

# CVM 2017

## Computational Visual Media Conference

### *Program Manual*

April 12~14, 2017

Nankai University, Tianjin, China



# Index

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<b>Introduction .....</b>	<b>2</b>
<b>CVM 2017 Committee .....</b>	<b>4</b>
<b>Schedule of Programs .....</b>	<b>5</b>
<b>Smart Robotics Workshop Information .....</b>	<b>8</b>
<b>Site Information &amp; Notices.....</b>	<b>11</b>

# 目录

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<b>会议简介.....</b>	<b>3</b>
<b>CVM 2017 会议组织委员会 .....</b>	<b>4</b>
<b>会议日程.....</b>	<b>5</b>
<b>智能机器人专题研讨会介绍 .....</b>	<b>9</b>
<b>会场信息及注意事项 .....</b>	<b>12</b>

# Introduction

The Computational Visual Media Conference series intend to provide a major international forum for exchanging novel research ideas and significant practical results both underpinning and applying Visual Media. With the rapid progress of Internet technology, large-scale visual data can be found on the Internet, bringing significant opportunities for novel processing of visual information, as well as commercial applications. The primary rationale for this new conference series is to target cross-disciplinary research, which amalgamates aspects of computer graphics, computer vision, machine learning, image processing, video processing, visualization and geometric computing. Original research is sought in areas concerning the classification, composition, retrieval, synthesis, and understanding of visual media.

Previous conferences have been successfully held in Tsinghua University, Zhejiang University and Cardiff University, earned wide-spreading influence in academic communities. The 5<sup>th</sup> international conference on Computational Visual Media (CVM 2017) will be held on Apr 12 to Apr 14, 2017, in Nankai University, Tianjin.

# 会议介绍

计算可视媒体 (Computational Visual Media, CVM) 系列国际会议旨在提供一个重要的国际论坛，以交流可视媒体应用领域的最新研究思路 and 重要研究进展。会议主要探讨跨学科研究，涉及计算机图形学，计算机视觉，机器学习，图像处理，视频处理，可视化和几何计算等诸多方面。在关于视觉媒体的分类，组成，检索，综合和理解的领域中寻求创新和突破。

该系列会议中的前几次分别在清华大学、浙江大学、英国卡迪夫大学等地召开，取得了较大的国际影响力。第五届计算可视媒体会议 (CVM 2017) 的举办地定于南开大学，于 2017 年 4 月 12 日至 14 日在中国天津市召开。

# CVM 2017 Committee

## Conference Co-Chairs

Holly Rushmeier (Yale University)  
Tieniu Tan (Institute of Automation, CAS)

## •Program Co-Chairs

Niloy Mitra (University College London)  
Yizhou Yu (The University of Hong Kong)

## •Organizing Chair

Ming-Ming Cheng (Nankai University)  
Jufeng Yang (Nankai University)

## •Paper Committee Members

Marc Alexa (Technische Universität Berlin)  
Xiang Bai (Huazhong University of Science & Technology)  
David Bommes (RWTH Aachen)  
Yiyu Cai (Nanyang Technological University)  
Xun Cao (Nanjing University)  
Xiaowu Chen (Beihang University)  
Gabriel Oliver Codina (Universitat de les Illes Balears)  
Jia Deng (University of Michigan)  
Yoshinori Dobashi (Hokkaido University)  
Puneet Dokania (University of Oxford)  
Weiming Dong (Chinese Academy of Sciences)  
Weisheng Dong (Xidian University)  
Jiashi Feng (National University of Singapore)  
Hongbo Fu (City University of Hong Kong)  
Paul Guero (Technische Universität Wien)  
Xiaohu Guo (University of Texas at Dallas)  
Yue Gao (Tsinghua University)  
Peter Hall (Bath University)  
Shi-Min Hu (Tsinghua University)  
Ruizhen Hu (Shenzhen University)  
Hua Huang (Beijing Institute of Technology)  
Jiwu Huang (Sun Yat-sen University)  
Xiaolei Huang (Lehigh University)  
Adrian Jarabo (Universidad de Zaragoza)  
Tao Ju (Washington University)  
Yugang Jiang (Fudan University)  
Myung-Soo Kim (Seoul National University)  
Leif Kobbelt (RWTH Aachen, Germany)

