# 数学与系统科学研究院

## 计算数学所学术报告

**报告人**： **Prof. Ran He**

（ *Institute of Automation, Chinese Academy of Sciences* ）

**报告题目**：

**Variational image analysis under limited computational resource**

**邀请人**： 刘歆 副研究员

**报告时间**：**2019 年 7 月 25 日（周四）**

**上午 9:00~10:00**

**报告地点**： 科技综合楼三层

**311 报告厅**

# Abstract：

**Image data tend to be high-dimensional and large-scale. When given infinite computational resource, machine learning algorithms can generate exact results (prohibitively expensive). Variational approximation methods arise from the use of a finite amount of processor time. These methods are often built on top of standard function approximators. In this talk, we introduce a group of variational inference and learning algorithms that scale to high-dimensional and large-scale image datasets. First, we address the linear approximation to learn robust and compact local features of image data, named ordinal measures. Second, we address the linear approximation we address the quadratic approximation of a family of loss functions that widely used in image analysis. Accordingly, a half-quadratic optimization framework is proposed for modeling sparsity, low-rank recovery and noise. Third, we introduce an Introspective Variational Autoencoders to approximate the posterior distribution, then we can generate high-resolution images from the learnt distribution.**

简介：

Ran He is a faculty member of National Pattern Recognition Laboratory at Chinese Academy of Sciences, where he directs the machine vision understanding and learning group. His research interests focus on machine learning, information theory and computer vision. He has published over 140 journal and conference papers in these fields, and has widely published at highly ranked international journals, such as IEEE TPAMI, IEEE TIP, IEEE TNNLS, IJCV, and leading international conferences, such as ICCV, CVPR and NIPS. He is currently a senior member of IEEE (Institute of Electrical and Electronics Engineers), and serves as the member of editor board of Neurocomputing (Elsevier) and IET image processing. His research is funded by NSFC for Excellent Young Scientist Programme and Beijing Natural Science Funds for Distinguished Young Scholars.

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