

THE CLIENT FOR THE CONTROL SYSTEM AND DATA PROCESSING IN THE MAMMOGRAPHY.

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Abstract

This work considers an approach to design the client GUI for a distributed control system and image processing. The results of the high level design of the client GUI for the Meta Data Analysis system (MEDA) are presented. This client is intended for image processing in mammography. The interactive processing mode is a means to realize it completely in Java with the possibility of remote access by WWW. The MEDA Server resource manager provides conflictless access to the non-shared system resources for MEDA Client.

1 MAIN CONCEPTS

Using complex distributed systems leads to the development of client-server applications. We present here the results of the high-level design of the client of the MEDA system. The MEDA system will be designed for mammography applications. It consists of data storage and the data mining system. The data mining works using any tool which consists of any algorithms. Each tool is the chain of algorithms. This chain of the algorithms we will name as the Scenario. The MEDA user can define a new Scenario or use a previously created one. To make a new scenario the MEDA server includes the Scenario Editor. Developing a new scenario a user can choose algorithms from the Scenario Repository (this is our knowledge base). The next step of the data processing is the definition of the parameters and the algorithm learning of new Scenarios because it can use for example the learning neural network algorithms. After this it is necessary for speed to link all pre-compiled algorithms into a new Scenario. This Scenario can be used in the development of a new one. Each Scenario can be considered as some new algorithm. Its name and parameters are described in the Scenario Repository.

To make a flexible system it is necessary to have many work places which can have a common Data Repository and Scenario Repository. All these features belong to the MEDA server, which has the Scenario Editor as well as to make new Scenarios.. That's why we can write this program in Java. The MEDA client implementation in Java can guarantee the flexibility and compatibility of the client.

2 THE MEDA SERVER

The structure of the MEDA Server is presented in Fig. 1. This program consists of modules such as the Scenario Editor, the Scenario Repository, the Data Storage, the Resource Manager and the Algorithms Repository. The Resource Manager controls all shared resources. Therefore the Algorithms Repository, the Scenario Repository and the Data Storage can be used by all users of MEDA. The Resource Manager description for ATLAS DAQ prototype) is presented in the ref. [1] and can be considered as an example of this module.

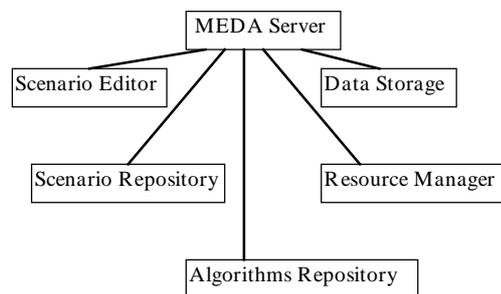


Figure 1: Server structure.

The client can not edit the scenarios. It can only use the scenarios created by the MEDA Server. All data is stored in the Data Storage of the MEDA Server. The MEDA Client can only display the chosen data and the structure of the Scenario. Using the Scenarios stored by the MEDA Server it can run the Server data processing. The results of this work obtained by the MEDA server will be displayed by the MEDA Client.

2 THE MEDA DATA

The data stored by MEDA are different kinds of tables and pictures. Each data mining process is a chain which consists of the data (the tables and the pictures). These data are transformed on each work step by any Scenario or Algorithm. The simple data transformation can be described as a sequence: Input Data, Transformation Algorithm (or Scenario) and Output Data (The Output Data is determined by the Input Data and the Transformation Algorithm). Then all the MEDA data

mining processes is the chain of these sequences. To save all the structure of the data we can save all the chain including the pointers to the used algorithms. This chain we will name as a Project (See the Figure 2). Each Project is determined by its initial data and by the chain of the algorithms.

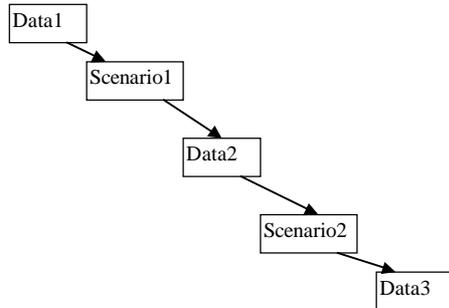


Figure 2. Project Structure.

This means that the Project is not only the data (Data1, Data2, Data3), but it is the data with the chain of algorithms (Data1, Scenario1, Data2, Scenario2, Data3). The chain of algorithms describe the structure of the data.

REFERENCES

- [1] I. Alexandrov, V. Iambourenko, R. Jones, V. Kotov, V. Roumiantsev High-level design of the resource manager, Note 060, Version:1.2, <http://atddoc.cern.ch/Atlas/Notes/052/Note052-1.html>