REGRESSION TREE MINER

Index:

Introduction

“Regression tree miner” is a client/server application which incorporates data mining features, a branch of machine learning and statistics used to discover patterns in large data sets, to allows users to predict the value of a continuous attribute associated with a vector of independent attributes.
Study case developed by Fabio Fucci for the course advanced programming methods held by the university of Bari Aldo Moro.

Installation The user will be provided with three .bat files (one for the server, one for the client CLI and one for the client GUI) and with a series of sql scripts.For the application to properly work the computer which will run the server side application must have a working version of mysql installed (at least version 8.0.19) with database MapDB, which will be used to store the various tables, and the user MapUser with password “map”, which will be used to access the database.The scripts in the SQLScripts folder can be used to create the database, the user and insert in the database all the tables used as test cases, the only difference between the file noDropAndCreate.sql and dropAndCreate.sql is that the second one will remove the database with all the existing tables if it exist, so use with care.To run the server application double click on the file mapServer.bat, a command line interface will open waiting for connections. Each time a client connects the server will display it’s id and the current phase.
To run the client application double click either on MapClientCLI.bat or MapClientGUI.bat, further explanation in the user guide section.

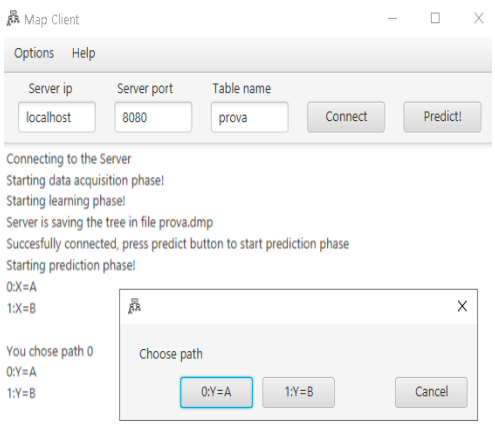
User guide

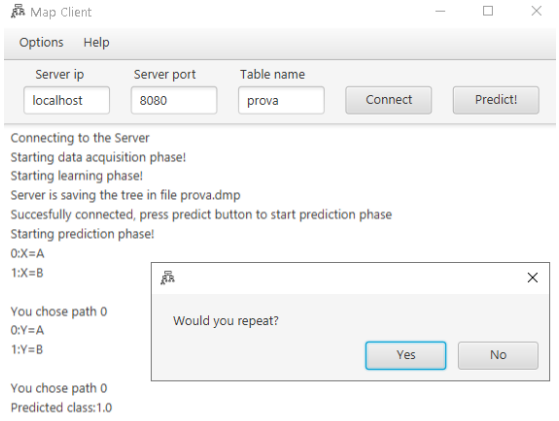
The CLI version of the client can be executed by double clicking on the file mapClientCLI.bat, by doing so it will automatically connect on localhost port 8080, if the server is hosted somewhere else the user can either modify the bat file or open the terminal and input “java -jar path/to/client/jar server_ip server_port”.
Instead on the GUI version these settings can be modified visually once opened, as usual, by double clicking on the file MapClientGUI.bat.
In both version of the app the user can choose to learn a new regression tree from the database or to load it from file, In the first case after entering the table name the tree will be learned from the data set and later saved to a file with name table_name.dmp, in the second case the user must be careful to only enter the file name without any extension and the tree will be loaded to memory.
In GUI version of the software, the user can modify all the setting before pressing the connect button, if there are problems connecting to the server or retrieving the table a message will be displayed in the console, else if the connection is successful the user can start the prediction phase by pressing the predict button.

