

# Final Program

<http://www.mva-org.jp/mva2015/>



# MVA2015

IAPR INTERNATIONAL CONFERENCE ON MACHINE VISION APPLICATIONS

May 18-22, 2015

National Museum of Emerging Science and Innovation, Tokyo, Japan

*Topics*

**Machine Vision and its Applications**

### IAPR Invited Talks

**Prof. Tomas Pajdla (Czech Technical University in Prague)**

“3D Reconstruction from Photographs - Principles and Applications”

**Prof. Johji Tajima (Nagoya City University)**

“Color Image Processing from the Physical, Psychological and Biological Viewpoints”

**Prof. Ramin Zabih (Cornell University)**

“Research Opportunities in Creating Medical Images”

### Tutorial Course

**Dr. Vishal M. Patel (University of Maryland, Center for Automation Research)**

“Domain Adaptation for Visual Recognition”

**Dr. Kota Yamaguchi (Tohoku University)**

“Effective Dataset Construction in Computer Vision”

*Co-Sponsored by*

The MVA Organization, IAPR TC-8, and AIST JAPAN

*Supported by*

The Telecommunications Advancement Foundation and

The KDDI foundation

*In cooperation with*

The Information Processing Society of Japan

The Institute of Electrical Engineers of Japan

The Institute of Electronics, Information and Communication Engineers

The Institute of Image Information and Television Engineers

The Institute of Systems, Control and Information Engineers

The Institute of Image Electronics Engineers of Japan

The Japanese Society for Artificial Intelligence

The Japanese Society for Non-destructive Inspection

The Japan Society for Precision Engineering

The Robotics Society of Japan

The Society of Academic Study on Sensing via Image Information

The Society of Automotive Engineers of Japan

The Society of Instrument and Control Engineers

The Virtual Reality Society of Japan

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For more details, please visit <http://www.mva-org.jp/> or contact: **MVA Organization, c/o Prof. Hideo SAITO**



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# IMPORTANT NOTICE

## For all participants

**Awards :** Winners of the MVA2015 Best Paper Award and the MVA2015 Best Practical Paper Award will be announced and commended at the conference closing.

The Best Poster Award is given to excellent poster presenters, based on the votes by all participants. Three voting sheets should be found in the conference bag. We ask each participant to vote for the best presentation in each poster session. The ballot box will be closed 10 minutes before the session closes. The winner will be announced and commended at the conference closing.

**Name badges:** All participants are requested to wear their name badges during the conference. You may not be allowed to access the conference site without your name badge.

**LAN:** Wireless LAN is available at the conference site. Further information, including ID and password, will be provided at the registration desk.

### **Restaurants, ATMs, post offices, etc.**

Please refer to the map (contained in your conference bag) for restaurants, ATMs, post offices, and convenience stores around the conference site.

## For presenters in oral sessions

1. All oral presentations will be given in a single track at the Miraikan Hall.
2. Duration of an oral presentation is 20 minutes including 5 minutes for discussions, comments, questions and answers.
3. A projector is used for oral presentation. Slides should be prepared in the aspect ratio of 4:3. An oral presenter should provide a device that can output the slides to the projector through a D-sub 15 or HDMI connector. No audio can be transmitted. A power source is provided.
4. An oral presenter must be present at the Miraikan Hall 10 minutes before the session starts, and must be recognized by the session chairs. The presentation slides should be checked with the provided equipment.
5. An oral presenter must also have a poster presentation at the poster session on the same day at the Conference Room 2. No snapshot presentation is necessary for oral presenters.
6. The Best Paper Award and the Best Practical Paper Award will be chosen from the oral presentations and presented at the closing session. Please attend the closing session.

## For presenters in poster sessions

1. The poster session will be held at the Conference Rooms 2 and 3. Presenters are expected to be present at their poster during the session.
2. Dimensions of the poster panel: 1.8m width × 2.1m height. Texts and figures should be large enough to be read clearly at a distance of approximately 2 meters. Poster numbers should be attached on the panels. Thumbtacks (drawing pins) are provided for attaching your poster to the panel.
3. A table will be available in front of each poster board for poster presenters, e.g., for showing videos and demos with laptop computers. A power source is supplied at each poster board.
4. Posters can be placed earlier to get publicity. Please do not forget to remove your poster at the end of the poster sessions.
5. Poster presenters must give a 30-second presentation in the snapshot session before the poster session. Prepare a one-page slide in .pptx format with 4:3 aspect ratio. Embed all fonts and movies. Each slide will be switched automatically to the next one when the time passes. All the animations should be configured to play automatically.

The poster chair has already notified to the corresponding authors how to collect slides. Please contact us if you have not received the instruction.

6. The Best Poster Award is chosen by all participants' votes and awarded at the closing session. Please attend the closing session.

## For session chairs

1. Please make sure to arrive at the Miraikan Hall at least 10 minutes before your session starts.
2. Then please make sure that all the presenters in your session are present.
3. Each presentation is 20-minute long, including questions and answers as well as the time for setting up the presentation.

