The Newsletter from Hoare Research Software

THE Cruncher

June 2006

New-Generation Bioinformatics Software

Many of our clients are working in bioinformatics - we can now supply them with the products from CLC Bio, a young but very vigorous Danish company.

This company not only has great products, but it also makes it easy for potential users to see how to use the products to achieve their own goals. For instance, the pages linked to from **www.hrs.co.nz/clcbioex.aspx** will enable those who are newly coming to grips with this complex topic to find out just what the techniques do.

CLC Bio has four main software products (called Workbenches) that let users do bioinformatics analyses. All have smooth data management, excellent graphical viewing and output options and are available on Windows, Mac OS X, and Linux platforms.

A Free Workbench enables (among other methods)

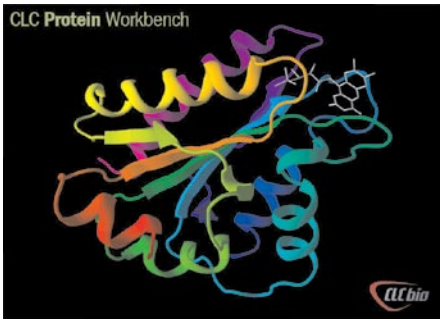
- Restriction site analysis
- Alignments
- Phylogenetics
- Integrated GenBank searches
- Advanced DNA to Protein translation

A **Protein Workbench** and a **Gene Workbench** are purchasable products that extend this basic framework to enable in-depth studies in the relevant areas. For instance, among very many other features, the Gene Workbench contains tools for assembly of DNA sequence data and molecular cloning, and an editor for primer design. The Protein Workbench includes a 3D molecule view, transmembrane helix prediction, and secondary protein structure predictions.

A **Combined Workbench** incorporates all the features of the above products.

A hardware-accelerated bio-informatics solution will soon be available. It will speed processing by at least 25 times that of a fast desktop computer – at a very competitive price.

A more detailed overview, and links to product pages, can be read at **www.hrs.co.nz/CLCintro.aspx**.



Some 3D views made from protein structure files

Calculation and Surveys Over the Web

Most of the products that HRS sells are designed for use on user's own computers. However, many of them can also be used through a server that allows anyone with a web browser and appropriate passwords to carry out calculations or fill out forms.

Mathematical Products

Mathcad and *Mathematica* both allow you to make documents which you can view on the Web. The documents contain various kinds of option buttons or text windows that are used through a browser to alter the calculation performed in the document. Examples can be seen at the links below. If you want to experiment with your own documents then contact **support@hrs.co.nz** and we may be able to run them for you on our server for a trial period.

See **www.hrs.co.nz/mmweb.aspx** and **www.hrs.co.nz/mcweb.aspx**.

The MATLAB Web Server lets you achieve similar effects with MATLAB programs.

STATISTICA

STATISTICA allows you either to build a customised application similar to the ones constructed by the mathematical applications, or to make all or a subset of the menu options of the desktop version available over the Web. It is explained in a movie reached from **www.hrs.co.nz/statweb.aspx**.

NetCollect

This program works with SurveyPro to make it easy to put data collection surveys on a web server. NetCollect implements many techniques to help you get the best quality responses from your respondents. See **www.hrs.co.nz/netdemo.aspx**.

Inside ...

STATISTICA News

Two Textbooks for *STATISTICA*

The following books might be useful for users of either *STATISTICA* or MATLAB:

- **"Applied Statistics using SPSS, *STATISTICA* and MATLAB"** by Joaquim P. Marques de Sá, published by Springer-Verlag. ISBN 3540011560. Google the ISBN number to find it on Amazon.
- The electronic textbook that has been on-line for over 10 years from StatSoft has now been published as **"Statistics: Methods and Applications"** by Thomas Hill and Paul Lewicki, published by StatSoft. ISBN 1884233597.

Amazon describes it thus: "This book offers a comprehensive, almost encyclopaedic presentation of statistical methods and analytic approaches used in science, industry, business, and data mining, written from the perspective of the real-life practitioner ("consumer") of these methods. The primary emphasis is on applications rather than theoretical derivations and formulas."

