

# Theme

*Optimization and Data Mining*

## Scope

The computer revolution has paved the way to a search for techniques capable of dealing with the huge amount of data information around us in all branches of sciences, bringing new theoretical and computational challenges to exciting research areas ranging from web page clustering, to computer vision, financial mathematics and bioinformatics, etc., to mention just a few. The perceptron algorithm, support vector machines, margin classifiers, *k*-means clustering, *EM*-algorithm, are just few examples of the terminologies we often encounter in classification, clustering and machine learning problems. Optimization algorithms and techniques are often at the heart of such methodologies, and a variety of other properties leading to interpretation and computation of solutions rely on optimization techniques as well.

The scientific aim of this summer institute is seeking solutions to challenging data mining problems within the use and development of advanced / modern mathematical optimization and statistics tools. The special structures often encountered in data mining systems also provide motivation for further investigations on new optimization methods and algorithms capable of handling very large scale data, and hence this summer meeting will advance both areas.

Contributions on other topics of the continuous and discrete *optimization theory, statistical learning and applications* are also welcome.

EURO Summer and Winter Institutes (ESWI) are organized to stimulate good social and working links among promising young OR scientists in Europe. The participation is limited to a group of about 25. The participation is a matter of honor and a person can be a participant in an ESWI only once in her/his career.

Applicants should submit an unpublished paper in the range of the subjects of the Institute together with their curriculum vitae to their National OR Society. Each National Society of EURO will then select one (eventually two) candidate(s) and submit the information to the chairperson of ESI XXII. The Programme Committee will make the final choice of the participants.

## Activities

The activities on our ESI are twofold. Firstly, there is the common scientific exchange which we, students from all over Europe and renowned international teachers, are going to have together. At the Institute, there will be lectures delivered by invited speakers, but the main emphasis will be on the young participants' presentations, on the discussion, extension and refinement of their papers. A special issue of *European Journal of Operational Research (EJOR)* will be prepared, based on the papers submitted after ESI. Secondly, besides scientific exchange, there is the common time spent by all ESI participants, students and teachers, being so valuable. EURO considers the social activities to be most important for the success of the ESI. In fact, by common time spent for sportive activities, visiting museums, ancient places and various other sights, enjoying Turkish food specialities and entertainment and by a bus tour to wonderful Cappadocia, we will get better acquainted with each other and friendship can just begin. This might be a stable basis for an initialization of scientific collaboration and of the development of a personal network, a scientific home of young scientists who made valuable experiences and even let other colleagues and friends benefit from them. Herewith, of course, we also hope that the teachers will enjoy young people's interest and enthusiasm, and see them in a new generation of colleagues. The organizers of the Ankara ESI are looking forward to a scientific and personally attractive and exciting Institute that encourages, supports and enjoys all participants and gives various impulses among them, in and with hospitable Turkey.

## Location and expenses

ESI 2004 will take place on the campus of Middle East Technical University (METU), a leading Turkish university, in Ankara, the capital of modern Turkey. METU is well-known not only for its high scientific level, but also for its international contacts and atmosphere, its large and beautiful campus, for its vivid and fascinating student life. There are excellent sports facilities, e.g., in tennis and swimming, possibilities for walking around METU's own lake, restaurants with Turkish and international food. Ankara is like a painting composed by both places from the middle age and representative buildings from 20-21st century. Nearby we find settlements of many ancient civilizations, there are Hittites and Romans, early Christianity, Shellshocks and Ottomans.

The expenses of staying at the ESI (scientific program, accommodation, meals, and social activities) are covered by EURO, and other sponsors. The young participants will have to cover the costs of travel to Ankara. However, EURO encourages the National OR Societies to give support to their participants to cover these costs. The travel expenditures of the invited speakers will partially be covered by our Institute ESI 2004.

## **Schedule**

Deadline for submission of papers to the National Societies:

- To be decided by each National Society.

Deadline for submission of information on the candidates by the National OR Societies to ESI XXII:

- April 20, 2004

Announcement of selected participants by the Scientific Committee of the ESI XXII:

- May 15, 2004,

ESI 2004 (Optimization and Data Mining):

- July 9 – 25, 2004

## **Information**

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