# PROGRAM AT A GLANCE

<b>18 Mon.</b>	<b>19 Tue.</b>		<b>20 Wed.</b>		<b>21 Thu.</b>		<b>22 Fri.</b>
	9:00	Registration	9:00	Registration	9:00	Registration	
	9:30	Opening	9:30	<a href="#">Session 6: ITS</a>	9:30	<a href="#">Session 11: Action</a>	10:00- 12:50 <a href="#">Tech- nical Tour</a>
	9:40	<a href="#">Session 1: Recognition</a>					
			10:50	Break	10:50	Break	
	11:00	Break	11:00	<a href="#">Session 7: Industry</a>	11:00	<a href="#">Session 12: Biomedical</a>	
	11:10	<a href="#">Session 2: 3D</a>					
	12:10	Lunch Break					
			12:20	Lunch Break <a href="#">Young Research- ers Meeting</a>	12:20	Lunch Break	
13:00- 17:15 <a href="#">Tutorial Courses</a>	13:40	<a href="#">Session 3: IAPR Invited Talk 1</a>	13:50	<a href="#">Session 8: IAPR Invited Talk 2</a>	13:50	<a href="#">Session 13: IAPR Invited Talk 3</a>	
	14:40	Break					
	14:50	<a href="#">Session 4: Doctoral Thesis Session</a>	14:50	<a href="#">Session 9: Pedestrian</a>	14:50	Break	
					15:00	Poster Snapshot	
					15:20	<a href="#">Session 14: Poster Session 3</a>	
			15:30	Break			
			15:40	Poster Snapshot			
			16:00	<a href="#">Session 7: Poster Session 2</a>			
		16:10	Break				
		16:20	Poster Snapshot				
	16:40	<a href="#">Session 5: Poster Session 1</a>			16:50	<a href="#">Session 15: Person</a>	
17:30- 19:30 <a href="#">Welcome Recep- tion</a>			17:30		17:50	<b>Closing Session, Award Ceremony</b>	
	18:10				18:00		
			19:10	<a href="#">Banquet</a>			
19:30			21:30				

# FINAL PROGRAM

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## Monday, May 18, 2015

**Tutorial Course** (13:00 - 17:15)

**Welcome Reception** (17:30 - 19:30)

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## Tuesday, May 19, 2015

**Registration** (9:00 - 9:30)

**Opening Session** (9:30 - 9:40)

**Session 1: Recognition** (9:40 – 11:00)

Chairs: Tsai Du-Ming and Yoshihisa Ijiri

01-1 **Biased Discriminant Analysis with Feature Line Embedding for Interactive Image Retrieval**

*Yu-Chen Wang, Chin-Chuan Han, Chang-Hsing Lee, Kuo-Chin Fan* (Taiwan)

01-2 **Discriminative Learning of Apparel Features**

*Rasmus Rothe, Marko Ristin, Matthias Dantone, Luc Van Gool* (Switzerland)

01-3 **Multi-View Hypotheses Transfer for Enhanced Object Recognition in Clutter**

*Thomas F aulhammer, Michael Zillich, Markus Vincze* (Austria)

01-4 **Affine Invariant Visual Phrases for Object Instance Recognition**

*Viorica P atr ucean, Maks Ovsjanikov* (United Kingdom)

**Break** (11:00 - 11:10)

**Session 2: 3D** (11:10 - 12:10)

Chairs: Sami Brandt and Norimichi Ukita

02-1 **Entire Shape Scan System with Multiple Pro-Cams Using Texture Information and Accurate Silhouette Creating Technique**

*Yoshinori Oki, Marco Visentini-Scarzanella, Tomohiro Wada, Ryo Furukawa, Ryusuke Sagawa, Hiroshi Kawasaki* (Japan)

02-2 **Automatic 3D Industrial Point Cloud Modeling and Recognition**

*Guan Pang, Rongqi Qiu, Jing Huang, Suyu You, Ulrich Neumann* (United States of America)

02-3 **Enhanced Surface Normal Computation by Exploiting RGB-D Sensory Information**

*Jens Hedrich, Fran ois Genois, Dietrich Paulus, Marcin Grzegorzec* (Germany)

**Lunch Break** (12:10 - 13:40)

**Session 3: IAPR Invited Talk 1** (13:40 - 14:40)

Chair: Takeshi Masuda

**3D Reconstruction from Photographs – Principles and Applications**

*Prof. Tomas Pajdla* (Czech Technical University in Prague)

**Break** (14:40 - 14:50)

**Session 4: Doctor Thesis Session** (14:50 - 16:10)

Joint Session with IPSJ CVIM. Papers are not included in the Proceedings.

04-1 **Action History Volume for Spatiotemporal Editing of 3D Video in Multi-party Interaction Scenes**

*Qun Shi, Shohei Nobuhara, Takashi Matsuyama*

04-2 **Viewpoint-independent Action Recognition Method using Depth Image**

*Ryo Yumiba, Hironobu Fujiyoshi*

04-3 **Cell Tracking Under High Density Culture Conditions for Cell Behavior Analysis**

*Bise Ryoma, Sato Yoichi*

04-4 **X-ray Visualization based on the Characteristics of Human Visual System**

*Taiki Fukiage, Takeshi Oishi, Katsushi Ikeuchi*

04-5 **Quad-Tree based Image Encoding Methods for Data-Adaptive Visual Feature Learning**

*Cuicui Zhang, Xuefeng Liang, Takashi Matsuyama*

04-6 **Shape from Scattering: Shape Estimation Based on Light Transport Analysis in Translucent Objects**

*Chika Inoshita, Yasuhiro Mukaigawa, Yasuyuki Matsushita, Yasushi Yagi*

04-7 **Four-dimensional City Modeling using Vehicular Imagery**

*Ken Sakurada, Takayuki Okatani*

04-8 **Spatio-Temporal Optimization-Based Motion Inpainting for Video Completion**