Analysis of a Split-Plot Design

STATISTICA is mostly very intuitive to use, but sometimes there are statistical subtleties that need explanation by an expert. One example is given in a page linked from www.hrs.co.nz/statsplit.aspx.

VEPAC

The Variance Estimation and Precision (VEPAC) procedure in *STATISTICA* is used for analysis of variance in a wide range of research and manufacturing applications.

It provides a comprehensive set of techniques for analysing data from experiments that include both fixed and random effects. With VEPAC, you can obtain estimates of variance components and use them to make precision statements while at the same time comparing fixed effects in the presence of multiple sources of variation.

In the VEPAC procedure, an alternative to ANOVA estimation is provided by restricted maximum likelihood estimation (REML). The REML method is based on quadratic forms and requires iteration to find a solution for the variance components.

See www.hrs.co.nz/vepacpress.aspx.

User Stories

The StatSoft web site includes a listing of industries and application areas, including the following ones, with descriptions of how *STATISTICA* is being utilised to solve their business needs. Go to www.hrs.co.nz/Statstory.aspx to see details.

- Banking
- Financial Risk Management
- Food Manufacturing
- Insurance
- Marketing

Reviews

Data Mining Tools

Robert A Nisbet has recently reveiwed a number of programs for mining CRM systems. In the section on *STATISTICA*, says, in part, "The base package is worth the price for the descriptive statistics and graphical capabilities alone. The data mining module is seamlessly integrated with the classical statistical capabilities…" The review comments in detail on features. Go to www.hrs.co.nz/statrev1.aspx to link to the article.

Note that the comparative table is at www.hrs.co.nz/statrev2.aspx and is easy to miss in the original article.

Comparative Review of Statistics Programs

Dr. J. A. Wass (a statistician at Abbott Laboratories) in Scientific Computing February 2006, reviewed 11 general statistics packages. He grouped them into three categories based on the functionality that they offer. The advanced group included only SAS, S-PLUS, and *STATISTICA*.

While the review offers no comparative ratings or rankings within each of the three categories, Dr Wass praised not only the comprehensiveness of *STATISTICA* and its "we do it all" approach, but also the menu-driven user interface of the application that makes all the extensive functionality so easily accessible to the user. (Review not available on the internet.)

CD Supports Quantitative Risk Analysis

David Vose, who now runs an international company supporting users of QRA, has put his skills and knowledge on a CD, called ModelAssist. This is a comprehensive training and reference tool, which can be used as a 'personal risk analysis expert'.

The main focus of ModelAssist is on risk analysis techniques and methods and teaching users how to do good risk analyses. ModelAssist is not meant to just teach how to use risk analysis software. While ModelAssist does show you how to set up various models within @RISK, the purpose of doing so is to make the actual modelling technique or method easy so that the focus can remain on creating accurate, clear, decision-supporting, and defensible risk analysis models.

Unlike 'live training', the risk analysis knowledge in ModelAssist is always available to its users. With full search capabilities, a complete index, and logical navigation, users of ModelAssist can find the answer to almost any risk analysis related question.

Contact **Glen** to order your copy today!

News from LINDO Systems Ltd

A faster, more powerful release of LINGO has recently begun shipping. LINGO 10 includes a number of new features that extend the functionality of the modelling language as well as several enhancements that boost the speed of the underlying solvers.

The recently released What's*Best*! 8.0 solves broad classes of problems substantially faster and includes expanded and improved support for several Excel functions.

Contact **Glen** for more information on both these products.

Mathcad 13 Service Release 1

This is a free download for users of Mathcad 13. (A CD has been sent to administrators of volume licenses). In addition to numerous bug fixes, important improvements and enhancements are provided in Mathcad 13 SR1.

If you want to view the service release notes or to download the installer, go to www.hrs.co.nz/mc13sr1.aspx.