Yukun Lai (Cardiff University)  
Chenfeng Li (Swansea University)  
Guanbin Li (The University of Hong Kong)  
Xirong Li (Renmin University of China)  
Wen-Yan Lin (ADSC, Singapore)  
Ligang Liu (USTC)  
Seungyong Lee (Pohang University of Sci. & Tech)  
Yongjin Liu (Tsinghua University)  
Jiwen Lu (Tsinghua University)  
Huchuan Lu (Dalian University of Technology)  
Cuixia Ma (Institute of Software, CAS)  
Dinesh Manocha (University of N. Carolina)  
Lizhuang Ma (Shanghai Jiaotong University)  
Ralph Martin (Cardiff University)  
Adrian Munteanu (Vrije Universiteit Brussel)  
Bo Ren (Nankai University)  
Holly Rushmeier (Yale University)  
Federico Spini (University Roma Tre, Italy)  
Tianjia Shao (Zhejiang University)  
Shiguang Shan (Institute of Computing Technology, CASIA)  
Shuai Zheng (University of Oxford)  
Hanqiu Sun (The Chinese University of Hong Kong)  
Yi-Zhe Song (Queen Mary University of London)  
RuoFeng Tong (Zhejiang University)  
Baoyuan Wang (Microsoft)  
Guoping Wang (Peking University)  
Jue Wang (Adobe)  
Kai Wang (Nankai University)  
Wenping Wang (The University of Hong Kong)  
Tien-Tsin Wong (Chinese University of Hong Kong)  
Enhua Wu (IOS/CAS & University of Macau)  
Jianxin Wu (Nanjing University)  
Kai Xu (National University of Defense Technology)  
Kun Xu (Tsinghua University)  
Wei-Wei Xu (Zhejiang University)  
Dongming Yan (NLPR, CASIA)  
Junchi Yan (East China Normal University)  
Zhicheng Yan (University of Illinois at Urbana-Champaign)  
Jinfeng Yang (Civil Aviation University of China)  
Meng Yang (Shenzhen University)  
Heng Yang (University of Cambridge)  
Yongliang Yang (University of Bath)  
Caiming Zhang (Shandong University)  
Guofeng Zhang (Zhejiang University)  
Lei Zhang (Beijing Institute of Technology)  
Minglin Zhang (Southeast University)  
Jianmin Zheng (Nanyang Technological University)  
Weishi Zheng (Sun Yat-Sen University)  
Youyi Zheng (ShanghaiTech University)  
Kun Zhou (Zhejiang University)