*Menandro Roxas, Katsushi Ikeuchi*

**Break** (16:10 - 16:20)

**Poster Snapshot** (16:20-16:40)

**Session 5: Poster Session 1 (16:40-18:10)**

- 05-02 **Discussion on a Method to Extract Scallop Using Line Convergence Index Filter from Granule-Sand Seabed Videos**  
*Koichiro Enomoto, Masashi Toda, Yasuhiro Kuwahara (Japan)*
- 05-03 **Structural inpainting of Road Patches for Anomaly Detection**  
*Asim Munawar, Clement Creusot (Japan)*
- 05-04 **Semantic Rich ICM Algorithm for VHR Satellite Images Segmentation**  
*J r mie Sublime, Andr s Troya-Galvis, Youn s Bennani, Antoine Cornu jols, Pierre Gan arski (France)*
- 05-05 **Using Polynomials to Correct Non-Uniform Backgrounds in Thermal Images Caused by Uneven Heating**  
*Kai-Yi Zheng, Yu-Sung Chang, Kai-Hong Wang, Yuan Yao (Taiwan)*
- 05-06 **An Innovative of Pyramid-Based Fusion for Generating the HDR Images in Common Display Devices**  
*Suthum Keerativittayanun, Toshiaki Kondo, Kazunori Kotani, Teera Phatrapornnant (Thailand)*
- 05-07 **Inferior Alveolar Canal Segmentation in Cone Beam Computed Tomography Images Using an Adaptive Diffusion Flow Active Contour Model**  
*Chadaporn Keatmanee, Stanislav Makhanov, Saowapak Thongvigitmanee, Kazunori Kotani, Toshiaki Kondo (Thailand)*
- 05-08 **3D Lung Nodule Candidates Detection in Multiple Scales**  
*Jorge Novo, Luis Gon alves, Ana Maria Mendon a, Aur lio Campilho (Portugal)*
- 05-09 **Modeling the Stone Floor Based on Excavation Information Using Implicit Polynomial**  
*Yoshihiro Sato, Yosuke Shinya, Bo Zheng, Takeshi Oishi, Katsushi Ikeuchi (Japan)*
- 05-10 **Hierarchical Summarization for Easy Video Applications**  
*Nithya Sudhakar, Sharat Chandran (India)*
- 05-11 **Character Extraction by Integrating Color into Edge-Based Methods**  
*Naoki Chiba, Xinhao Liu (Japan)*
- 05-12 **Face Photo-Sketch Recognition Based on Joint Dictionary Learning**  
*Jixuan Liu, Seho Bae, Hanjae Park, Lei Li, Seongbeak Yoon, Juneho Yi (Korea, South)*
- 05-13 **A Hybrid Approach to Pedestrian Clothing Color Attribute Extraction**  
*Mu Gao, Yuning Du, Haizhou Ai, Shihong Lao (China)*
- 05-14 **Scene Retrieval by Unsupervised Salient Part Discovery**  
*Naotoshi Sugegaya, Kanji Tanaka, Kentaro Yanagihara (Japan)*
- 05-16 **An Efficient FPGA Implementation of the Harris Corner Feature Detector**  
*Tak Lon Chao, Kin Hong Wong (China)*
- 05-17 **Mobile Real-Time Single Image 3D Corridor Reconstruction Using J-Linkage**  
*Greg Olmschenk, Zhigang Zhu (United States of America)*
- 05-18 **Egocentric Articulated Pose Tracking for Action Recognition**  
*Haruka Yonemoto, Kazuhiko Murasaki, Tatsuya Osawa, Kyoko Sudo, Jun Shimamura, Yukinobu Taniguchi (Japan)*
- 05-19 **A Novel Spiral Addressing Scheme for Rectangular Images**  
*Min Jing, Bryan Scotney, Sonya Coleman, Martin McGinnity (United Kingdom)*
- 05-20 **Illuminant Classification Based on Random Forest**  
*Bozhi Liu, Guoping Qiu (United Kingdom)*
- 05-21 **Transfer Learning Method Using Multi-Prediction Deep Boltzmann Machines for a Small Scale Dataset**  
*Yoshihide Sawada, Kazuki Kozuka (Japan)*
- 05-22 **Part-Segment Features for Articulated Pose Estimation**  
*Norimichi Ukita (Japan)*
- 05-23 **Connectivity-Based Error Evaluation for Ellipse Fitting**  
*Tomonari Masuzaki, Yasuyuki Sugaya (Japan)*
- 05-24 **Weighted Hough Forest for Object Detection**  
*Yusuke Murai, Yuji Yamauchi, Takayoshi Yamashita, Hironobu Fujiyoshi (Japan)*
- 05-25 **Fine-Grained Classification of Identity Document Types with Only One Example**  
*Marcel Simon, Erik Rodner, Joachim Denzler (Germany)*
- 05-26 **Similar Handwritten Chinese Character Recognition Based on Adaptive Discriminative Locality Alignment**  
*Xiwen Qu, Ning Xu, Weiqiang Wang, Ke Lu (China)*
- 05-27 **Pose Estimation of Textureless Objects in Cluttered Environments**  
*Bla z Bratani , Bo tjan Likar, Franjo Pernu , Dejan Toma zevi  (Slovenia)*
- 05-28 **Grouped Outlier Removal for Robust Ellipse Fitting**  
*Mang Shao, Yoshihisa Ijiri, Kosuke Hattori (United Kingdom)*
- 05-29 **Reliable Background Prediction Using Approximated GMM**  
*Tomosuke Maeda, Tomohiko Ohtsuka (Japan)*
- 05-30 **Manufactured Object Sub-Segmentation Based on Reflection Motion Estimation**  
*Qinglin Lu, Olivier Laligant, Eric Fauvet, Anastasia Zakharova (France)*
- 05-31 **Unsupervised Muscle Region Extraction by Fuzzy Decision Based Saliency Feature Integration on Thigh MRI for 3D Modeling**  
*Nevrez Imamoglu, Jose Gomez-Tames, Siyu He, Dong-Yun Gu, Kahori Kita, Wenwei Yu (Japan)*
- 05-32 **Training-Free Moving Object Detection System Based on Hierarchical Color-Guided Motion Segmentation**  
*Xinfeng Bao, Gijs Dubbelman, Svitlana Zinger, Peter H. N. de With (Netherlands)*
- 05-33 **Multiple-Organ Segmentation Based on Spatially-Divided Neighboring Data Energy**  
*Minato Morita, Asuka Okagawa, Yuji Oyamada, Yoshihiko Mochizuki, Hiroshi Ishikawa (Japan)*
- 05-34 **WM-SBA: Weighted Multibody Sparse Bundle Adjustment**  
*Kai Cordes, Mark Hockner, Hanno Ackermann, Bodo Rosenhahn, J rn Ostermann (Germany)*

