International Conference on

Image Processing: Theory, Method and Applications

Shanghai, China

May 13-15, 2016

Sponsors

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The International Conference on

Image Processing：Theory, Method and Applications

May 13-15, 2016, Shanghai University, Shanghai, China

Aim of the Conference

The conference aims at promoting academic research, exchange and collaboration among researchers both home and abroad. The topics cover the mathematical theories and methods in image processing and analysis. The main topics of this conference include but not limit to Mathematical Theory of Imaging, PDE and Variational Methods and Applications in Compressed Sensing, Medical Image Analysis, etc.

Conference Chairs

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Invited Speakers

Feng Chen	(The First Affiliated Hospital of Zhejiang University, China)
Yunmei Chen	(University of Florida, USA)
Bin Dong	(Peking University, China)
Hui Ji	(National University of Singapore, Singapore)
Dexing Kong	(Zhejiang University, China)
Chunming Li	(University of Electronic Science and Technology of China, China)
Ronald Lui	(Chinese University of Hong Kong, Hong Kong, China)
Michael Ng	(Hong Kong Baptist University, Hong Kong, China)
Zhifeng Pang	(Henan University, China)
Jigen Peng	(Xi'an Jiaotong University, China)
Chunli Shen	(East China Normal University, China)
Dinggang Shen	(University of North Carolina at Chapel Hill, USA)
Huafei Sun	(Beijing Institute of Technology, China)
Zongben Xu	(Xi'an Jiaotong University, China)
Xiaoping Yang	(Nanjing University, China)
Zheng'an Yao	(Sun Yat-Sen University, China)
Tieyong Zeng	(Hong Kong Baptist University, Hong Kong, China)
Sirong Zhang	(Beijing University of Aeronautics and Astronautics, China)
Xiaoqun Zhang	(Shanghai Jiao Tong University, China)
Peng Zhang	(Capital Normal University, China)
Yufei Zhao	(National University of Singapore, Singapore)
Jubo Zhu	(National University of Defense Technology, China)

Schedule of the Conference

Time	May 13 (Friday)	Time	May 14 (Saturday)	Time	May 15 (Sunday)
Summer school		Opening ceremony		**08:10-08:50**	Peng Zhang
				08:50-09:30	Dinggang Shen
				09:30-10:10	Jigen Peng
		09:30-10:20	Zongben Xu	**10:20-11:00**	Chunming Li
		10:20-11:10	Yunmei Chen	**11:00-11:40**	Bin Dong
		11:10-12:00	Dexing Kong	**11:40-12:20**	Yufei Zhao
Lunch					
13:30-14:10	Ronald Lok Ming LUI	**13:30-14:10**	Xiaoping Yang	**13:30-14:10**	Zelong Wang
14:10-14:50		**14:10-14:50**	Michael Ng	**14:10-14:50**	Huafei Sun
14:50-15:30	Huanhuan Yi	**14:50-15:30**	Hui Ji	**14:50-15:30**	Xiaoqun Zhang
		15:40-16:20	Zheng'an Yao	**15:50-16:30**	Zhifeng Pang
		16:20-17:00	Feng Chen	**16:30-17:10**	Chunli Shen
		17:00-17:40	Tieyong Zeng	**17:10-17:50**	Sirong Zhang

Registration time: 12:00-21:00, May 13, 2016

Registration venue: New Lehu Building (North Door of Shanghai University), Shanghai University, 99 Shangda Road, Shanghai, P.R. China
Conference venue: Xuehai Hall (2F of New Lehu Building) 乐乎新楼学海厅 2 楼

May 13, 2016 (Friday)			
Time	Place	Schedule	Chair
13:30-14:10	G507	Ronald Lok Ming LUI: Medical Image Analysis using Quasiconformal Teichmuller Theory	
14:10-14:50			
14:50-15:30		Huanhuan Yi:	
16:00-17:00		The meeting of the academic committee and the organizing committee	
17:30-		Dinner	

May 14, 2016 (Saturday)			
Time	Place	Schedule	Chair
08:30-09:10	Xuehai Hall	Opening ceremony	
09:10-09:30	Gate of the Hall	Photo-taking	
09:30-10:20	Xuehai Hall	Zongben Xu: (P 23)	
10:20-11:10		Yunmei Chen: Bundle Level Methods and Their Applications in Inverse Problems and Imaging (P 12)	
11:10-12:00		Dexing Kong: (P 15)	
12:05-13:30		Lunch	

