

THE Cruncher

HRS web site

We are on the point of changing to a new web site. Most of the elements of the old site will be incorporated, but you should find that it is much easier to locate information about resources such as seminars and helpful hints for specific products. We will also make it easier for users of our major programs to find information specific to them.

We have used new technology that simplifies maintaining the site, so you should find that there are frequent additions and

changes that make it worth while visiting the site to see what is happening with products you are interested in.

The change will mean that bookmarks that you have previously used may fail, and you may have to set new ones.

Do let us know if you have any thoughts about the change - positive, negative, or alternative ways to do things. We will especially pleased to be told if any links are broken.

Mathcad in Economics

Prof. Dr. Andreas Thiemer has produced a website containing Mathcad documents of use to economists. He says *"The aim of the site is to convince you that Mathcad is a powerful environment for quantitative economic research and teaching. I hope this site will become a starting point for a network of economists using Mathcad."*

"Mathcad is a wonderful tool for exploring the behaviour of models because it takes a 'white box' approach. Students can see the equations that are being solved, and they have access to more complex models than those which are solvable by hand." See <http://appl.wirtschaft.fh-kiel.de/lehre/thiemer/modelzoo.html>.

Pre-purchase consulting

If you want to see how well any of our products can help you to analyse your data, you can take advantage of a new pre-purchase consulting scheme we are offering. We will contract to take one of your data sets, and produce a report in a form that you specify, along with a description of the methods used in production of this report. We envision a charge of about \$500 for this work, depending on the length of the job.

We believe that this will be much more efficient for our clients than obtaining a demo or loan copy of the software, and then spending days just finding out how to use it before being able to apply it to their task. If a purchase of the software is made then the consulting fee will be rebated, up to a maximum of 10% of the purchase price.

Exchange rates

The rising exchange rate is reflected in our prices, which have decreased substantially over the last few months. Do note that we calculate our prices using the "retail buy rate", which is less than the rate quoted in the media. Our prices include shipping and customs charges.

If you pay by cheque with your order we can calculate a price based on that day's exchange rate.

Macworld awards - Science/Engineering Software

WINNER Mathematica 4.2 "Wolfram Research released an upgrade that added new mathematics functions and an improved user experience to an already solid program. Users now have a feature-rich statistics package that includes analysis of variance, as well as a set of global-optimization functions that make *Mathematica* more useful for social science and business research. Anyone who relies on printed records for archival purposes or publication will also appreciate the improved word-processing features."

RUNNER-UP MATLAB 6.5. "... a welcome upgrade, offering improved application speed, programming options and graphical rendering of math functions for engineers, and much better Mac compatibility."

Trade displays

If you want to have a chat to Ray about parts of your work that might be improved by implementing the right software solution then you could come and see him at a trade display.

IPENZ conference, 30 March - 1 April. Quality Hotel, Hamilton.

NZ Statistics Association, 2-4 July, Massey University.



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Data mining solution packages

Solution Packages for *STATISTICA* Data Miner include a combination of training and initial model development consulting services, using specialist staff from StatSoft Pacific in Melbourne. Each package is based on a specific *STATISTICA* Data Miner project template, and initial package topics include:

- Customer Segmentation Applications
- Mail Order Customer Management Applications
- General Risk Management
- Loan Application Processing and Risk Management
- Management and Prediction of Rare Events
- Business Forecasting and Time Series Domain

Contact Glen for more details on these packages.

STATISTICA in quality control

A brief review of *STATISTICA*'s Quality control charts and also its data mining in the context of quality control is published by Felix Grant, a lecturer and consultant in the United Kingdom.

See www.qualitydigest.com/sept02/departments/quality_software.shtml. Some quotes are: "*STATISTICA's Data Miner is the best tool I've seen yet for actually applying what you learn at the sharp end of industry.*"

"These new additions to the STATISTICA 6 product range take traditional quality further, make it more accessible, and introduce a new level of integration that yield considerable synergy payoffs. If you have unsolved analytical problems, try STATISTICA 6."

Another quality control case history is at www.qualitydigest.com/sept02/departments/02_app.shtml. In this case the investigation showed that measurement variability was a problem.

@RISK for Project version 4

If you use Microsoft Project to control your planning process you will know the difficulty of estimating the values used to build your model.

By adding @RISK for Project to the basic product you will be able to build uncertainty directly into the components of your model. Monte Carlo simulation then lets you make quantitative assessments of the likely variability of your output parameters.

Simply replace uncertain values in your project with @RISK functions which represent a range of possible values. Select bottom-line fields like Finish Date, Project Duration, or Total Cost as outputs, and start a simulation.

The result: distributions of possible outcomes and the probabilities of getting those results. This not only tells you what could happen in a given situation, but how likely it is that it will happen.

Version 4 is totally re-engineered, with state-of-the-art graphics and an enhanced simulation engine, making it faster and easier to analyse schedule and cost risks and to present your findings to others. See www.hrs.co.nz/riskpro for more information.

MATLAB for non-engineers

We normally promote MATLAB as a tool for engineers. However, we have recently helped a couple of Management Science students at Canterbury University to use MATLAB to solve a vehicle routing problem in the grocery industry.