- 05-35 **Bundle Adjustment Revisited for Slam with RGB-D Sensors**  
Kathia Melbouci, Sylvie Naudet Collette, Vincent Gay-Bellile, Omar Ait Aider, Mathieu Carrier, Michel Dhome (France)
- 05-36 **Tracking a Table Tennis Ball for Umpiring Purposes**  
Hnin Myint, Patrick Wong, Laurence Dooley, Adrian Hopgood (United Kingdom)
- 05-37 **A New Method to Detect Nystagmus for Vertigo Diagnosis System by Eye Movement Velocity**  
Theekapun Charoenpong, Visan Mahasitthiwat, Preeyanan Pattrapisetwong (Thailand)
- 05-38 **Surface Defect Recognition of Continuous Casting Slabs Based on Non-Subsampled Contourlet Transform**  
Ke Xu, Peng Zhou (China)
- 05-39 **A Lens Collar Auto-Inspection System**  
Chien-Chih Wang, Ssu-Han Chen (Taiwan)
- 05-40 **Surface Defect Detection in Low-Contrast Images Using Basis Image Representation**  
Du-Ming Tsai, Yan-Hsin Tseng, Wei-Yao Chiu (Taiwan)

## **Wednesday, May 20, 2015**

**Registration** (9:00 - 9:30)

**Session 6: ITS** (9:30 - 10:50)

Chairs: Raphaël Labayrade, Abdelaziz Khat

- 06-1 **Augmenting Off-the-Shelf Paper Maps Using Intersection Detection and Geographical Information Systems**  
Liming Yang, Jean-Marie Normand, Guillaume Moreau (France)
- 06-2 **Leveraging Image Based Prior for Visual Place Recognition**  
Taisho Tsukamoto, Kanji Tanaka (Japan)
- 06-3 **Beyond Thinking in Common Categories: Predicting Obstacle Vulnerability Using Large Random Codebooks**  
Johannes Rühle, Erik Rodner, Joachim Denzler (Germany)
- 06-4 **Road Sign-Aided Estimation of Visibility Conditions**  
Rachid Belaroussi, Dominique Gruyer (France)

**Break** (10:50 - 11:00)

**Session 7: Industry** (11:00 - 12:20)

Chairs: Mark Whitty and Naoki Chiba

- 07-1 **Automated Visual Inspection of Pharmaceutical Tablets in Heavily Cluttered Dynamic Environments**  
Gregor Podrekar, Blaž Bratanič, Boštjan Likar, Franjo Permuš, Dejan Tomažević (Slovenia)
- 07-2 **Visual Words for Automated Visual Inspection of Bulk Materials**  
Matthias Richter, Tomas Längle, Jürgen Beyerer (Germany)
- 07-3 **OLED Panel Defect Detection Using Local Inlier-Outlier Ratios and Modified LBP**  
Vishwanath Sindagi, Sumit Srivastava (India)
- 07-4 **Pixel-Wise Radiometric Line Scanner Calibration**  
Francois Johannes Louw, Masaaki Iiyama, Takuya Funatomi, Michihiko Minoh (Japan)

**Lunch Break** (12:20 - 13:50) and

**Young Researchers Meeting** (12:20 - 13:20)

**Session 8: IAPR Invited Talk 2** (13:50 - 14:50)

Chair: Hiroshi Ishikawa

**Color Image Processing from the Physical, Psychological and Biological Viewpoints**

Prof. Johji Tajima (Nagoya City University)

**Session 9: Pedestrian** (14:50 - 15:30)

Chairs: Stefan Becker and Hitoshi Habe

- 09-1 **Boosted Pedestrian Detector Adaptation in Specific Scenes**  
Puhao Ma, Lei Sun, Haizhou Ai, Shun Sakai (China)
- 09-2 **Fast Discrimination by Early Judgment Using Linear Classifier**  
Takato Kurokawa, Yuji Yamauchi, Takayoshi Yamashita, Hironobu Fujiyoshi (Japan)

