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VISOR–A PLANT VARIETY IMAGE DATABASE SYSTEM

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INTRODUCTION

This note reports on progress in the development of a database system for storing and viewing photographic records of plant varieties.

The VISOR system is the product of a collaborative project involving Biomathematics & Statistics Scotland (BioSS) and the Scottish Agricultural Science Agency (SASA).

SYSTEM OUTLINE

The main purpose of the system is to support investigations into methods for variety identification using digital image analysis.

VISOR uses World-Wide-Web browsers to view images. The system allows the user to:

- browse an image collection;
- view all images for a variety in outline;
- select one image for detailed inspection;
- compare all images for a pair of varieties.

Several views of the same specimen can be held and viewed. Images can be stored of samples of a variety drawn from more than one plot, trial or season.

Photographs of plant specimens are taken in the usual way. Samples are photographed under controlled artificial lighting conditions and the photographic images are captured on slides. The slide images are digitised and converted to the JPEG image format for storage on the computer.

The VISOR system has been created from freely-available computing tools including standard file management structures for organising the image files and WWW browsers for viewing the images. The main advantage of this approach is ease of porting the database across computing systems - it can operate both on networked systems and stand-along PCs. The use of the WWW also allows wide access to the photographic records.

OPERATION

VISOR can operate on a stand-along PC or on a networked server and can be accessed across the Internet. A JAVA/JAVASCRIPT-enabled browser is required for access, preferably Netscape 4 or Internet Explorer 4.

APPLICATION

At BioSS/SASA the image database system has been used to hold three years of photographic data on carrot varieties. It includes views of the plants as whole roots, as sliced roots, and samples of the leaf foliage. A total of 160 variety sowings are currently held and these occupy approximately 10 megabytes of computer disk storage.

The system can handle more than one species.

FUTURE PLANS

The next step is to see whether it is possible to match varieties using a combination of the shape and colour information contained in the photographic images. The aim is to see whether, given a photograph of a variety from a new season, we can find in the database the same variety from an earlier season. Preliminary results from three seasons of data on sliced roots of carrots have been encouraging. Work will continue on developing these approaches.

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