May 14, 2016 (Saturday)			
Time	Place	Schedule	Chair
13:30-14:10	Xuehai Hall	Xiaoping Yang: A variational model for medical image segmentation (P 24)	Yunmei Chen
14:10-14:50		Michael Ng: Convex and Nonconvex Optimization Methods in Image Processing (P 18)	
14:50-15:30		Hui Ji: Dictionary learning for sparse coding: models, algorithms and applications (P 14)	
15:30-15:40		Tea break	
15:40-16:20	Xuehai Hall	Zheng'an Yao: (P)	Dexing Kong
16:20-17:00		Feng Chen: (P)	
17:00-17:40		Tieyong Zeng: Two-stage image segmentation (P 25)	
18:30		Dinner	

May 15, 2016 (Sunday)			
Time	Place	Schedule	Chair
08:10-08:50	Xuehai Hall	Peng Zhang: (P)	
08:50-09:30		Dinggang Shen: Machine Learning in Medical Imaging Analysis (P 21)	
09:30-10:10		Jigen Peng: Model Equivalence between l_p Minimizations and l_0 Minimization for Sparse Signal Representations (P 20)	
10:10-10:20		Tea break	
10:20-11:00	Xuehai Hall	Chunming Li: Multiplicative intrinsic component optimization (MICO) for MRI bias field estimation and tissue segmentation (P 16)	
11:00-11:40		Bin Dong: Wavelet Frames and Differential Operators: Bridging Discrete and Continuum for Image Restoration and Beyond (P 13)	
11:40-12:20		Yufei Zhao: Directional Frames for Image Recovery: Multi-scale Finite Discrete Gabor Frames (P 28)	
12:20-13:30		Lunch	

May 15, 2016 (Sunday)			
Time	Place	Schedule	Chair
13:30-14:10	Xuehai Hall	Zelong Wang: New Approach for Feature Extraction of Radar Targets (P)	
14:10-14:50		Huafei Sun: Information geometry and its applications (P)	
14:50-15:30		Xiaoqun Zhang: Calibrationless dynamic parallel MRI reconstruction (P)	
15:30-15:50		Tea break	
15:50-16:30	Xuehai Hall	Zhifeng Pang: Minimized Surface Regularization for Image Restoration and Segmentation (P)	
16:30-17:10		Chunli Shen:	
17:10-17:50		Sirong Zhang: (P)	
17:50-18:00		Closing ceremony	
18:00		Dinner	

Accommodation: New Lehu Building (North Door of Shanghai University), Shanghai University, 99 Shangda Road, Shanghai, P.R. China

Transportation

- **By Airplane**

Pudong Airport → Shanghai University (Baoshan Campus)

Way 1: Pudong airport By Subway Line 2 to Jing'an Temple exchange to Subway Line 7 to Shanghai University. *Total price: about 6 RMB*.

Way 2: Directly take taxi to 716 Jingqiu Road, Shanghai University (Baoshan Campus, North Gate). *Total price: about 240 RMB.*

Hongqiao Airport → Shanghai University (Baoshan Campus)

Way 3: Hongqiao airport By Subway Line 2 to Jing'an Temple exchange to Subway Line 7 to Shanghai University. *Total price: about 6 RMB.*

Way 4: Directly take taxi to 716 Jingqiu Road, Shanghai University (Baoshan Campus, North Gate). *Total price: about 60 RMB.*

- **By Train**

Hongqiao Railway Station → Shanghai University (Baoshan Campus)

Way 5: Hongqiao Railway Station By Subway Line 2 to Jing'an Temple exchange to Subway Line 7 to Shanghai University. *Total price: about 6 RMB*.

Way 6: Directly take taxi to 716 Jingqiu Road, Shanghai University (Baoshan Campus, North Gate). *Total price: about 60 RMB.*

Shanghai South Railway Station → Shanghai University

Way 7: By Subway Line 1 to Changshu Road exchange to Subway Line 7 to Shanghai University. *Total price: about 5 RMB.*

Way 8: Directly take taxi to 716 Jingqiu Road, Shanghai University (Baoshan Campus, North Gate). *Total price: about 90 RMB.*

Shanghai Railway Station → Shanghai University

Way 9: By Subway Line 1 to Changshu Road exchange to Subway Line 7 to Shanghai University. *Total price: about 5 RMB.*