**Break** (15:30 - 15:40)

**Poster Snapshot** (15:40-16:00)

**Session 10: Poster Session2** (16:00 - 17:30)

- 10-01 **Automatic Grape Bunch Detection in Vineyards for Precise Yield Estimation**  
Scarlett Liu, Mark Albert Whitty, Stephen Cossell (Australia)
- 10-02 **OKIRAKU Search: Leaf Images Based Visual Tree Search System**  
Takeshi Saitoh, Toshihiro Iwata, Kentaro Wakisaka (Japan)
- 10-03 **Pedestrian Detection in Thermal Images Using Adaptive Fuzzy C-Means Clustering and Convolutional Neural Networks**  
Vijay John, Zheng Liu, Seiichi Mita, Bin Qi (Japan)
- 10-04 **PerSEE: a Central Sensors Fusion Electronic Control Unit for the Development of Perception-Based ADAS**  
Dominique Gruyer, Rachid Belaroussi, Xuanpeng Li, Benoit Lusetti, Marc Revilloud, Sebastien Glaser (France)
- 10-05 **Metamerism-Based Shading Illusion**  
Daisuke Miyazaki, Takafumi Saneshige, Masashi Baba, Ryo Furukawa, Masahito Aoyama, Shinsaku Hiura (Japan)
- 10-06 **Digital Image Watermarking on Illumination Component**  
Piyanart Chotikawanid, Kharittha Thongkor, Pipat Supasirisun, Thumrongrat Amornraksa (Thailand)

- 10-08 **Temporal-Spatial Validation of Knot-Tying Procedures Using RGB-D Sensor for Training of Surgical Operation**  
*Yoko Ogawa, Nobutaka Shimada, Yoshiaki Shirai, Yoshimasa Kurumi, Masaru Komori* (Japan)
- 10-09 **Document Image Dataset Indexing and Compression Using Connected Components Clustering**  
*Housseem Chatbri, Keisuke Kameyama* (Japan)
- 10-10 **Development of Design and Operation Supporting Techniques for Product Inspection Devices Using Virtual Devices**  
*Fumiyuki Takahashi, Hideki Abe, Susumu Haga, Tetsuo Koezuka* (Japan)
- 10-11 **A Hybrid Wavelet and Temporal Fusion Algorithm for Film and Video Denoising**  
*Hannes Fassold, Peter Schallauer* (Austria)
- 10-12 **A Deep-Learning Approach to Facial Expression Recognition with Candid Images**  
*Wei Li, Min Li, Zhong Su, Zhigang Zhu* (United States of America)
- 10-13 **Multi-Genomic Curve Extraction**  
*Raphaël Labayrade, Mathias Ngo* (France)
- 10-14 **Bag of Words Representation and SVM Classifier for Timber Knots Detection on Color Images**  
*Mohamad Mazen Hittawe, Désiré Sidibé, Fabrice Mériaudeau* (France)
- 10-15 **Non-Parametric Image Transforms for Sparse Disparity Maps**  
*Dexmont Peña, Alistair Sutherland* (Ireland)
- 10-16 **Increasing the Precision of Junction Shaped Features**  
*Kai Cordes, Jörn Ostermann* (Germany)
- 10-17 **On the Number of Holes of a 2-D Binary Object**  
*Humberto Sossa* (Mexico)
- 10-18 **Local Behavior Modeling Based on Long-Term Tracking Data**  
*Rainer Planinc, Martin Kampel* (Austria)
- 10-19 **A Practical Classifier for Photographs and Non-Photographic Images Based on Local Visual Features**  
*Kei Terayama, Hirohisa Hioki* (Japan)
- 10-20 **Automatic Target Recognition by Infrared and Visible Image Matching**  
*Kai-Sheng Cheng, Hwei-Yung Lin* (Taiwan)
- 10-21 **Sparse Image Reconstruction by Two Phase RBM Learning: Application to Mine Planning**  
*Yanyan Mu, Frank Ferrie, Roussos Dimitrakopoulos* (Canada)
- 10-22 **Occlusion-Free Appearance Modeling of Body Parts for Human Pose Estimation**  
*Yuki Kawana, Norimichi Ukita, Norihiro Hagita* (Japan)
- 10-23 **Semantic Mapping for Mobile Outdoor Robots**  
*Dagmar Lang, Susanne Friedmann, Jens Hedrich, Dietrich Paulus* (Germany)
- 10-25 **Action Recognition in Bed Using BAMs for Assisted Living and Elderly Care**  
*Manuel Martinez, Lukas Rybok, Rainer Stiefelwagen* (Germany)
- 10-26 **Geometric Interpretation of Fisher's Linear Discriminant Analysis through Communication Theory**  
*Jun Fujiki, Masaru Tanaka, Hitoshi Sakano, Akisato Kimura* (Japan)
- 10-27 **Correspondence Rejection by Trilateration for 3D Point Cloud Registration**  
*Kishan Lachhani, Jifang Duan, Hadi Baghsiahi, Eero Willman, David R. Selviah* (United Kingdom)
- 10-28 **Surface Object Recognition with CNN and SVM in Landsat 8 Images**  
*Tomohiro Ishii, Ryosuke Nakamura, Hidemoto Nakada, Yoshihiko Mochizuki, Hiroshi Ishikawa* (Japan)
- 10-29 **Lane Detection in Surveillance Videos Using Vector-Based Hierarchy Clustering and Density Verification**  
*Shan-Yun Teng, Kun-Ta Chuang Chuang, Chun-Rong Huang, Cheng-Chun Li* (Taiwan)
- 10-30 **Circle-Based Eye Center Localization (CECL)**  
*Yustinus Eko Soelistio, Eric Postma, Alfons Maes* (Indonesia)
- 10-31 **Unsupervised Figure-Ground Segmentation Using Edge Detection and Game-Theoretical Graph-Cut Approach**  
*Yu-Min Hsiao, Long-Wen Chang* (Taiwan)
- 10-32 **Visually Salient Features for Highway Scene Analysis**  
*Anurag Singh, Chee Hung Henry Chu, Michael A. Pratt* (United States of America)
- 10-34 **General-Purpose Road Boundary Detection with Stereo Camera**  
*Takuya Nanri, Abdelaziz Khat, Hiroyuki Furusho* (Japan)
- 10-35 **Tracking Image Features with PCA-SURF Descriptors**  
*Ardhisha Pancham, Daniel Withey, Glen Bright* (South Africa)
- 10-36 **A Novel Multi Modal Tracking Method Based on Depth and Semantic Color Features for Human Robot Interaction**  
*Aswin Chandarr, Maja Rudinac, Pieter Jonker* (Netherlands)
- 10-37 **Distributed Sigma Point Information Filters for Target Tracking in Camera Networks**  
*Shiva Kumar K A, K. R. Ramakrishnan, G. N. Rathna* (India)
- 10-38 **A Dataset for Computer-Vision-Based PCB Analysis**  
*Christopher Pramerdorfer, Martin Kampel* (Austria)
- 10-39 **Online Detection Technique of 3D Defects for Steel Strips Based on Photometric Stereo**  
*Lei Wang, Ke Xu* (China)