Mathcad Add-In for Microsoft Excel

The Mathcad Add-In for Microsoft Excel lets you add Mathcad calculations and plots to your Excel worksheets, with full access to worksheet data. The add-in features a 3D plot wizard, easy mapping between Excel ranges and Mathcad variables, automatic recalculation, and online help. Available free from the download site www.mathcad.com/download/.

Mathcad Extension Packs and Libraries

The older extension packs and libraries do not work with Mathcad 13 unless they are upgraded using free downloadable utilities available from the Mathcad download site (address above).

Mathcad Modules

"Inside Mathcad - Programming" is a Mathcad module – it is installed like a workbook, and is read like a Mathcad document. It describes all the various methods to do mathematics or to control Mathcad using programming techniques.

There are detailed tutorials on Mathcad's programming language and instruction on how to build dynamically linked libraries, plus other information to let you get the most out of Mathcad.

To get this and other modules, you must first register at www.mathcad.com/download/ using your email address and Mathcad serial number. (You can find your serial number on your CD sleeve or in the Help/About dialog box of your product.)

Differential Equation Solving is another module (see above) and is an introduction to solving ordinary differential equations and systems of ordinary differential equations in Mathcad, with detailed examples that demonstrate the practical uses of many of Mathcad's solvers.

Mathematica webinars

Wolfram are offering webinars to introduce people to *Mathematica*. The webinar called **"S10: A Technical Overview of *Mathematica*"** will be presented at 11am NZ time on all Fridays in June and perhaps July. This webinar gives a broad overview of *Mathematica* and is designed for those new to *Mathematica* as well as those who want to learn what the latest version can do.

These webinars are live and run for 1 hour, including 10-15 minutes for questions. They are given online, so anyone with an internet connection can attend. Course dates and times are listed on the Wolfram Education Group training calendar accessible from www.hrs.co.nz/mmtrain.aspx. You have to make bookings weeks ahead, because they have only a limited number of places in each webinar.

The Wolfram Technology Guide

This is an online resource that graphically highlights many of the unique innovations in *Mathematica* and other Wolfram Research products. See www.wolfram.com/technology/guide/

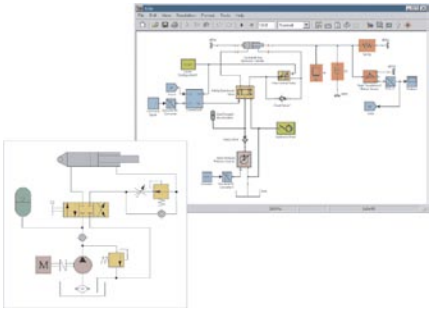
MathType Price

Price now is only $296+GST. Even less for academics and for more than 1 copy.

SimHydraulics 1.0

This product extends Simulink with tools for modelling and simulating hydraulic power and control systems. It enables you to describe multidomain systems containing connected hydraulic and mechanical components as physical networks.

See www.mathworks.com/products/simhydraulics/.



An example of a SimHydraulics model

What's New in MATLAB R2006a

R2006a, launched on March 1, 2006, includes updates to MATLAB and Simulink, plus one new product, major updates to 10 products, and minor updates and bug fixes to 64 products. This release reflects a change to a twice-yearly release schedule and a new naming convention.

We have sent out update CD's to all contacts for licenses on current maintenance, and recommend that all customers install the new version if their procedures allow this.

Contact **Bruce** if you think you have been missed out or want more information. For details of the new release go to www.hrs.co.nz/mlr2001a.aspx.

MATLAB Central

A user forum for file exchange, newsgroups, links and Blogs.

www.mathworks.com/matlabcentral/

The Blogs include regular features by MathWorks staff on MATLAB programming and related topics, submissions from the File Exchange and image processing concepts and algorithm implementations.

Introduction to MATLAB

If you are wondering if MATLAB is for you, there is a recorded Webinar that acts as a quick introduction to some aspects of it. Go to www.hrs.co.nz/MLwebinar.aspx to be linked to the MathWorks web page where you can access it.

MATLAB Newsletter Coming...