Way 10: By Subway Line 3 to Zhenping Road exchange to Subway Line 7 to Shanghai University. *Total price: about 5 RMB.*

Way 11: Directly take taxi to 716 Jingqiu Road, Shanghai University (Baoshan Campus, North Gate). *Total price: about 50 RMB.*

Content

Title: Sparse representation and dictionary learning based PET reconstruction

Speaker: Shuhang Chen

Affiliations: Zhejiang University

Abstract: Given the Poisson nature of photo-counting measurements, we present a reconstruction framework that integrates sparsity penalty on dictionary into a maximum likelihood estimator. Patch-sparsity on a dictionary provides the regularization for our effort, and iterative procedures are used to solve the maximum likelihood function formulated on Poisson statistics. Specifically, in our formulation, dictionary could be trained on CT images, to provide intrinsic anatomical structures for the reconstructed images, or adaptively learned from the noisy measurements of PET. Accuracy of the strategy with very promising application results from Monte-Carlo simulations, and real data are demonstrated.

Short Bio:

I am a master student at College of Optical Science and Engineering, Zhejiang University. Supervised by Professor Huafeng Liu, my research focuses on medical image analysis, statistical image reconstruction. I am also interested in computer vision and machine learning. Specifically, I worked on positron emission tomography (PET) image reconstruction and segmentation algorithms from 2013 to 2014. Currently, I am working on automatic diagnosis of ventricular tachycardia sources through machine learning methods.

Education: Zhejiang University, Hangzhou, Zhejiang, China M.S., Optical Engineering, September, 2013. Wuhan University, Wuhan, Hubei, China B.S., Optical Information Science and Engineering, September, 2009

Title: Bundle Level Methods and Their Applications in Inverse Problems and Imaging

Speaker: Yunmei Chen

Affiliations: University of Florida

Abstract: We present a bundle level method and its variant for solving large scale ball constrained convex optimization problems and a class of saddle point problems, respectively. These methods are featured by low iteration cost, high solution accuracy and slightly increasing computation cost when the dimension of the unknown is increased significantly due to the use of the restricted memory technique. Moreover, they can achieve the optimal iteration complexity uniformly for smooth, nonsmooth and weakly smooth functions and for solving a class of saddle point problems. These methods can be extended to solve unconstrained problems through an expansion algorithm developed in this work. Our numerical results on solving some large-scale least square problems and total variation based image reconstruction problem have shown the advantages of these methods over several accelerated first-order methods in terms of both computational time and solution quality.

Short Bio:

Professor Chen received her Ph.D. in Mathematics from Fudan University in 1985. She is a distinguished Professor in the Department of Mathematics at University of Florida. Professor Chen is a world-class mathematician. Her research focuses on image processing models, optimization and their applications to medical image analysis. She also serves as the associated editors of SIAM Journal on Imaging Sciences, inverse problem and other famous international journals.

Title: Wavelet Frames and Differential Operators: Bridging Discrete and Continuum for Image Restoration and Beyond

Speaker: Bin Dong

Affiliations: Peking University

Abstract: The first half of my talk is based on a series of four papers. We established rigorous connections between wavelet frame transforms and differential operators in variational framework, and established their connections for nonlinear evolution PDEs as well. The connections between wavelet frame transforms and differential operators provide us with new insights and inspiring interpretations of both wavelet frame and differential operator based approaches for image restoration, which also enable us to create new models and algorithms that combine the merits of both approaches. In the second half of my talk, I will discuss how these findings from image restoration can guide us in the process and analysis of more general data sets in high dimensional spaces, such as point cloud and graph data.

Short Bio:

I received my B.S. from Peking University (PKU) in 2003, M.S degree from National University of Singapore (NUS) in 2005, and Ph.D degree from University of California Los Angeles (UCLA) in 2009. Then I spent 2 years at University of California San Diego (UCSD) as a visiting assistant professor. I was an assistant professor at University of Arizona since 2011 and joined Peking University as an associate professor in 2014. My research interest is in mathematical modeling and computations in imaging science and high dimensional data analysis. A special feature of my research is a blending of wavelet frame theory, variational techniques and nonlinear PDEs. We are working on projects aiming at addressing new and fascinating connections among these subjects, which not only leads to new understandings of the subjects themselves, but also gives rise to new and powerful mathematical tools for imaging/data science.