**Banquet** (19:10 - 21:30)

## **Thursday, May 21, 2015**

**Registration** (9:00 - 9:30)

**Session 11: Action** (9:30 - 10:50)

Chairs: Kusakunniran Worapan and Kyoko Sudo

- 11-1 **Effective Fusing the Factored Matrices in Dual Tensors for Action Recognition**  
*Chung-Yang Hsieh, Wei-Yang Lin* (Taiwan)
- 11-2 **Human Motion Prediction Considering Environmental Context**  
*Igi Ardiyanto, Jun Miura* (Japan)
- 11-3 **Lie Algebra-Based Kinematic Prior for 3D Human Pose Tracking**  
*Edgar Simo-Serra, Carme Torras, Francesc Moreno-Noguer* (Spain)
- 11-4 **Human Arm Pose Modeling with Learned Features**  
*Chongguo Li, Nelson H.C. Yung, Edmund Lam* (China)

**Break** (10:50 - 11:00)

**Session 12: Biomedical** (11:00 - 12:20)

Chairs : Aurélio Campilho and Wataru Ohyama

- 12-1 **Dorsal Hand Vein Recognition Based on EP-Tree**  
*Jen-Chun Lee* (Taiwan)
- 12-2 **Compressive Sensing Reconstruction Using Collaborative Sparsity among Color Channels**  
*Satoshi Satou, Motonori Ishii, Yoshihisa Kato, Kunio Nobori, Takeo Azuma* (Japan)
- 12-3 **Dependence on the Display Methods of Change in Accommodation and Convergence When a Target Moves along the Depth Direction**  
*Yuki Yokoyama, Shinya Mochiduki, Hideaki Takahira, Mitsuho Yamada* (Japan)
- 12-4 **Non-Contact Pulse Transit Time Measurement Using Imaging Camera, and Its Relation to Blood Pressure**  
*Kenta Murakami, Mototaka Yoshioka, Jun Ozawa* (Japan)

**Lunch Break** (12:20 - 13:50)

**Session 13: IAPR Invited Talk 3** (13:50 - 14:50)

Chair: Björn Stenger

**Research Opportunities in Creating Medical Images**  
*Prof. Ramin Zabih* (Cornell University)

**Break** (14:50 - 15:00)

**Poster Snapshot** (15:00-15:20)

**Session 14: Poster Session 3** (15:20 - 16:50)

- 14-01 **Mobile 3D Wood Pile Surveying**  
*Christopher Herbon, Benjamin Otte, Klaus-Dietz Tönnies, Bernd Stock* (Germany)
- 14-02 **Portable, Automatic Water Level Estimation Using Mobile Phone Cameras**

*Machiel Bruinink, Aswin Chandarr, Maja Rudinac, Peter-Jules van Overloop, Pieter Jonker* (Netherlands)

