PRE-CONFERENCE **TECHNICAL WORKSHOP**

PREDICTIVE MODELING TECHNIQUES
Theory, Applications and Hands-on

Resorts World Convention Centre
Level 1, Virgo Rooms 2, 3 and 4

WEDNESDAY, 16th MAY 2012

TIME	SESSION TITLE
1400h – 1430h	**Session A** **Mathematical Introduction of Predictive Modelling Techniques** Speaker: Dr Fabian Winter
1430h – 1515h	**Session B** **Supervised and Unsupervised Modelling** Speaker: Xavier Conort
1515h – 1530h	Questions & Answers
1530h – 1545h	**Coffee Break**
1545h – 1630h	**Session C** **Applications of Predictive Modelling in Health Insurance** Speaker: Dr Fabian Winter
1630h – 1715h	**Session D** (*Hands-on session**) **An Introduction to GLIM Using R** Speaker: Xavier Conort
1715h – 1730h	Questions & Answers

*Interested participants please bring your own laptops for this session. Make sure your laptops have 'R' installed in them already. You may refer to the 'R' Installation guide found at the following SAS website link: http://www.actuaries.org.sg/?q=node/3120.

[Full Version]

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Speaker's Biography and Presentations

DR FABIAN WINTER

Dr. Winter joined the Munich Re Group in 2009 and is responsible for statistical solutions within Munich Health worldwide. He holds a PhD in Politics and Statistics from the University of Heidelberg, Germany. This Doctoral Thesis was performed after he obtained a Diploma in Statistics from the Institute for Statistics in Munich, Germany. Dr. Winter spent also half a year at the London Metropolitan University, Great Britain. In total, Dr. Winter brings 10 years of experience within the insurance business including his previous positions as Management Consultant at GCN Consulting in Austria and Switzerland. During his time within the Insurance Consulting Business, he worked for worldwide strategic projects within the primary- and reinsurance business sector. Fabian Winter´s main areas of expertise are complex statistical models to steer insurance operations including medical-, claims and network management. He has also deep understanding of statistical software (SAS, SPSS...). Besides statistical/ mathematical topics, he has a large range of experience in several functions of a Insurance Company while the time he worked as a management consultant. Fabian raised in Munich, Germany. He has been an active basketball player since over 20 years, holds the highest German coaching license to coach several basketball teams and is also a referee in Basketball.

SYNOPSIS of PRESENTATIONS

Session A: Mathematical Introduction of Predictive Modelling Techniques
The session will give a brief overview of techniques, which are usually used for predictive modelling like regression approaches, neuronal networks of decisions trees. Within this session, the audience will get an idea of the general approach of each technique including a short discussion about advantages and disadvantages of each technique.

Session C: Applications of Predictive Modelling in Health Insurance
Based on the first session, it will be shown for which purposes predictive modelling solutions are beneficial for a health insurance company.

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Speaker's Biography and Presentations

XAVIER CONORT

Xavier is a Fellow of the Institut des Actuaires and is an Enterprise Risk Actuary (CERA equivalent). His company, Gear Analytics, specialises in predictive modelling using R. He has held key roles in CNP's international Life banc assurance partnerships and acquisitions in France, Brazil, Italy and China (Actuary, Deputy Head of Budget and Planning department, Chief Actuary, Finance Director) and acted as Executive Committee Member for Sino-French Life Insurance and AXA Insurance Singapore (General Insurance). Xavier has extensive knowledge of predictive modelling techniques and hands-on experience in a variety of projects including risk management, strategic planning and M&A. In his spare time, Xavier participates in Kaggle competitions (kaggle.com) and has won 1st and 2nd places back-to-back in 2 recent competitions (on car dealership & credit scoring respectively). He is currently ranked 5th on Kaggle's overall competitor rankings, out of over 30,000 data scientists. Xavier holds two Masters Degrees in Actuarial Science and Statistics from ENSAE ParisTech (Paris Institute of Technology Graduate School) and Paris VII University.

SYNOPSIS of PRESENTATIONS

Session B: Supervised and unsupervised learning in insurance

The session discusses how data mining can be supervised or unsupervised. These techniques has potential application in Health insurance for pricing, risk segmentation, marketing, claims management, fraud detection and providers management. We will review "the good, the bad and the ugly" of GLMs which is by far the most popular predictive modelling technique in insurance. Whilst tree-based techniques (Radom Forest, Boosting Regression Trees) that, unlike GLMs, can model complex relations without any assumption being made about the nature of the nonlinearity relationship between the response and the predictors. Such non-parametric techniques can produce significantly better predictive accuracy than GLMs with lower modelling effort. Finally, we will discuss techniques used for fraud detection and show that unsupervised techniques, such as PRIDIT, allow to detect questionable claims without any prior claims audit. An example of the PRIDIT technique was its use to evaluate hospital quality; this research was funded by the SOA Health Section.

Session D: An Introduction to GLIM Using R

This session will provide participants to a hands-on GLIM modelling exercise using R. Participants are encouraged to download and install R and bring their own laptops to fully benefit from the session.

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