Development of Web Interface of Image Analysis System DDGEL for 2D Gel Electrophoresis

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1 Introduction

Recently, a method called RLGS (Restriction Landmark Genomic Scanning) has been developed in order to detect and analyze the genetic alterations by observing the entire genomic DNA after separating DNA fragments in a single two-dimensional slab gel [1]. To analyze gel images obtained by the RLGS method, a lot of tasks must be done: thousands of spots must be detected where each spot corresponds to particular genetic landmark; a correspondence of spots between two images must be detected; links between spots and genetic information must be classified and stored in a database.

We have been developing a software tool named **DDGEL** so that such tasks can be done automatically or semi-automatically [2], where similar systems have been developed by other groups [3, 4]. Previously, user interface of DDGEL was implemented using the X-WINDOW (X11R6) system. However, it is hard to install X-WINDOW on standard PCs (personal computers) and thus limited users (i.e., users having UNIX workstations) can use DDGEL. In order to make DDGEL more user-friendly, we have newly developed a web interface for DDGEL, using which DDGEL can be easily accessed from standard PCs using standard web browsers such as NETSCAPE and INTERNET EXPLORER.

2 Web Interface

Although DDGEL is implemented on an UNIX workstation (server machine), users can access it from standard PCs through the web interface. A snapshot of the web interface is shown in Fig. 1.

The web interface has the following functions: (1) User identification/registration; (2) Spot detection; (3) Modification of spot data; (4) Database of reference gel image/spot data; (5) Addition and modification of comments on image/spot data; (6) Spot matching (under construction). Note that, although database of reference gel image/spot data is maintained on the server machine, users' gel image/spot data must be maintained by users. Since a lot of image data may be input by a user and the disk space of the server machine is limited, DDGEL does not maintain users' image/spot data.

3 Conclusion

Owing to the development of the web interface, DDGEL system has become a user-friendly tool for 2D gel image analysis. DDGEL with web interface will be available soon (see `http://www.hgc.ims.u-tokyo.ac.jp`).

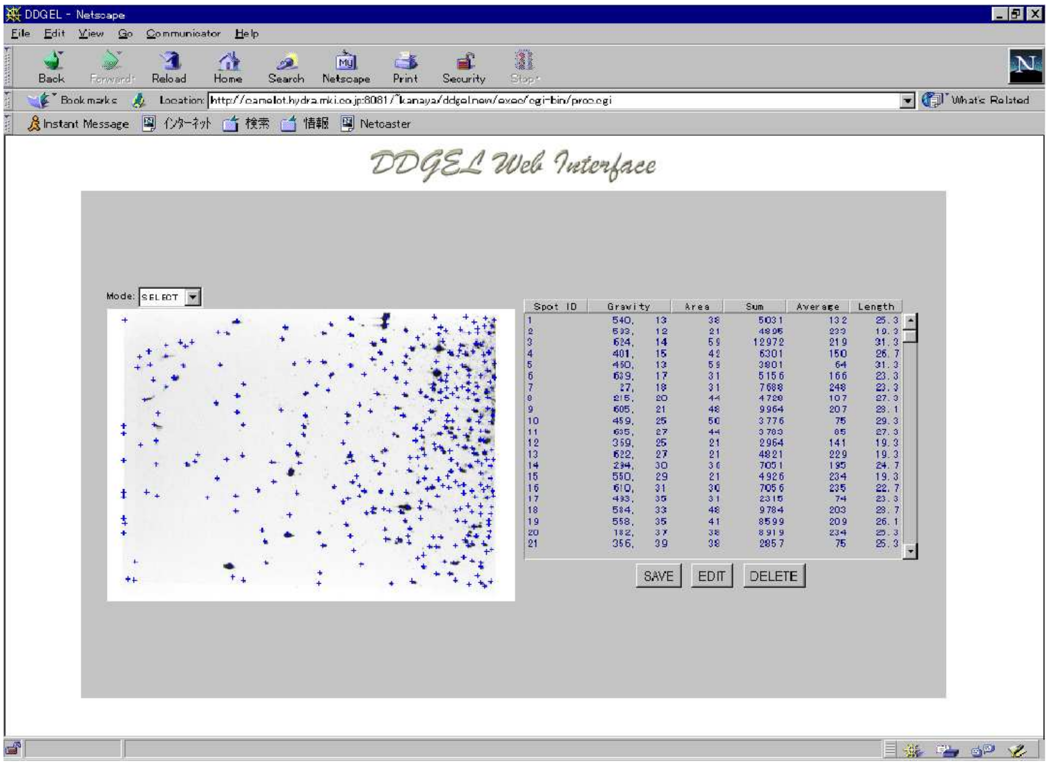

Figure 1: Snapshot of the web interface of DDGEL.

Finally, we conclude with future work. Since the quality of the current spot matching module (algorithm) is not satisfactory, improvement of the module is the most important future work. Moreover, this module should be combined with the web interface.

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