- 14-03 **Annotation Driven MAP Search Space Estimation for Sliding-Window Based Person Detection**  
*Stefan Becker, Wolfgang Hübner, Michael Arens* (Germany)
- 14-04 **Tsai Camera Calibration Enhanced**  
*Trevor Gee, Patrice Delmas, Nick Stones-Havas, Chris Sinclair, Wannes Van Der Mark, Wei Li, Heide Friedrich, Georgy Gimel'farb* (New Zealand)
- 14-05 **Combined Generation of Road Marking and Road Sign Databases Applied to Consistency Checking of Pedestrian Crossings**  
*Lykele Hazelhoff, Ivo Creusen, Thomas Woudsma, Xinfeng Bao, Peter H. N. de With* (Netherlands)
- 14-06 **Fast Single Image Dehazing through Edge-Guided Interpolated Filter**  
*Ximei Zhu, Ying Li, Yu Qiao* (China)
- 14-07 **Discriminating Motion Patterns of ACL Reconstructed Patients from Healthy Individuals**  
*Worapan Kusakunniran, Nattaporn Dirakbussarakom, Nantawat Prachasri, Duangkamol Yangchaem, Jos Vanreenterghem, Mark Robinson* (Thailand)
- 14-08 **Computer Vision-Based Approach for Rite Decryption in Old Societies**  
*Jilliam María Díaz Barros, Cédric Demonceaux, Adlane Habed, Alamin Mansouri* (France)
- 14-09 **The Method Based on View-Directional Consistency Constraints for Robust 3D Object Recognition**  
*Jun Shimamura, Taiga Yoshida, Yukinobu Taniguchi, Hiroko Yabushita, Kyoko Sudo, Kazuhiko Murasaki* (Japan)
- 14-10 **Efficient Three Dimensional Rotation Estimation for Camera-Based OCR**  
*Kanta Kuramoto, Wataru Ohyama, Tetsushi Wakabayashi, Fumitaka Kimura* (Japan)
- 14-11 **Intelligent Autofocus with Adaptive Depth of Field**  
*Pu-Chuan Kang, Huei-Yung Lin* (Taiwan)
- 14-13 **Spatio-Temporal Texture-Based Feature Extraction for Spontaneous Facial Expression Recognition**  
*Siti Khairuni Amalina Kamarol, Nor Syazana Meli, Mohamed Hisham Jaward, Nader Kamrani* (Malaysia)
- 14-14 **Spatio-Temporal Descriptor for Abnormal Human Activity Detection**  
*Boon Lung Fam, Mohamed Hisham Jaward, Jussi Parkkinen* (Malaysia)
- 14-15 **Expanding Histogram of Colors with Gridding to Improve Tracking Accuracy**  
*Kourosh Meshgi, Shin Ishii* (Japan)
- 14-16 **Measuring the Complexity of Two Dimensional Binary Patterns —Sub-Symmetries Versus Pappin Complexity—**  
*Godfried T. Toussaint, Noris S. Onea, Quan H. Vuong* (United Arab Emirates)
- 14-17 **Novel Spatio-Temporal Features for Fingertip Writing Recognition in Egocentric Viewpoint**  
*Muhammad Zaid Hameed, Guillermo Garcia-Hernando, Tae-Kyun Kim* (United Kingdom)

- 14-18 **3D Hand Skeleton Model Estimation from a Depth Image**  
*Chin-Yun Fan, Meng-Hsuan Lin, Te-Feng Su, Shang-Hong Lai, Chih-Hsiang Yu* (Taiwan)
- 14-19 **Digital Image Watermarking Based on Regularized Filter**  
*Khariththa Thongkor, Pipat Supasirisun, Thumrongrat Amornraksa* (Thailand)
- 14-20 **Knot Detection in X-Ray Images of Wood Planks Using Dictionary Learning**  
*Mattias Hansson, Alexandru Enescu, Sami S. Brandt* (Denmark)
- 14-21 **A Discriminative Cascade CNN Model for Offline Handwritten Digit Recognition**  
*Shulan Pan, Yanwei Wang, Changsong Liu, Xiaoqing Ding* (China)
- 14-22 **Visual Detection and Species Classification of Orchid Flowers**  
*Steven Puttemans, Toon Goedemé* (Belgium)
- 14-23 **Probabilistic Nodes for Modelling Classification Uncertainty for Random Forest**  
*Florian Baumann, Karsten Vogt, Arne Ehlers, Bodo Rosenhahn* (Germany)
- 14-24 **METU Dataset: A Big Dataset for Benchmarking Trademark Retrieval**  
*Osman Tursun, Sinan Kalkan* (Turkey)
- 14-25 **Image Annotation Via Deep Neural Network**  
*Chengjian Sun, Songhao Zhu, Zhe Shi* (China)
- 14-26 **A Study on the Robustness of Shape Descriptors to Common Scanning Artifacts**  
*Ferran Roure, Yago Diez, Xavier Lladó, Josep Forest, Tomislav Pribanic, Joaquim Salvi* (Spain)
- 14-27 **A Closed-form Estimate of 3D ICP Covariance**  
*Prakhya Sai Manoj, Bingbing Liu, Yan Rui, Weisi Lin* (Singapore)
- 14-28 **View Extension for Teleoperated MAV**  
*Ren Foo Lim, Akihiko Torii, Masatoshi Okutomi* (Japan)
- 14-29 **Object Detection in Surveillance Video from Dense Trajectories**  
*Mengyao Zhai, Lei Chen, Mehran Khodabandeh, Jinling Li, Greg Mori* (Canada)
- 14-30 **A Deep Reinforcement Learning Approach to Character Segmentation of License Plate Images**  
*Farnaz Abtahi, Zhigang Zhu, Aaron M. Burry* (United States of America)
- 14-31 **VHR Satellite Image Segmentation Based on Topological Unsupervised Learning**  
*Nistor Grozavu, Nicoleta Rogovschi, Guénaél Cabanes, Andrés Troya-Galvis, Pierre Gançarski* (France)
- 14-32 **Multi-Organ Segmentation by Minimization of Higher-Order Energy for CT Boundary**  
*Asuka Okagawa, Yuji Oyamada, Yoshihiko Mochizuki, Hiroshi Ishikawa* (Japan)
- 14-33 **Three-DoF Pose Estimation of Asteroids by Appearance-Based Linear Regression with Divided Parameter Space**  
*Naoki Kobayashi, Yuji Oyamada, Yoshihiko Mochizuki, Hiroshi Ishikawa* (Japan)
- 14-34 **Embedded Human-Following Mobile-Robot with an RGB-D Camera**  
*Minh-Quoc Do, Chang-Hong Lin* (Taiwan)
- 14-35 **Respiratory Motion Prediction from CBCT Image Observations Using UKF**  
*Manivannan Sundarapandian, Ramakrishnan Kalpathi, R Alfredo Siochi* (India)
- 14-36 **A Portable 6-DOF Motion Tracker Using High-Accuracy AR Markers — First Report on the Feasibility**  
*Hideyuki Tanaka, Yasushi Sumi, Yoshio Matsumoto* (Japan)
- 14-37 **Towards 3D Human Posture Estimation Using Multiple Kinects Despite Self-Contacts**  
*Andrew Phan, Frank P. Ferrie* (Canada)
- 14-38 **Defect Inspection of Touch Panel Based on Repeated Patterns**  
*Mao-Hsiung Hung, Chaur-Heh Hsieh* (Taiwan)
- 14-39 **Robust Visual Analysis for Planogram Compliance Problem**  
*Anurag Saran, Ehtesham Hassan, Avinash Kumar Maurya* (India)