Title: Dictionary learning for sparse coding: models, algorithms and applications

Speaker: Hui Ji

Affiliations: National University of Singapore

Abstract: Dictionary learning for sparse coding has been an important tool in image processing with a wide range of applications. In this talk, we will present some recent results on dictionary learning ranging from model design, numerical algorithms and their applications in imaging and vision science.

Short Bio:

Ji Hui got his Ph.D. degree in Computer Science from University of Maryland, USA, in 2006. Since then, he joined National University of Singapore as an assistant professor, and currently is an associate professor in Department of Mathematics and the director of Center for wavelets, Approximation and Information Processing. His research interests lies in computational harmonic analysis, non-convex optimization image processing, and computational vision. More information can be found in his website. http://www.math.nus.edu.sg/~matjh

Title:

Speaker: Dexing Kong

Affiliations: Zhejiang University

Abstract:

Short Bio:

Title: Multiplicative Intrinsic Component Optimization (MICO) for MRI bias field Estimation and Tissue segmentation

Speaker: Chunming Li

Affiliations: University of Electronic Science and Technology of China

Abstract: This talk present a new energy minimization method called multiplicative intrinsic component optimization (MICO) for joint bias field estimation and segmentation of magnetic resonance (MR) images. This method takes full advantage of the decomposition of MR images into two multiplicative components, namely, the true image that characterizes a physical property of the tissues and the bias field that accounts for the intensity inhomogeneity, and their respective spatial properties. Bias field estimation and tissue segmentation are simultaneously achieved by an energy minimization process aimed to optimize the estimates of the two multiplicative components of an MR image. The bias field is iteratively optimized by using efficient matrix computations, which are verified to be numerically stable by matrix analysis. More importantly, the energy in our formulation is convex in each of its variables, which leads to the robustness of the proposed energy minimization algorithm. The MICO formulation can be naturally extended to 3D/4D tissue segmentation with spatial/sptatio temporal regularization.

Short Bio:

Chunming Li is currently a professor of Electrical Engineering at University of Electronic Science and Technology of China (UESTC). He received Ph.D. in Electrical Engineering from University of Connecticut, USA, in 2005. His expertise is in image processing, computer vision, and medical image analysis. His research articles on the level set method and image segmentation and related image processing problems have been frequently cited. One of his papers on the level set method has received over 1880 citations since its publication in CVPR 2005. He received 2013 and 2015 IEEE Signal Processing Society Best Paper Awards for another two well- known papers, which were published in IEEE Trans. Image Processing in 2008 and 2010, respectively. He is serving as an Associate Editor for IEEE Trans. Image Processing, and reviewer and program committee members for ICCV, CVPR, MICCAI.

Title: Medical Image Analysis using Quasiconformal Teichmuller Theory

Speaker: Ronald Lok Ming LUI

Affiliations: Chinese University of Hong Kong

Abstract: Medical image analysis is an important topic in medical imaging. Its goal is to systematically analyze anatomical structures of different subjects, and to generate diagnostic images to help doctors to visualise abnormalities for disease analysis. Quasiconformal (QC) Teichmuller theory, which studies the deformation patterns between shapes, is a useful tool for this purpose. In this talk, I will talk about how computational QC geometry can be practically applied to medical imaging.

Short Bio:

Ronald Lui is an assistant professor in Mathematics Department, The Chinese University of Hong Kong. He received his Ph.D. in Applied Mathematics from UCLA in 2008, supervised by Prof. Tony F. Chan. After graduation, he worked as a postdoctoral scholar at Harvard University under the supervision of Prof. Shing-Tung Yau. His research focuses on computational conformal/quasi-conformal geometry, scientific computing, mathematical shape analysis and their applications to computer graphics, vision, and medical image analysis. In particular, one of his works applies conformal and quasi-conformal geometry to human brain mapping research for brain disease analysis.

Title: Convex and Nonconvex Optimization Methods in Image Processing

Speaker: Michael Ng

Affiliations: Hong Kong Baptist University

Abstract: In this talk, we discuss convex and nonconvex optimization methods in image processing. Several applications are presented and discussed. Numerical examples are also given to illustrate the theoretical results and the performance of different methods.

Short Bio:

Title: Minimized Surface Regularization for Image Restoration and Segmentation

Speaker: Zhifeng Pang

Affiliations: Henan University

Abstract: We propose a new image restoration and segmentation model based on the minimized surface regularization. The proposed model closely relates to the classical smoothing TV-type models. We can reformulate the proposed model as a min-max problem and solve it using the primal dual method. Relying on the convex conjugate, the convergence of the algorithm is provided as well. Numerical implementations mainly emphasize the effectiveness of the proposed method by comparing it to other well-known methods in terms of the CPU time and restored quality.