We are preparing our mailing list and ordering requirements for a mailout later in the year of the MATLAB News and Notes (N&N). Highlights of N&N include:

- Technical "how-to" and product trend articles
- Articles featuring customer applications
- Industry application examples
- Major product news

If you want to receive the N&N, and we have not previously had discussions with you about MathWorks products, then please email matlab@hrs.co.nz with your full postal mailing details.

Free Seminars

*We have enclosed a flyer advertising seminars that HRS will conduct in Auckland, Christchurch and Wellington from 19-25 July. To see details on the Web go to **www.hrs.co.nz/seminars**.*

Creating Applications with MATLAB

MATLAB is a superb environment for developing algorithms in all areas of engineering and the mathematical aspects of financial tools. However, in many situations it is valuable to be able to deploy these applications to a large number of users who do not need to know anything about MATLAB. The seminar will introduce MATLAB, showing why it is such a powerful and convenient environment for developing applications that use mathematical techniques, and then it will demonstrate the deployment of MATLAB programs as either Excel add-ins or stand-alone applications.

Data Mining with STATISTICA

This seminar will introduce *STATISTICA*'s main features, from the interaction with data sources through the graphics that are part of all *STATISTICA* installations, right through to the advanced data mining tools that are optionally available.

The emphasis will be on the ease enjoyed by all users, from total beginners who know only Excel, to advanced statisticians and data analysts.

Quantitative Business Decision-making

Many business decisions can be enhanced by considering the results of quantitative modelling, of the sort performed by Operations Researchers. This seminar will demonstrate three techniques that can be applied by business analysts using specialised software from leading international companies

- Time Series Forecasting, using Forecast Pro
- Optimisation using What's*Best*!
- Quantitative Risk Analysis using @RISK.

MATLAB for DSP

A free seminar by Dr Don Bailey, Massey University. To be held in Christchurch, Wednesday 26 July

The seminar is based on a case study detailing the investigation of high speed weighing using impact on load cells. The example employed MATLAB for analysis and investigation, and Simulink to simulate the complete algorithm.

You will learn about the applications and advantages of DSP in different fields, what benefits DSP with MATLAB gives you, and where you can get training.

Check our website for details at **www.hrs.co.nz/dspseminar**

HRS in Fiji

On Monday 10 July HRS will present seminars on MATLAB, Mathcad and *STATISTICA* in Suva. Our clients at USP and FIT have been pressing us for some time to do this, so we have decided to make it happen so they can see products that improve education and commercial efficiency in the rest of the world.

Please register at **www.hrs.co.nz/seminars**.

Training Courses

The next round of public training courses will be held in November. We are recording expressions of interest now to facilitate our planning, so if you would like to let us know of possible interest, without committing yourself, do phone Bruce (Mathcad) or Glen (@RISK or *STATISTICA*).

We are planning a 2-day @RISK Training by Kathy Boardman, a 1-day Mathcad Training by Helen Clarkson - a certified Mathsoft trainer, and a 1-day *STATISTICA* Training course by Ray Hoare. To find out more and to register visit: www.hrs.co.nz/training.

Webinars – 28 July

Webinars will be used to demonstrate *STATISTICA* and Mathcad over the Internet.

Anyone with a broadband connection can register at **www.hrs.co.nz/seminars**, and on the day they will phone in to HRS and at the same time be able to see the product demonstrated on their computer screen.

This works particularly well when a group of people gather in a conference room with a data projector, and is recommended for those who can't make a seminar.

Did you get our eNews?

We are sending out the eNews at the same time as the Cruncher as part of a telephone survey of a sample of our clients. If you did not get it, perhaps your spam blocker is too effective. You may want to put **hrs.co.nz** on your "white list".

New Staff Member

We are pleased to introduce Bruce Raine who has a background in Computer Science. You can talk to Bruce about our Science and Engineering products by emailing **bruce@hrs.co.nz**.

Contacting us ...

We are based in Hamilton, but supply, support and demonstrate our products throughout New Zealand and parts of the South Pacific.

Product information:
www.hrs.co.nz

Email Addresses

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