

Talk Announcement: prof. A. Gammerman

Conformal Prediction

The Gerstner Laboratory of CVUT Prague cordially invites you to attend a talk given by **professor Alex Gammerman**, director of the Computer Learning Research Centre (CLRC) of Royal Holloway, University of London.

DATE MAY 5, 2006 (FRIDAY)
TIME 11:30 AM
VENUE ROOM #112 (VYČICHLOVA KNIHOVNA)
CVUT FEL, KARLOVO NÁM. 13, BUILDING E

The CLRC maintains a team of influential researchers, such as professors Vladimir Vapnik, Alexei Chervonenkis, or Ray Solomonoff, spiritual fathers of important concepts which have shaped the research field of **machine learning**.

Abstract. *A new machine learning technique, called conformal prediction, makes it possible to complement many modern prediction algorithms with quantitative measures of their accuracy and reliability. The fundamental idea used is that of transductive (as opposed to inductive) inference, where, instead of estimating functions over the whole object space, predictions for new objects are made by analysing how well possible future observations conform to known data. The main feature of conformal predictors is that they allow us to control (up to statistical fluctuations) the number of errors made in classification and regression problems. Their advantages include the following: as they can be used on top of many state-of-the-art learning algorithms, they can deal with learning problems involving huge numbers of attributes; unlike many conventional statistical techniques they do not make any additional assumptions about the data beyond the standard assumption of randomness (the examples are generated independently from the same probability distribution); their measures of accuracy and reliability can be tailored to the individual objects to be predicted; they can be used in both "on-line" and "batch" modes, as well as in several intermediate modes. This new approach in machine learning has already been applied in a number of areas, including clinical diagnosis, bioinformatics, financial modelling, energy supply, oil exploration and ecology, and no doubt will find new areas of application.*

Professor Gammerman studied in Leningrad (now St Petersburg), acquired his PhD in 1974, and then worked in several Research Institutes of the Academy of Science of the USSR. In 1983 he moved to Great Britain and

worked first as a Lecturer and then as a Reader at Heriot-Watt University, Edinburgh. He was appointed to the established Chair in Computer Science at University of London (Royal Holloway and Bedford New College) in 1993 and served as Head of the Computer Science Department from 1995 until 2005. He is also the Director of the Computer Learning Research Centre at Royal Holloway, University of London. Professor Gammerman is a Fellow of the Royal Statistical Society, Fellow of the Royal Society of Arts, Member of British Computer Society. He chaired and participated in organising committees of many international conferences and workshops on Machine Learning and Bayesian methods in Europe, Russia and in the United States. He is also a member of the editorial board of the Law, Probability and Risk journal.

Professor Gammerman's current research interest lies in field of Algorithmic Randomness Theory and its applications to machine learning, the development of inductive/transductive confidence machines and intelligent data analysis. Areas in which these techniques have been applied include medical diagnosis, forensic science, genomics, environment and finance. Professor Gammerman has published over a hundred research papers and several books on computational learning and probabilistic reasoning. His most recent contributions include a book written with V. Vovk and G. Shafer and entitled "Algorithmic Learning in a Random World", published by Springer in 2005.