# Schedule of Programs

	<b>Tuesday, Apr. 11: Side Events</b> 4月11日, 星期二: 周边活动	
<b>14:00 - 17:00</b>	Young Scientists Forum	CCCE 523
<b>19:00 - 20:20</b>	Student Training: Research and Scientific Paper Writing	计控学院 523
	<b>Wednesday, Apr. 12: Registration &amp; Side Events</b> 4月12日, 星期三: 注册与周边活动	
<b>09:00 - 17:20</b>	Conference Registration	Lecture Hall 报告厅
<b>09:00 - 18:00</b>	Smart Robotics Workshop	
<b>18:00 - 19:30</b>	Reception	
<b>Day One</b>	<b>Thursday, Apr.13: Main Programs</b> 4月13日, 星期四: 主要活动	
<b>08:30 - 09:20</b>	Opening & Photographing	Lecture Hall 报告厅
<b>09:20 - 10:00</b>	<b>Invited talk I: From Quad Meshes to Quad Layouts,</b> by Leif Kobbelt. Chair: Shi-Min Hu	
<b>Session 1</b>	<b>Retrieval 检索</b> Chair: Shi-Min Hu	
<b>10:00 - 10:20</b>	<b>Non-negative Locality-constrained Vocabulary Tree for Finger Vein Image Retrieval,</b> Kun Su, Gongping Yang, Lu Yang, Peng Su and Yilong Yin	Lecture Hall 报告厅
<b>10:20 - 10:40</b>	<b>Medical signs recognition of lung nodules based on image retrieval with semantic feature and supervised hashing,</b> Juanjuan Zhao, Ling Pan, Pengfei Zhao and Xiaoxian Tang	
<b>10:40 - 11:00</b>	Coffee Break	
<b>Session 2</b>	<b>Detection 检测</b> Chair: Peter Hall	
<b>11:00 - 11:20</b>	<b>Joint Salient Object Detection and Existence Prediction,</b> Huaizu Jiang, Ming-Ming Cheng, Shi-Jie Li, Ali Borji and Jingdong Wang	Lecture Hall 报告厅
<b>11:20 - 11:40</b>	<b>Crowd Counting via Learning Perspective in Multi-scale Multi-view Web Images,</b> Chong Shang and Haizhou Ai	
<b>11:40 - 12:00</b>	<b>Collective Representation for Abnormal Detection,</b> Renzhen Ye and Xuelong Li	
<b>12:00 - 12:20</b>	<b>Robust Tracking-by-Detection Using a Selector and Refinement Mechanism,</b> Ruo Chen Fan and Fanglue Zhang	
<b>12:20 - 14:00</b>	Lunch	
<b>Session 3</b>	<b>Image Enhancement 图像增强</b> Chair: Hung-Kuo Chu	
<b>14:00 - 14:20</b>	<b>Automatic colorization with improved spatial coherence and boundary localization,</b> Wei Zhang, Chaowei Fang and Guanbin Li	Lecture Hall 报告厅
<b>14:20 - 14:40</b>	<b>Photographic Appearance Enhancement via Detail-based Dictionary Learning,</b> Zhifeng Xie and Lizhuang Ma	
<b>14:40 - 15:00</b>	<b>User-guided Line Abstraction using Coherence and Structure Analysis,</b> Hui-Chi Tsai, Ya-Hsuan Lee, Hung-Kuo Chu and Ruen-Rone Lee	

15:00 - 15:20	<b>Multi-Example Feature-Constrained Back-Projection for Image-Resolution</b> , Junlei Zhang, Xuemei Li and Xin Zhang	Lecture Hall 报告厅
15:20 - 15:40	Coffee Break	
Session 4	<b>Learning Methodology 学习方法论</b> Chair: Youfu Li	
15:40 - 16:00	<b>Graph Regularized Low-Rank Representation for Semi-Supervised Learning</b> , Cong-Zhe You and Xiao-Jun Wu	Lecture Hall 报告厅
16:00 - 16:20	<b>Semi-supervised dictionary learning with label propagation for image classification</b> , Lin Chen and Meng Yang	
16:20 - 16:40	<b>Discriminative Histogram Intersection Metric Learning and Its Applications</b> , Pengyi Hao, Yang Xia, Sei-Ichiro Kamata, Xiao-Xin Li and Shengyong Chen	
16:40 - 17:00	<b>EasySVM: A Visual Analysis Approach for Open-Box Support Vector Machines</b> , Yuxin Ma, Wei Chen, Xiaohong Ma, Jiayi Xu, Xinxin Huang, Ross Maciejewski and Anthony K. H. Tung	
Session 5	<b>Fast Presentation for Poster 快速展示</b> Chair: Dong-Ming Yan	
17:00 - 17:26	<p><b>1.Object-Aware Image Editing</b>, Shiming Ge, Xin Jin, Qiting Ye and Zhao Luo</p> <p><b>2.MSEdge: A Multi-Scale Edge Chain Detector</b>, Xiaohu Lu, Jian Yao, Xiaofeng Zhang, Li Li and Yahui Liu</p> <p><b>3.Batch Image Alignment via Subspace Recovery Based on Alternative Sparsity Pursuit</b>, Xianhui Lin, Zhu Liang Yu, Zhenghui Gu and Zhaoquan Cai</p> <p><b>4.Learned 3D-Compact Local Binary Pattern Descriptors for Human Action Recognition with Color-Depth videos</b>, Zhai Zhengyuan, Fan Chunxiao, Ming Yue and Tian Lei</p> <p><b>5.Feature-aware variational subdivision surface reconstruction</b>, Xiaoqun Wu, Jianmin Zheng, Yiyu Cai and Haisheng Li</p> <p><b>6.A Procedural Texture Generation Framework Based on Semantic Descriptions</b>, Junyu Dong, Lina Wang, Jun Liu and Xin Sun</p> <p><b>7.Foreground Object Extraction Based on Graph and Depth Layers</b>, Zhiguang Xiao, Hui Chen, Changhe Tu and Reinhard Klette</p> <p><b>8.Visual Tracking via Convolutional Network and Structured Output Support Vector Machine</b>, Junwei Li, Xiaolong Zhou, Sixian Chan and Shengyong Chen</p> <p><b>9.Face image retrieval based on shape and texture feature fusion</b>, Zongguang Lu, Jing Yang and Qingshan Liu</p> <p><b>10.A hierarchical structure of co-occurrence relationship for Occlusion handling</b>, Xiaowei Zhang and Bo Li</p> <p><b>11.Joint Head Pose and Face Landmarks Regression from Depth Images</b>, Jie Wang, Juyong Zhang, Changwei Luo and Falai Chen</p> <p><b>12.ILPN: An Independent Losses Pose Net for Globally Locating Body Joints</b>, Le Dong, Xiuyuan Chen, Ran Wang, Wenpu Dong, Bo Hu and Ebroul Izquierdo</p> <p><b>13.Vectorial Approximations of Infinite-Dimensional Covariance Descriptors for Image Classification</b>, Jieyi Ren and Xiaojun Wu</p>	Lecture Hall 报告厅
17:26 - 18:00	Poster Discussion	Lecture Hall 报告厅
18:00 - 20:00	Banquet	报告厅