Short Bio:

Zhifeng Pang received his PhD in mathematics from Hunan University in 2010, Changsha, China. He is now an associate professor of Department of Mathematics and Statistics at Henan University, Kaifeng, China. Between 2010 and 2012, he was a Postdoctoral Fellow with Nanyang Technological University, Singapore and City University of Hong Kong. From 2014-2016, he respectively visited Academy of Mathematics and Systems Science in Beijing, Chern Institute of Mathematics in Tianjing, and The Chinese University of Hong Kong as a short-term visiting scholar. His recent research interests on mathematical theory and fast numerical methods in image processing and machine learning. He has published 18 scientific papers.

Title: Model Equivalence between l_p Minimizations and l_0 Minimization for Sparse Signal Representations

Speaker: Jigen Peng

Affiliations: Xi'an Jiaotong University

Abstract:

Short Bio:

Title: Machine Learning in Medical Imaging Analysis

Speaker: Dinggang Shen

Affiliations: University of North Carolina at Chapel Hill

Abstract: This talk will summarize our recently developed machine learning techniques, including sparse learning and deep learning, for various applications in medical imaging. Specifically, in neuroimaging field, we have developed an automatic tissue segmentation method for the first-year brain images with the goal of early detection of autism such as before 1 year old, and also a novel multivariate classification method for early diagnosis of Alzheimer's Disease (AD) with the goal of potential early treatment. In image reconstruction field, we have developed a sparse learning method for reconstructing 7T-like MRI from 3T MRI for enhancing image quality, and also another novel sparse learning technique for estimation of standard-dose PET image from low-dose PET and MRI data. Finally, in cancer radiotherapy field, we have developed an innovative regression-guided deformable model to automatically segment pelvic organs from single planning CT which is currently done manually, as well as a novel image synthesis technique for estimating CT from MRI for current new direction of MRI-based dose planning (and also for PET attenuation correction in the case of using PET/MRI scanner). All these techniques and applications will be discussed in this talk.

Short Bio: Dinggang Shen is a Professor in the Department of Radiology and BRIC at UNC-Chapel Hill. He is a senior member of IEEE and on the Advisory Board of Cognitive Computation (Springer Neuroscience, USA). He is also the Editorial Board of IEEE Transactions on Biomedical Engineering, IEEE Journal of Biomedical and Health Informatics (J-BHI), Pattern Recognition, Computerized Medical Imaging and Graphics, International Journal of Image and Graphics, CMBBE: Imaging & Visualization, and Brain Informatics. He has published 700 articles in journals and proceedings of international conferences with more than 14000 citations. He is the recipient of the title of SJTU Top Ten Research Elite (1994), best paper awards (1993,2001,2003,2005,2007), and the most cited paper award (2007).

Title: Information geometry and its applications

Speaker: Huafei Sun

Affiliations: Beijing Institute of Technology

Abstract: Information geometry based on differential geometry has played very important role, applying in various fields such as in statistical inference, signal processing, neural networks. Introducing the dual connection and the divergence is the key to construct the theory of information geometry. Contrast to the random cases above, matrix information geometry appears in dealing with cases including non-random phenomenon, which is applied in Diffusion Tensor Imaging, manifold learning, optimization, image processing and so on, while the theory of Lie group and Lie algebra plays significant role. Also, in this talk, some applications will be involved.

Short Bio:

Title:

Speaker: Zongben Xu

Affiliations: Xi'an Jiaotong University

Abstract:

Short Bio:

Title: A Variational Model for Medical Image Segmentation

Speaker: Xiaoping Yang

Affiliations: Nanjing University

Abstract:

Short Bio:

Title: Two-stage Image Segmentation

Speaker: Tieyong Zeng

Affiliations: Hong Kong Baptist University

Abstract: The Mumford–Shah model is one of the most important image segmentation models and has been studied extensively in the last twenty years. In this talk, we propose a two-stage segmentation method based on the Mumford Shah model. The first stage of our method is to find a smooth solution g to a convex variant of the Mumford–Shah model. Once g is obtained, then in the second stage the segmentation is done by thresholding g into different phases. The thresholds can be given by the users or can be obtained automatically using any clustering methods. Because of the convexity of the model, g can be solved efficiently by techniques like the split-Bregman algorithm or the Chambolle–Pock method. We prove that our method is convergent and that the solution g is always unique. In our method, there is no need to specify the number of segments K (K $\geqslant$ 2) before finding g. We can obtain any K-phase segmentations by choosing (K -1) thresholds after g is found in the first stage, and in the second stage there is no need to recompute g if the thresholds are changed to reveal different segmentation features in the image. Experimental results show that our two-stage method performs better than many standard two-phase or multiphase segmentation methods for very general images, including antimass, tubular, MRI, noisy, and blurry images. We then extend the idea to different situations.