Test cases

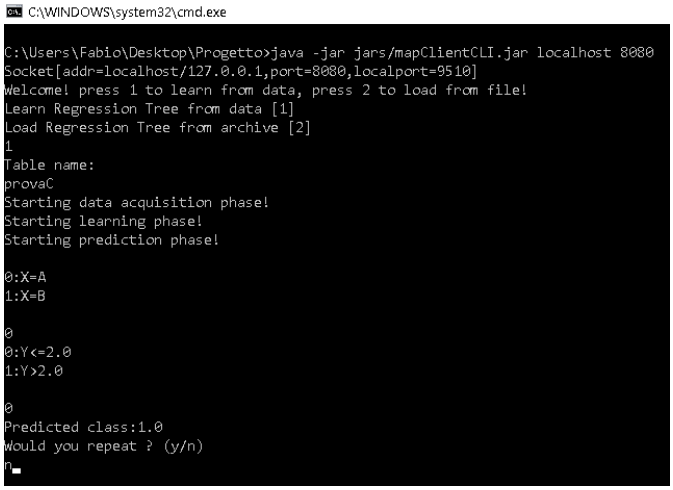
All the test cases shown can be reproduced by entering the table name of the specific test.
Only one test is shown with the GUI since the identical to the CLI.

- prova, small test case table with two independent discrete attributes.

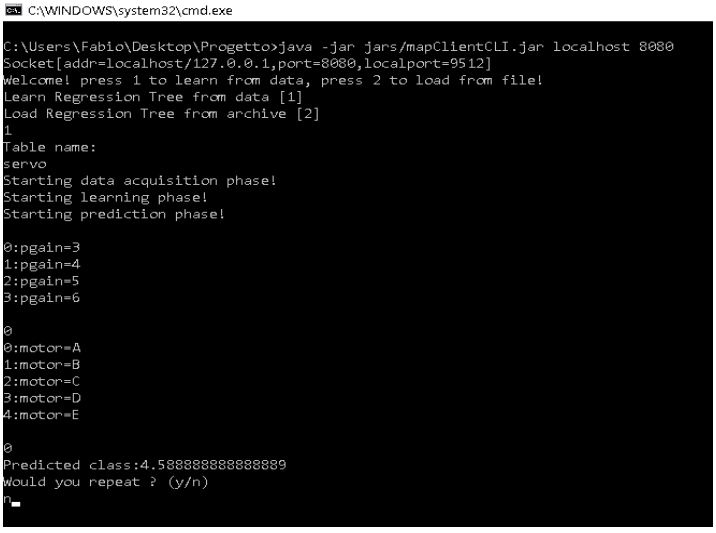




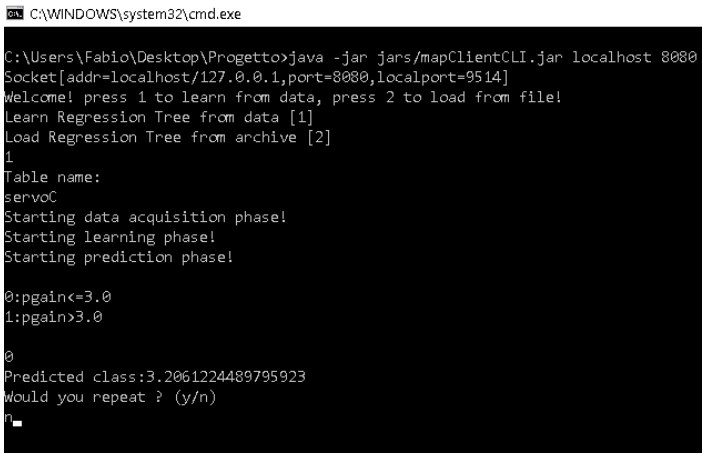
- provaC, changes one of the attributes of prova to a continuous attribute.