Day Two	Friday, Apr.14: Main Programs 4月14日, 星期五: 主要活动	
09:00 - 09:40	<b>Invited Talk II: Toward Deep Geometric Image Understanding,</b> by Jia Deng. Chair: Ralph Martin	Lecture Hall 报告厅
Session 6	<b>Segmentation 分割</b> Chair: Ralph Martin	
09:40 - 10:00	<b>Feature-Aligned Segmentation using Correlation Clustering,</b> Yixin Zhuang, Hang Dou, Nathan Carr and Tao Ju	Lecture Hall 报告厅
10:00 - 10:20	<b>Texture Region Segmentation from Manga,</b> Xueting Liu, Chengze Li and Tien-Tsin Wong	
10:20 - 10:40	<b>Prior-free Dependent Motion Segmentation using Helmholtz-Hodge Decomposition based Object-Motion Oriented Map,</b> Cuicui Zhang and Zhilei Liu	
10:40 - 11:00	Coffee Break	
Session 7	<b>Scene Understanding 场景理解</b> Chair: Song-Hai Zhang	
11:00 - 11:20	<b>Static Scene Illumination Estimation from Video with Applications,</b> Bin Liu, Ralph Martin, Kun Xu and Shi-Min Hu	Lecture Hall 报告厅
11:20 - 11:40	<b>Fast and Accurate Visual Odometry from A Monocular Camera,</b> Xin Yang	
11:40 - 12:00	<b>Feature-based RGB-D camera pose optimization for real-time 3D reconstruction,</b> Chao Wang and Xiaohu Guo	
12:00 - 12:20	<b>Temporally Consistent Depth Map Prediction Using Deep CNN and Spatial-temporal CRF,</b> Xuran Zhao, Xun Wang and Qichao Chen	
12:20 - 14:00	Lunch	
Session 8	<b>Modeling 模型</b> Chair: Yu-Kun Lai	
14:00 - 14:20	<b>ExploreTree: Interactive Tree Modeling in Semantic Trait Space with Online Intent Learning,</b> Yinhui Yang, Rui Wang, Hongxin Zhang and Hujun Bao	Lecture Hall 报告厅
14:20 - 14:40	<b>Minkowski Sum Computation of B-spline Surfaces,</b> Jonathan Mizrahi, Sijoon Kim, Iddo Hanniel, Myung-Soo Kim and Gershon Elber	
14:40 - 15:00	<b>Rigidity Controllable As-Rigid-As-Possible Shape Deformation,</b> Shu-Yu Chen, Lin Gao, Yu-Kun Lai and Shihong Xia	
15:00 - 15:20	<b>A Fast Propagation Scheme for Approximate Geodesic Paths,</b> Xiaoguang Han, Hongchuan Yu and Jianjun Zhang	
15:20 - 15:40	Coffee Break	
Session 9	<b>Video Processing 视频处理</b> Chair: Yizhou Yu	
15:40 - 16:00	<b>Practical automatic background substitution for live video,</b> Haozhi Huang, Xiaonan Fang, Yufei Ye, Songhai Zhang, Paul Rosin and Shimin Hu	Lecture Hall 报告厅
16:00 - 16:20	<b>Captioning Videos using Large-scale Image Corpus,</b> Xiaoyu Du, Yang Yang, Liu Yang, Fumin Shen and Jinhui Tang	
16:20 - 16:40	<b>Recognizing Human Actions in Low-Resolution Videos: An Approach Based on the Dempster-Shafer Theory,</b> Zhen Gao, Guoliang Lu and Peng Yan	
16:40 - 17:00	<b>Robust Facial Landmark Detection and Tracking across Poses and Expressions for In-The-Wild Monocular Video,</b> Yongqiang Zhang, Shuang Liu, Xiaosong Yang, Daming Shi and Jian Jun Zhang	
17:00 - 17:20	Closing session	

