International Workshop On Image Processing and Inverse Problems

April 21-24, 2018, CSRC, Beijing, China

Organizing Committee

Conference Chairs:

Xue-Cheng Tai (Hong Kong Baptist University)

Suhua Wei (Institute of Applied Physics and Computational Mathematics)

Organizers:

Haiguang Liu (Beijing Computational Science Research Center)

Mila Nikolova (CMLA, CNRS, ENS Cachan, France)

Youwei Wen (Hunan Normal University)

Organizational Support:

Beijing Computational Science Research Center

Institute of Applied Physics and Computational Mathematics

Hunan Normal University

National Natural Science Fundation of China

Date & Location

Date: April 21-24, 2018

Venue: Conference Room I, 1st Floor, CSRC Building, Beijing

Contact Information

Ms.Sining Wang: Tel: 86-10-56981714   Email: ipip2018@csrc.ac.cn

Technical Program

♣ Saturday, April 21

♣ Room: Main Auditorium, First Floor

Chair: Xue-Cheng Tai

8:50-9:00 **Opening Ceremony**

9:00-9:30 **Depth from Defocus using Point Spread Function Engineering**

Robert Plemmons (Wake Forest University, USA)

9:30-10:00 **Iterative Region of Interest Reconstruction in Emission Tomography**

Jun Ma (Macquarie University, Australia)

10:00-10:30 **Mathematical Models for Restoration of Turbulence-distorted Images**

Ronald Lui (The Chinese University of Hong Kong, China)

10:30-11:00 **Coffee Break**

11:00-11:30 **ZOO-ADMM: a Zeroth-Order Online Alternating Direction Method of Multipliers**

Alfred Hero (University of Michigan, USA)

11:30-12:00 **Block Coordinate Proximal Gradient Method for Nonconvex Optimization Problems: Convergence Analysis**

Xiaoming Yuan (The University of Hong Kong, China)

12:00-12:30 **On Progressive Hedging Algorithm and Douglas-Rachford Operator Splitting for Multistage Stochastic Variational Inequalities**

Junfeng Yang (Nanjing University, China)

Chair: Ke Chen

14:00-14:30 **Deep Learning: Approximation of Functions by Composition**

Zuowei Shen (National University of Singapore, Singapore)

14:30-15:00 **"Deep Revolution" in Image Restoration and Beyond**

Bin Dong (Peking University, China)

15:00-15:30 **Non-Convex Methods for Low-Rank Matrix Reconstruction**

Jianfeng Cai (Hong Kong University of Science and Technology, China)

15:30-16:00   Coffee Break

16:00-16:30   Image Segmentation Based on a Convex Non-convex Variational Model

Fiorella Sgallari (University of Bologna, Italy)

16:30-17:00   Efficient Numerical Methods For Variational Inpainting Models

Sung Ha Kang (Georgia Institute of Technology, USA)

17:00-17:30   Robust Tensor Completion

Michael Ng (Hong Kong Baptist University, China)

✚ Sunday, April 22
✚ Room: Main Auditorium, First Floor

Chair: Zuowei Shen

9:00 - 9:30   New Region Force for Variational Models in Image Segmentation and High Dimensional Data Clustering

Tony Chan (Hong Kong University of Science and Technology, China)

9:30 -10:00   On Mathematical Theories of Deep Learning

Yuan Yao (Hong Kong University of Science and Technology)

10:00-10:30   Convex Blind Image Deconvolution with Inverse Filtering

Tieyong Zeng (Chinese University of Hong Kong, China)

10:30-11:00   Coffee Break

11:00-11:30   Adaptive Finite Element Methods for Inverse Problems

Jun Zou (Chinese University of Hong Kong, China)

11:30-12:00   Spatially Varying Parameter Selection for CT Reconstruction

Yiqiu Dong (Technical University of Denmark, Denmark)

12:00-12:30   Adjoint State Methods for Inverse Problems from Traveltime Tomography and Gravimetry

Tim Leung (Hong Kong University of Science and Technology, China)

12:30-12:40   Group Photo

Chair: Fiorella Sgallari

14:00-14:30 **From Model-based to Data-driven Imaging**

Carola-Bibiane Schönlieb (University of Cambridge, UK)

14:30-15:00 **Representer Theorems for Convex Regularized Linear Inverse Problems**

Pierre Weiss (CNRS, France)

15:00-15:30 **Variational Shape Decomposition via LpCM**

Serena Morigi (University of Bologna, Italy)

15:30-16:00 **Coffee Break**

16:00-16:30 **Functions as Proximity Operators: Alternations between Minimum Mean Square Error and Maximum a Posteriori Estimators**

Mila Nikolova (ENS Cachan, Université Paris-Saclay, France)

16:30-17:30 **Poster Session**

Reconstruction of High Resolution Wavefronts in Closed Loop
Rihuan Ke (The Chinese University of Hong Kong)

An Adaptive Regularization Approach for Image Restoration and Bias Field Correction
Linghai Kong (Institute of Applied Physics and Computational Mathematics)

Point Cloud Surface Segmentation Based on Volumetric Eigen functions of the Laplace-Beltrami Operator
Xinge Li (Institute of Applied Physics and Computational Mathematics)

Reconstruction with Enhanced Prior Knowledge by POCS Methods
Jin Liu, Jun Liu, Yue-feng Jing, Xuan Zhang (Institute of Fluid Physics, CAEP)

An Adaptive Model for Parallel Magnetic Resonance Image Reconstruction
Shousheng Luo (Beijing Computational Science Research Center)

Nonconvex Optimization for 3D Point Source Localization Using a Rotating Point Spread Function
Chao Wang (The Chinese University of Hong Kong)

♦ Monday, April 23
♦ Room: Main Auditorium, First Floor

Chair: Carola-Bibiane Schönlieb

9:00 - 9:30 **On a Fast Multilevel Scheme for Solution of Image Selective Segmentation Models**

Ke Chen (University of Liverpool, UK)

9:30 -10:00 **Multigrid Method for Image Registration based on Optimal Mass Transport**

Justin Wan (University of Waterloo, Canada)

10:00-10:30 **Multigrid Iterative Regularization for Image Deblurring**

Marco Donatelli (University of Insubria, Italy)

10:30-11:00 **Coffee Break**

11:00-11:30 **Mathematics of Machine Learning and Medical Image Analysis**

Jin Keun Seo (Yonsei Univetsity, South Korea)

11:30-12:00 **An Adaptive Directional Haar Framelet-based Reconstruction Algorithm for Parallel Magnetic Resonance Imaging**

Yanran Li (Shenzhen University, China)

12:00-12:30 **Image Processing Problems in X-ray Sciences**

Haiguang Liu (Beijing Computational Science Research Center, China)

Chair: Haomin Zhou

14:00-14:30 **Multilinear Compressive Sensing and an Application to Convolutional Linear Networks**

François Malgouyres (Université Paul Sabatier, France)

14:30-15:00 **Enhanced Principal Component Projection**

Lixin Shen (Syracuse University, USA)

15:00-15:30 **Lattice-based Patterned Fabric Inspection by Using Total Variation with Sparsity and Low-Rank Representations**

Wenxing Zhang (University of Electronic Science and Technology of China,

China)

15:30-16:00   **Coffee Break**

16:00-16:30   **Discrete Optimal Transport and Applications**

Haomin Zhou (Georgia Institute of Technology, USA)

16:30-17:00   **A Regularization Parameter Selection Model for Total Variation Based Image Noise Removal**

Youwei Wen (Hunan Normal University, China)

17:00-17:10   Raymond Chan (Chinese University of Hong Kong, China)