WSIT'11 – 11th IEEE Winter School of Information Theory

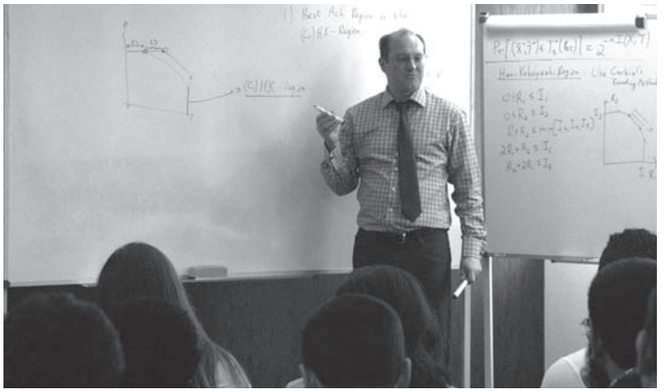
Barcelona, Catalonia (Spain)
March 14th–18th 2011

Continuing the tradition started two decades ago by Han Vinck and Rolf Johannesson, the 11th Winter School of Information Theory took place between the 14th and the 18th of March, 2011, in Barcelona, its southernmost location to date. This edition was jointly hosted by UPF (Universitat Pompeu Fabra) and CTTC (Centre Tecnològic de Telecomunicacions de Catalunya). As usual, the purpose of the week-long event was to provide an opportunity for doctoral students from different universities to gather and interact on a wide range of research subjects related to Information Theory. The 70 available slots filled up rapidly once registration opened. Altogether, over 110 applications for participation were received, a record number for the Winter School thus far.

The organizing committee for this edition included Profs. Angel Lozano and Ezio Biglieri, and Drs. Xavier Mestre, Azadeh Faridi, Vanesa Daza and Deniz Gündüz. The event was financially supported by the IEEE Information Theory Society, the Spanish Ministry of Science and Innovation, the Catalan Research Agency AGAUR, and Universitat de València. This broad support allowed keeping a low registrativon fee.

The Winter School consisted of morning lectures by distinguished professors and afternoon short talks given by the students themselves. The five lecturers this year were Prof. Helmut Bölcskei (ETH Zürich), who covered the topic of compressed sensing, Prof. Emre Telatar (EPFL), who addressed polar codes, Prof. Gerhard Kramer (Technische Universität München) who lectured

Group photo on the terrace of the UPF building where the lectures were held. A perfect sunny "winter" day in Barcelona!



Prof. Kramer explaining the intricacies of the interference channel.

on the interference channel, Prof. Daniel P. Palomar (Hong Kong University of Science and Technology), who introduced variational inequality theory, and Prof. Baltasar Beferull-Lozano (Universitat de València), who dealt with gossip algorithms. All of the lectures were lively, illuminating, and highly interactive. In the afternoons, students presented their ongoing work to their peers and to the professors and received valuable feedback.

Wednesday afternoon was free, allowing all attendees to enjoy the architectural and artistic wonders of Barcelona. The social program also included a banquet dinner in a central restaurant next to the popular "Ramblas", the core of Barcelona's old town. The instructors also got to enjoy a traditional Catalan meal with "calçots" (mild green onions dipped in romesco sauce) and other delicacies from the world-famous local gastronomy.

A word of gratitude goes to all the members of the organizing committee and to UPF's tireless staff —in particular Miss Joana Clotet and Miss Beatriz Abad— and to all the participants, who made this edition of the Winter School a resounding success. For the next edition, the southern drift continues into Turkey under the stewardship of Dr. Deniz Gündüz. Encouraged by the growing demand for participation, the next edition might arrive sooner than the usual two—year interval. Our best wishes for the 12th edition, and for many more to come!

For additional information on the 2011 Winter School:
http://www.dtic.upf.edu/~afaridi/WinterSchool

In Memoriam, Igor Vajda

Igor Vajda, Principal Researcher at the Institute of Information Theory and Automation (ÚTIA) of the Academy of Sciences of the Czech Republic in Prague, and a leading figure in the field of information-theoretic statistical inference, passed away unexpectedly on May 2, 2010.

Igor Vajda

Igor was born on October 20, 1942, in Martin, Czechoslovakia. After attending elementary and secondary school in Slovakia, he graduated in mathematics at Czech Technical University (CTU) in Prague in 1965, and received Candidate of Science and Doctor of Science degrees from Charles University in 1968 and 1990, respectively, with specializations in probability, statistics and mathematical informatics. He had been a key researcher at ÚTIA since 1965 and held a teaching position at CTU since 1969. For many years he was head of the Department of Stochastic Informatics of ÚTIA and served on the Scientific Boards of both ÚTIA and the Faculty of Electrical Engineering of CTU.

He spent the year 1966–1967 at the Institute for Information Transmission Problems (IPPI) in Moscow, and was a visiting professor of mathematics at the Military Technical College in Cairo from 1973 to 1976. After the political changeover in Czechoslovakia in 1989 he developed many contacts abroad, especially in Western Europe and the USA. He held many research grants since 1991, frequently traveled, and intensively cooperated in research with colleagues in other countries in the period 1991–2010.

Igor Vajda early recognized the meaning of different types of distances between distributions in information theory and mathematical statistics. One of his major research directions was the investigation of f-divergences $D_f(P\|Q) = \int qf(p/q)d\mu$ of distributions P and Q with densities $p = dP/d\mu$ and $q = dQ/d\mu$, and their statistical applications. In early papers he studied the relations between f-divergences and variational distance, the approximation, monotonicity, topological properties of f -divergences and their minimization under constraints.

A first systematic theory of f-divergences was presented in the book *Convex Statistical Distances* [2], with applications to hypothesis testing, minimum distance estimation, and random processes.

Igor Vajda's book *Theory of Statistical Inference and Information* [3], a first version of which was published in Slovak language in 1982, provides a comprehensive treatment of the theory of statistical inference and information. This book is unique in the field, contains a wealth of research results and has become an indispensable source of reference for researchers in the domain.

Igor Vajda used special f-divergences to generalize the Cramer-Rao bound and the theorems of Chernoff and Stein. The extension of the likelihood ratio statistic to divergence-based statistics for testing composite hypotheses was the subject of many papers of which he was the author or a co-author.

In order to compare the empirical distribution $\hat{P}_n$ with the theoretical distribution P_θ from a parametric model, one must turn to a sequence of partitions of the sample space. Igor Vajda and co-authors characterized the suitable speed of refining, and studied sequences of partitions generated by the quantile function.

Another research topic of Igor Vajda was the divergence-based estimation and testing in mathematical statistics. He used the distance $D_f(\hat{P}_n\|P_\theta)$ between the empirical distribution $\hat{P}_n$ and the