Advanced Analytics Seminar Series on 02/12/2011

Seminar Title: For Low-Rank Structures in Images and Data
Speaker: Professor Yi Ma, ECE Department, UIUC & Visual Computing Group, Microsoft Research Asia

Date and Time: 1:30pm to 3:00pm, 2nd December 2011 (Friday)
Seminar Room: CB10.02.320, UTS City Campus
Street Address: 235, Jones Street, Broadway, NSW 2007
Seminar Chairman: A/Prof Jian Zhang (jian.zhang@uts.edu.au)

Abstract: In this talk, we will introduce two fundamental computational tools, namely TILT and RASL, for extracting rich low-rank structures in images and videos, respectively. Both tools utilize the same transformed Robust PCA model for the visual data:

$$\boldsymbol{D}\circ\boldsymbol{\tau} = \boldsymbol{A} + \boldsymbol{E}.$$

They use practically the same algorithm for extracting the low-rank structures $\boldsymbol{A}$ from the visual data $\boldsymbol{D}$, despite image domain transformation $\boldsymbol{\tau}$ and corruptions $\boldsymbol{E}$. We will show how these two seemingly simple tools can help unleash tremendous geometrical and statistical information in images and videos that we used to struggle to get. We believe these new tools will bring disruptive changes to many challenging tasks in computer vision and image processing, including feature extraction, image matching and alignment, 3D reconstruction, and object recognition, etc.

This is joint work with John Wright of Columbia, Emmanuel Candes of Stanford, and my students Zhengdong Zhang, Xiao Liang, Yigang Peng of Tsinghua, and Arvind Ganesh of UIUC.

Short biographies of the speakers: Yi Ma is the research manager of the Visual Computing group at Microsoft Research Asia in Beijing since January 2009. He is also an associate professor at the Electrical & Computer Engineering Department of the University of Illinois at Urbana-Champaign. His main research interest is in computer vision, high-dimensional data analysis, and systems theory. He is the first author of the popular vision textbook "An Invitation to 3-D Vision," published by Springer in 2003. Yi Ma received two Bachelors' degree in Automation and Applied Mathematics from Tsinghua University (Beijing, China) in 1995, a Master of Science degree in EECS in 1997, a Master of Arts degree in Mathematics in 2000, and a PhD degree in EECS in 2000, all from the University of California at Berkeley. Yi Ma received the David Marr Best Paper Prize at the International Conference on Computer Vision 1999, the Longuet-Higgins Best Paper Prize at the European Conference on Computer Vision 2004, and the Sang Uk Lee Best Student Paper Award with his students at the Asian Conference on Computer Vision in 2009. He also received the CAREER Award from the National Science Foundation in 2004 and the

Young Investigator Award from the Office of Naval Research in 2005. He is an associate editor of IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI) and the International Journal of Computer Vision (IJCV). He has served as the chief guest editor for special issues for the Proceedings of IEEE and the IEEE Signal Processing Magazine. He will also serve as Program Chair for ICCV 2013 in Sydney, Australia. He is a senior member of IEEE and a member of ACM, SIAM, and ASEE.

Overview to This Seminar Series

The Advanced Analytics Seminar Series presents the latest theoretical advancement and empirical experience in a broad range of interdisciplinary and business-oriented analytics fields. It covers topics related to data mining, machine learning, statistics, bioinformatics, behavior informatics, marketing analytics and multimedia analytics. It also provides a platform for the showcase of commercial products in ubiquitous advanced analytics. Speakers are invited from both academia and industry.

It opens regularly on every Friday afternoon at the garden-like UTS Blackfriars Campus. Each seminar is followed by a 30-minute afternoon tea, and then a open graduate study session teaching basic components in artificial intelligence, machine learning, data mining, business analytics and statistics.

You are warmly welcome to attend this seminar series.

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