Short Bio:

2000 Peking University (B.S) 2004 Ecole Polytechnique/ENS Cachan (Master)2007 The University of Paris XIII (PhD) 2008 ENS Cachan (Post-doc Researcher) 2008 Hong Kong Baptist University (Assistant Professor) 2015 Hong Kong Baptist University (Associate Professor)

Title:

Speaker: Sirong Zhang

Affiliations: Beijing University of Aeronautics and Astronautics

Abstract:

Short Bio:

Title: Calibrationless dynamic parallel MRI reconstruction

Speaker: Xiaoqun Zhang

Affiliations: Shanghai Jiao Tong University

Abstract: Parallel magnetic resonance imaging (MRI) works by acquiring a reduced amount of data in Fourier domain with multiple receiver coils. To recover the image the underlying scanning object, one often needs the explicit knowledge of coil sensitivity maps, or some additional fully acquired data blocks called the auto-calibration signals (ACS). In this talk, we show that by exploiting the between-frame redundancy of dynamic parallel MRI data, it is possible to achieve simultaneous coil sensitivity map estimation and image (sequence) reconstruction. Specially, we introduce two methods for estimating the sensitivity map and ACS respectively for dynamic parallel MRI reconstruction and then recover dynamic parallel MRI images with low rank plus sparse model. Numerical experiments demonstrate that the proposed approach outperform state-of-the-art approaches for cablirationless dynamic parallel MRI reconstruction.

Short Bio:

Title: Directional Frames for Image Recovery: Multi-scale Finite Discrete Gabor Frames

Speaker: Yufei Zhao

Affiliations: National University of Singapore

Abstract: Sparsity-driven image recovery methods assume that images of interest can be sparsely approximated under some suitable system. As the discontinuities of 2D images often show geometrical regularities along image edges with different orientations, an effective sparsifying system should have high orientation selectivity. There have been enduring efforts on constructing discrete frames and tight frames for improving the orientation selectivity of tensor product real-valued wavelet bases or frames. In this talk, I will introduce the general theory of discrete Gabor frames for finite signals, as well as the construction a class of discrete 2D Gabor frames with optimal orientation selectivity for sparse image approximation. Besides high orientation selectivity, the proposed multi-scale discrete 2D Gabor frames also allow us to simultaneously exploit sparsity prior of cartoon image regions in spatial domain and the sparsity prior of textural image regions in local frequency domain. Using a composite sparse image model, we show the advantages of the proposed discrete Gabor frames over the existing wavelet frames in several image recovery experiments.

Short Bio:

2011-present, PhD candidate in the department of Mathematics, National University of Singapore; 2011, Bachelor of Science Degree in the department of Mathematics, East China Normal University.

Title: New Approach for Feature Extraction of Radar Targets

Speaker: Zelong Wang

Affiliations: National University of Defense Technology

Abstract:

Feature extraction for target identification is the ultimate aim of radar imaging. In thi s talk, we focus on new approach of feature extraction for two kinds of radar targets, i.e., ocean internal wave and missile-like targets. Restricted to imaging conditions, su ch as clutter and non-ideal movement of imaging targets, it is difficult to have recogni zable images and sometimes it is even impossible to obtain images. To extract feature s accurately, new models and algorithms are proposed based on local low-rank prior f or ocean internal wave and sparse prior for missile-like targets, respectively, to explor e structure information of radar targets. These new approaches not only improve the performance of feature extraction, but also reduce the requirement of radar imaging.

Short Bio:

Z. L. Wang received his B.S in applied mathematics, Master in system science, and, Ph .D. in system analysis and integration from National University of Defense Technology in 2008, 2009, and 2013, respectively. His interests include modeling, algorithm, and system design in mathematical imaging.

上海轨道交通网络示意图
SHANGHAI METRO NETWORK MAP