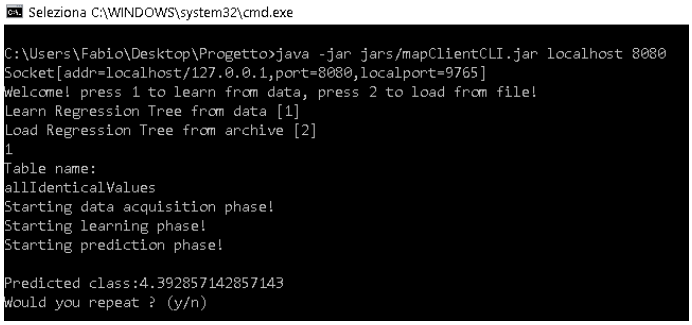
- servo, biggest test table with four independent discrete attributes.



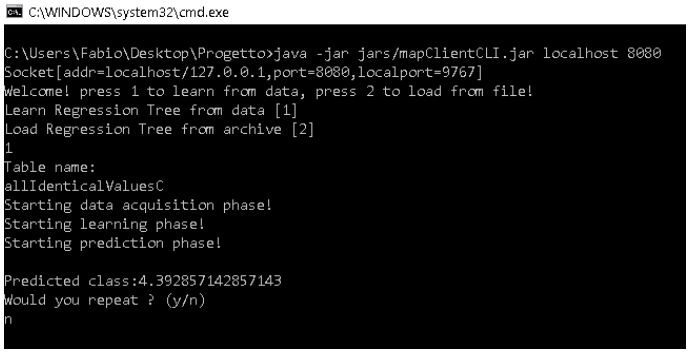
- servoC, changes two of the attributes of servo to a continuous attribute.



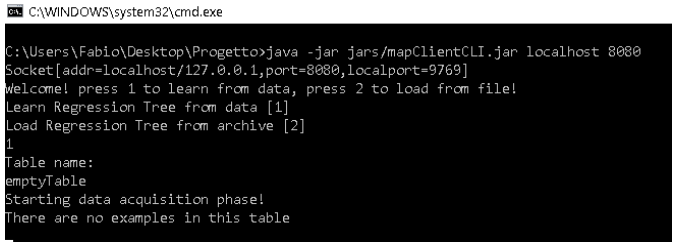
- allIdenticalValues, data set used to show the case in which the decision tree only has one leaf node.



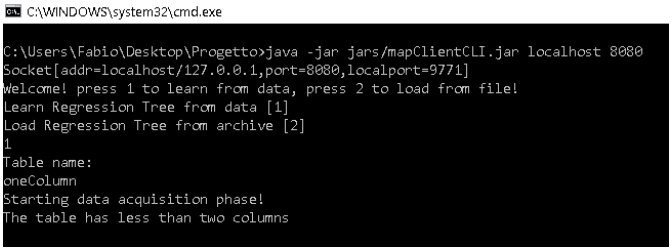
- allIdenticalValuesC, like the previous one but with continuous attributes.



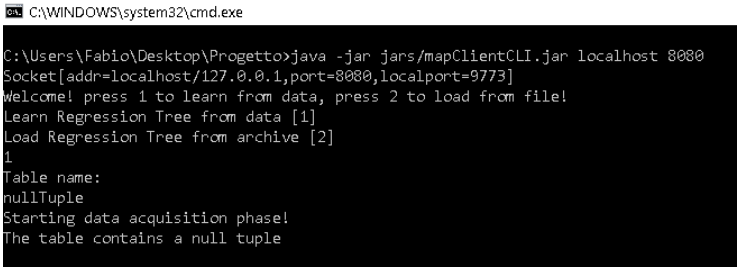
- emptyTable, used to show what happens if the table is not populated.



- oneColumn, used to show what happens if the table only has one column.



- nullTuple, used to show what happens if one or more tuple in the table has null values.



Material

- mapServer.bat and mapServer.jar.
- mapClientCLI.bat and mapClientCLI.jar.
- mapClientGUI.bat and mapClientGUI.jar.
- SQL scripts to create the database and the various test tables.
- Source code.
- UML class diagrams.
- Jar file for JDBC driver connector version 8.0.17.
- Public javadoc for the users.
- Private javadoc for the developers.