# Smart Robotics Workshop Information

This decade is witnessing the fastest awareness and heavy investigation at the research of Robotics, which will play a key role in the development of science and technology in this century. The aims of robotics include making them be able to perceive and learn from the environment, enabling the robots to independently work or provide support in work-intensive, difficult and possibly complex situations, and giving them higher level intelligence like social behavior and cognitions. To make the robots smarter, knowledge and technique from multiple research areas should combine, like intelligent sensors, computer vision, geometric processing, operating system and automation. In order to encourage the integration of various research streams from robotics and other relevant disciplines, this workshop aims to bring together a diverse and multidisciplinary group of researchers interested in intelligent robotics. The workshop will include several invited talks and a poster session to introduce the newest progress in intelligent robotics. The topics of this workshop will cover:

- Geometric computing for robotics;
- Scene understanding of robots;
- Smart control architectures of robots;
- Intelligent Human-Robot interaction;
- Robots and smart manipulation;
- System software for robots;
- Security and safety of robots.

## Workshop Organization

### Workshop Co-Chairs

- Shi-Min Hu, Tsinghua University
- Charlie C. L. Wang, Delft University of Technology

### Local Organizer

- Ming-Ming Cheng, Nankai University
- Ren Bo, Nankai University

# 智能机器人专题研讨会介绍

近年来,智能机器人技术获得了广泛的关注与研究,并在本世纪科学技术发展中起到了关键性的作用。智能机器人学主要关注如何使得机器人能够理解周围环境并从中学习,从而使其能够在高强度,高难度等复杂环境中进行独立工作或提供支援,亦或使其获得足以模仿人类社会行为与认知的高度智慧。提高机器人智能程度的工作需要多种相关研究领域的密切合作,例如智能传感器,机器视觉,几何处理,操作系统以及自动化等。为鼓励不同研究方向内机器人相关的研究的相互交流,本研讨会旨在召集多样化学科内对智能机器人感兴趣的研究者共同进行科学研讨。研讨会将包含数场邀请报告以及一个论文海报专栏,以介绍智能机器人学科内的最新研究进展。研讨会的主题如下:

