

DATA ACQUISITION AND CONTROL OF SPECTROPHOTOMETRIC DEVICES USING A GENERIC PROGRAM AND DYNAMIC LINK LIBRARIES

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SUMMARY

A program for the spectrophotometric data acquisition was implemented, allowing the control of any type of spectrophotometer, using dynamic link libraries. The program is now in use for the control of UV/Vis (Hitachi 330, Japan) and IR (Pye Unicam PU9512, UK).

RESULTS AND DISCUSSION

The program is divided in three parts (fig. 1) the user interface, the control and acquisition module and the device link module. The first two parts are compiled in a single program and the third is a Dynamic Link Library (DLL). The main program serves as a common platform for the data acquisition and processing and the DLL contains the device information and the communication routines. Once the library is loaded the program is connected to the equipment, with no library loaded the program can be used for the processing of existing data.

The system was written for Microsoft Windows version 3.1 using Borland C++ version 4.0. The program uses an abstract class containing the most common char-

acteristics to the photometric devices: physical link with the computer, control sequences, status lines, error handling, selection of a wavelength and scanning.

In each of the communication modules, a new class is created as a descendant of the previous abstract class, the new class define the specific properties of the equipment and provide functionality to the inherited characteristics. The DLL also exports a function that retrieves an object of the class defined in the library. This objects is then used in the program for the control of the device and for the acquisition of the data. The program and the DLLs share common data structures to define a single measured point and a collection of points forming the spectra.

To work with a given equipment, the user only have to load the corresponding device link module. It is possible to work simultaneously with two or more spectrophotometers, running another instance of the program and specifying the new device to link. Each module provides a dialog to change the equipment parameters that are specific in each case.

The program allows the processing and archival of the acquired data and is possible to display several files at a time for comparison.

Conforming with the standards of the windows interface, the program consists of a main menu, speedbar and a status line. Printing facilities and online help are also included.

Up to now we have designed modules for the communication with two spectrophotometers: the UV/Vis Hitachi model 330 and the Infrared Pye Unicam PU9512.

REFERENCES

1. Programming Windows, Microsoft Press. Washington DC, USA, 1990.
2. Model 330 Spectrophotometer, User manual, Hitachi Corp., Japan, 1991.
3. PU 9510 and PU 9520 Series Infrared Spectrophotometers, User Manual, Philips Scientific Inst. Corp., UK, 1983.

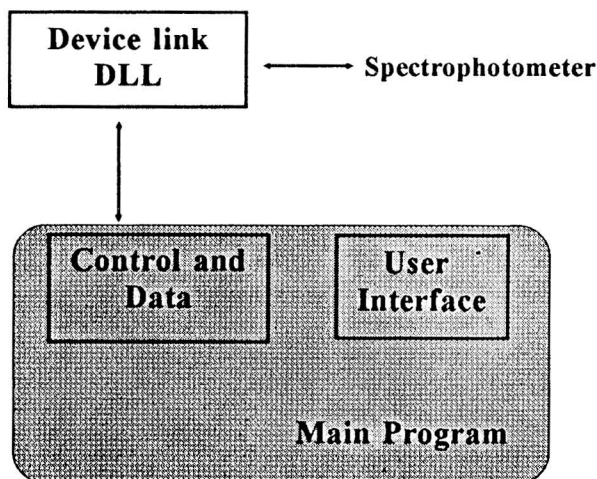


Fig. 1.- Structure of the system