

# 数学与系统科学研究院学术报告

报告题目: Pattern recognition, statistical learning and applications in skin cancer diagnosis

报告人: Professor Maciej Ogorzalek (IEEE CASS President, IEEE Fellow)

时间地点: 11:00 – 12:00 am, Tuesday, May 13, 2008, 708, Siyuan Building

## 摘要:

Digital photography provides new powerful tools for computer-assisted diagnosis systems in dermatology. Dermoscopy is a special photography technique which enable taking photos of skin laisions in chosen lighting conditions. Digital photography allows for seeing details of the skin changes under various enlargments and colouring. Computer-assisted techniques are used for feature extraction and pattern recognition in the selected images. Special techniques used in skin-image processing are discussed in detail. Statistical learning techniques provide very powerful tools for data and signal modeling and classification. We use special type of techniques allowing for building of ensembles of models. It can be shown that a carefully chosen ensemble of diverse models can outperform any of the individual models in the set. Feature extraction and classification techniques provide very powerful tools which can help the doctors in taking decisions. Performance of classifiers will be discussed in specific case of melanoma cancer diagnosis. The techniques have been tested on a large database of real images.

## 报告人简介:

Maciej Ogorzalek is a Professor of electrical engineering at the AGH University of Science and Technology, Poland and a Chair Professor of Department of Electronic and Information Engineering, Hong Kong Polytechnic University. He is an IEEE Fellow since 1997, Recipient of the IEEE Guillemin-Cauer Award in 2002, Recipient of the IEEE-CAS Golden Jubilee Award in 2004, IEEE Distinguished Lecturer from 2001 to 2003. He served as an Associate Editor of IEEE Transactions on Circuits and Systems, Part I 1993-1995 and 1999-2001, the elected member of the Editorial Board of the Proceedings of the IEEE since 2004, the Editor-in-Chief of the IEEE Circuits and Systems Magazine from 2004-2007, an Associate Editor Int. J. Circuit Theory and Applications since 1999, an Associate Editor of Journal of The Franklin Institute since 1997, and the Member of the Editorial Board of the International Journal of Bifurcation and Chaos. He was the Chairman of the Technical Committee of Nonlinear Circuits and Systems of IEEE CASS from 1997 to 1998, the Founding member of the IEEE CASS Technical Committee on Biomedical Circuits and Systems, the General Chairman of European Conference on Circuit Theory and Design in 2003. He had been elected the IEEE CASS Vice-President for Region 8 for 2002-2004 and IEEE CASS Administrative Vice-President since 2004. He is also the current President of IEEE CASS.