- 针对机器人的几何计算;
- 机器人场景理解;
- 机器人智能控制体系;
- 智能人机交互;
- 机器人与智能操控;
- 机器人系统软件;
- 机器人安全。

## 专题研讨组织委员会

### 研讨会联合主席

- 胡事民, 清华大学
- Charlie C. L. Wang, 代尔夫特理工大学

### 组织者

- 程明明, 南开大学
- 任博, 南开大学

## Workshop Schedule

Smart Robotics Workshop Schedule (Apr. 12, Lecture Hall) 智能机器人专题研讨会日程 (4月12日, 报告厅)	
09:00 - 09:10	Open Session
09:10 - 09:50	Dinesh Manocha, University of North Carolina at Chapel Hill
09:50 - 10:30	Michael Yu Wang, Hong Kong University Of Science and Technology
10:30 - 10:50	Coffee Break
10:50 - 11:30	Peter Hall, University of Bath
11:30 - 12:10	Youfu Li, City University of Hong Kong
12:00 - 14:00	Lunch
14:00 - 14:40	Fuchun Sun, Tsinghua University
14:40 - 15:20	Charlie C.L. Wang, Delft University of Technology
15:20 - 15:40	Coffee Break
15:40 - 16:10	Ruigang Yang, University of Kentucky
16:10 - 16:30	(Paratera Inc.)
16:30 - 16:50	Yongchun Fang, Nankai University
16:50 - 17:20	Lab Visit: Robotic Lab in Nankai University
18:00 - 19:30	Dinner

# Site Information & Notices

## Travel Information

The conference will be held in **Jinnan Campus, Nankai University**, Tianjin, China.

### Travel by Train:

If you come to Tianjin by Train, you may arrive at any one of the railway stations which are Tianjin Station (天津站), West Tianjin Station (天津西站) and South Tianjin Station (天津南站), each takes you about 1 hour to travel to Nankai University.

You can take a taxi for approximately 90RMB (14 US Dollar) to the West Gate of Jinnan Campus, Nankai University (南开大学津南校区西门). You may also travel by subway + taxi, for which we recommend you to use map apps to get more details.

### Travel by Plane:

We highly recommend you to fly to Tianjin Binhai International Airport (天津滨海国际机场) if possible. You can take a taxi to the West Gate of Jinnan Campus, Nankai University (南开大学津南校区西门). It takes about 40 minutes, and costs about 80 RMB (12 US Dollar).

You may also want to travel to Beijing International Airport (北京首都国际机场). You can take a taxi firstly to Beijing South Railway Station (北京南站), which will cost about 140 RMB (22 US Dollar) and take about 1.5 hour. Then you can take an inter-city train (京津城际列车) which has a train number beginning with C or G to Tianjin Station(天津站). The inter-city train is convenient and there is a train about every 20 minutes with a cost of about 60 RMB (10 US Dollar) and 40 minutes for arriving. Having arrived at Tianjin Station, you can take a taxi to the West Gate of Jinnan Campus, Nankai University (南开大学津南校区西门) with a cost about 80 RMB (12 US Dollar) and about 1 hour.

## Useful Information and Other Notices:

1. **Expert's Apartment (Hotel):**      **022-85358915**
2. **College Hospital:**                **022-85358311**
3. **Security Department:**            **022-85358122**
4. **Conference Contact:**              **15222612607, office in hotel 6106**
5. **Please make sure to inform the taxi driver that you would like to get off at the “west gate” of the Jinnan Campus, Nankai University (南开大学津南校区西门), which is near to the hotel (i.e. Expert apartment, 专家公寓).**

# 会场信息与注意事项

## 旅行信息

会议将于中国天津市南开大学津南校区举办。

### 乘火车抵达:

坐火车至天津站、天津西站、天津南站，随后打车至南开大学津南校区西门（需约 90 元，时间 1 小时左右）。也可乘坐地铁+出租车的方式，详情请参照交通导航类 APP。

### 乘飞机抵达:

我们推荐您选择飞往天津滨海国际机场，随后搭乘出租车前往南开大学津南校区西门（花费 80 元左右，时间约 40 分钟）。

此外，您可能习惯飞往北京首都国际机场，抵达后可乘出租车前往北京南站（140 元，1.5 小时），随后搭乘京津城际列车或高铁（C 或 G 开头）前往天津站（或天津西站）（60 元左右，40 分钟）。之后的安排参照以上火车方案。

## 其他信息与注意事项:

1. 南开大学专家公寓电话: **022-85358915**
2. 南开大学校医院电话: **022-85358311**
3. 南开大学保卫处电话: **022-85358122**
4. 会务联系方式: **15222612607**, 会务组房间: **专家公寓 6106**
5. 搭乘出租车告知目的地时建议选择西门（距离住宿宾馆最近）。预定宾馆价格在 **318 元** 及以上请在专家公寓办理入住手续，**198 元** 和 **98 元** 标准的预定请在留学生公寓 A 楼办理入住手续。