We know of a number of statisticians who use MATLAB to develop new algorithms in preference to using statistics software.

We recently developed an algorithm and a graphical user interface to assist a student to study repetition of nucleotide sequences in DNA.

Although MATLAB is used extensively for engineering in New Zealand, particularly in communications applications, we find that there is a large number of users who treat it as a "language of technical computing".

We are interested to hear of any more applications in this and other areas. Contact Ray.

LINGO 8 and LINDO API 2

A substantially faster set of solvers is now available with the newest releases of LINGO and LINDO API—including the new Global solver and Multistart solver. These new solvers can help find better solutions to non-convex models. The new releases also offer significant enhancements that can improve performance on many linear and integer models.

The new release of LINDO API also features enhanced interfaces to other systems such as MATLAB and Java.

See www.lindo.com for articles on these improvements, as well as examples of the application of Lindo products in teaching and business.

The Lindo Lines newsletter, available from the above site, includes discussions of basic problems found in many optimisation situations, and the way in which LINGO and What'sBest! can be used to solve them.

ALF

The Building Research Association of NZ sells a program called ALF, that makes various calculations regarding energy flow in houses. You can get more information at www.branz.co.nz/main.php?page=ALF%20Software.

LGO and MathOptimizer

We have been asked by Pinter consulting services to represent them in NZ to sell their optimisation products. Although we already sell a number of these products, particularly the ones from Lindo Systems, it seems that LGO and MathOptimizer have some special features that our clients may find to be valuable.

LGO is a compiler-based global and convex nonlinear solver, used with Lahey Fortran and Microsoft Visual C++. If you are a programmer looking for maximum speed and flexibility in model development this may be a useful product for you.

MathOptimizer is a Mathematica-based product, most suitable for prototyping, education and use in interdisciplinary research. See www.wolfram.com/products/applications/mathoptimizer/.

Contact Marc to get more details for both these products.

STATISTICA Group

The URL <http://groups.yahoo.com/group/statistica/> takes you to a Yahoo site that will let you sign up to this email-based user group. The activity is not high, but it can be a convenient place to ask other users for statistical advice.

Mathcad 11

Mathsoft have decided that its strength lies in design documentation, and will continue to enhance Mathcad with features to assist this purpose.

The major announcement associated with the release of version 11 is the implementation of the "Enterprise Edition". This version has licensing options and additional features that make Mathcad particularly appropriate for large organisations that wish to use Mathcad as a mission-critical tool to capture and share design information.

Many well-known international companies were doing this anyway, and the new features are designed to help them and others in this task.

Emphasis has been placed on backward compatibility in this version, and it can read documents produced by all earlier versions.

We are sure that the new features in Mathcad 11 clearly make it worth while for those using older versions to upgrade. Contact Marc for more information.

Mathcad 11 Update

A downloadable patch is available at www.mathcad.com/download, to fix a variety of issues that have been discovered since the release of the product.

Mathcad at U. of Canterbury

The University of Canterbury School of Engineering recently purchased a Mathcad license for student and staff use. Dr's John Berrill and Bruce Deam from the Civil Engineering department made the case for purchasing the license. They say "We expect that Mathcad will allow our students to significantly improve their understanding of the engineering because their attention doesn't need to be diverted toward the underlying mathematical manipulations at the same time. Student assignments should be clearer because their formulae will no longer be hidden in spreadsheet cells that are seldom displayed in submitted assignments, with benefits both to staff and students." They told us that Mathcad had been seen for some time as the best product for this purpose, and the recent changes in pricing have made it feasible to use.

Mathcad support

Mathsoft now have a policy of providing answers to technical support questions only for the current version and the one before.

HRS will attempt to help you with any version, and you can access searchable databases at <http://support.mathsoft.com>.

SimMechanics 2

The Mathworks recently announced the availability of SimMechanics 2, the latest version of the mechanical simulation software used to expand the power of Simulink to model physical systems.

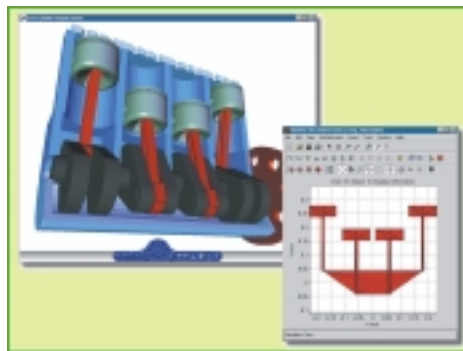
SimMechanics enables engineers and researchers to model mechanical systems (bodies and joints), simulate their motion, and analyze the results by specifying physical properties of the system, rather than the mathematical properties as required in the basic Simulink environment.

The simulation is done by Simulink, and the physical model is easily connected to any control and dynamic system designed with traditional Simulink blocks.

New capabilities include improved animation, new spring-damper blocks, and a new variable mass block. Animating models in SimMechanics is easier with several improvements to the MATLAB graphics animation tool. New buttons have been added to toggle the display of coordinate systems, center-of-gravity icons, and bodies.

Users can create movies of the mechanical system motion, storing the animations as AVI files to be used later in presentations.

