface. Though it may not be suited for large-scale production systems, it is ideal for teaching, research, and prototyping.