You can also generate C code so that you can run the models on real-time and hardware-in-the-loop systems.



In the picture above you can see to the left a model of an engine, created using the Virtual Reality Toolbox, and to the right a Matlab Graphic automatically generated by the model

Mathcad users say:

"With all the long and hairy geotech formulas that are in the texts and academic papers, Mathcad has made it really easy to code these formulas in and use cutting edge thinking rather than relying on older and more conservative formulas".

**Andrew Morrison, Structural Engineer
Connell Mott MacDonald**

"Mathcad is THE best tool for quickly verifying derived equations—I use it all the time as a scratchpad to check my algebra or to feed in numbers to check calculations. The units feature is superb. The ability to quickly generate and change graphs of functions and data is extremely powerful. I am now using Mathcad to write my web-based lecture material".

**Conan Fee, Department of Materials and
Process Engineering, Waikato University**

ChemNews

This free printed newsletter from CambridgeSoft contains many articles of interest to chemists. We get copies every few months to distribute to our clients, and have plenty to go around. Please contact Marc to let us know if you would like to receive it.

MATLAB in Fiji

HRS is now the official distributor of MathWorks products in Fiji. The University of South Pacific is our first customer, and we are keen to find other organisations who wish to talk to us about using MathWorks' products there.

Mathematica 4.2 on the Mac

The November 2002 issue of Macworld reviewed Mathematica 4.2 and gave it 4.5 mice - a very high score! "It has the largest scope of math functionality, the most complete set of features for print and Web publishing, and exemplary compatibility with OS X."

Financial programmers could note this quote: "... analysts will soon be processing the financial data piling up on the Web as .xml data files with Mathematica's computational packages for time-series processing and options trading. Wolfram Research's offerings are among the most popular with math-oriented traders."

(Note: there are Windows and Unix editions, too.)

Seminars and training

Quantitative Risk Analysis Training

The next scheduled public training on this topic is 26-27 June, in Auckland. The course will be similar to previous ones in the series and will give participants a good appreciation of how to use @RISK or similar Monte Carlo simulation tools for making business decisions. See www.hrs.co.nz/training for details.

Mathcad Training

The next public Mathcad training is scheduled for 11 July in Auckland. By attending this course you will be rapidly introduced to a wide range of techniques used within Mathcad to perform engineering or other calculations. We will remind you in the next Cruncher, which will come out shortly before the training course, but to hold a place you might want to email Marc. See www.hrs.co.nz/training.

MATLAB Training

We have scheduled an "Introduction to MATLAB" course on 26-27 November. It is a way off yet, and you may prefer to organise private training before then. Call Marc, or see www.hrs.co/training.

STATISTICA Training

We will run a one-day public training course called "Using STATISTICA in research" on 1 May 2003, in Auckland. This will be of value to anyone who is interested in fully understanding the features of STATISTICA version 6, as well as those who have access to a STATISTICA license.

Ask us about package deals that combine the purchase of a STATISTICA license with the day's training, and about special offers for University Academic staff. See www.hrs.co.nz/training.

Statistical Process Control Training

We are offering a one-day public training course called "An introduction to Statistical Process Control". This course will focus on the use of statistical software to interpret process measurement data in order to ensure that departures from the desired "in-control" situation can be detected. Although the methods used will be illustrated with STATISTICA, the treatment will be general, so the course will be of interest to those with other statistical software used for the same purpose.

The course will run in Auckland, on 2 May 2003. Details are at www.hrs.co.nz/training. Phone Glen for more information.

Seminar series

We have been running seminars 4 times per year recently, but have decided that the needs of our customers are best served by having only 3 public seminar sets per year, and putting more resources into in-house visits where customers can tell us what they want.

You will see from the enclosed flyer that we will be offering a large variety of seminars over 3 days - some of these are ones we have done before, others are new, and all have been revised. The March seminars will only be held in Auckland and Wellington, but we expect to visit Christchurch in August. The last seminars for the year will be in November. See also www.hrs.co.nz/seminars.

If you are keen to discuss your business or research needs with us, or have us show you how our software can help you, please call Ray.

MATLAB Webinars

The MathWorks are continuing to produce these Web-based seminars, and the enrolment records show that many New Zealanders are taking advantage of them to increase their knowledge of the way in which MathWorks products can help them work more efficiently.

We are sending out emailed reminders each month to those who we know are interested in MATLAB, and we welcome new people who want to be included on the list. Contact Marc.

For the schedule, and for access to recorded previous webinars, go to www.mathworks.com/webinars.

MATLAB News and Notes

We are glad to distribute this free printed quarterly newsletter to anyone who is interested in MATLAB. It contains hints, explanations and new product news. Please contact Marc to let us know if you would like to receive it.

Staff

Bobbi, our marketing manager, is following her heart to Christchurch. We thank her for her efforts for HRS, and wish her well.

Our new marketing manager is Leon Tepania, a graduate of Waikato University with experience in business consulting. He starts as this Cruncher goes to press, so we look forward to his ideas on how we can help you to work better.



Contacting us ...

We are based in Hamilton, but supply, support and demonstrate our products throughout New Zealand.

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