**Session 15: Person (16:50 - 17:50)**

Chairs: Yi Juneho and Shotaro Miwa

- 15-1 **Tri-Subjects Kinship Verification: Understanding the Core of a Family**  
*Xiaoqian Qin, Xiaoyang Tan, Songcan Chen* (China)
- 15-2 **Estimation of Face Parameters Using Correlation Analysis and a Topology Preserving Prior**  
*Stella Grasshof, Hanno Ackermann, Jörn Ostermann* (Germany)
- 15-3 **People Re-Identification Using Two-Stage Transfer Metric Learning**  
*Guanwen Zhang, Jien Kato, Yu Wang, Kenji Mase* (Japan)

**Closing Session, Award Ceremony (17:50 - 18:00)**

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**Friday, May 22, 2015**

**Technical Tour (10:00 -12:50)**

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# EVENTS

## Tutorial Course

### **Course 1: “Domain Adaptation for Visual Recognition”**

**Lecturer: Dr. Vishal M. Patel (University of Maryland, Center for Automation Research)**

Date: May 18, 2015

Time: 13:00 – 15:00

Place: Conference Room 1 on the 7th floor of Miraikan

**Abstract:**

In pattern recognition and computer vision, one is often faced with scenarios where the training data used to learn a model has different distribution from the data on which the model is applied. Regardless of the cause, any distributional change that occurs after learning a classifier can degrade its performance at test time. Domain adaptation tries to mitigate this degradation. In this tutorial, I will give an overview of recent visual domain adaptation methods and their applications in object recognition and biometrics recognition problems.



### **Course 2: “Effective Dataset Construction in Computer Vision”**

**Lecturer: Dr. Kota Yamaguchi (Tohoku University)**

Date: May 18, 2015

Time: 15:15 – 17:15

Place: Conference Room 1 on the 7th floor of Miraikan

**Abstract:**

As machine learning methods become the mainstream, we start to see a new challenge in computer vision: lack of data. This tutorial turns our attention to the importance of high-quality data in computer vision. Several approaches have been proposed to efficiently collect and create a high-quality dataset based on human-computation, including a task-specific annotation interface, a human-in-the-loop approach, or a game-based incentive control. Also, crowdsourcing has been utilized not only to assign concrete labels for supervised learning but also to study human behavior in terms of psychological perspective. In this tutorial, I will review various crowdsourcing efforts in computer vision and introduce as a case study the data-driven approach in fashion domain.



## Welcome Reception

Date: May 18, 2015

Time: 17:30 – 19:30

Place: Conference Room 3 on the 7th floor of Miraikan

## IAPR Invited Talks

### **Talk 1: Prof. Tomas Pajdla (Czech Technical University in Prague)**

**Talk title: “3D Reconstruction from Photographs – Principles and Applications”**

Date: May 19, 2015

Time: 13:40-14:40

Place: MIRAikan Hall on the 7th floor of Miraikan

**Synopsis:**

We will review and demonstrate main principles of the state of the art 3D reconstruction from photographs. Challenges and opportunities will be discussed and applications in photogrammetry, autonomous robotics and consumer cameras will be presented.

**Speaker bio:**

Tomas Pajdla received the MSc and PhD degrees from the Czech Technical University in Prague. He works in geometry and algebra of computer vision and robotics with emphasis on nonclassical cameras, 3D reconstruction, and industrial vision. He contributed to introducing epipolar geometry of panoramic cameras, non-



central camera models generated by linear mapping, generalized epipolar geometries, to developing solvers for minimal problems in structure from motion and to solving image matching problem. He coauthored works awarded the best paper prize at OAGM 1998 and 2013 and BMVC 2002. He is a member of the IEEE. Google Scholar: <http://scholar.google.com/citations?user=gnR4zf8AAAAJ>

<http://cmp.felk.cvut.cz/~pajdla/pajdla.html>

## **Talk 2: Prof. Johji Tajima (Nagoya City University)**

### **Talk title: “Color Image Processing from the Physical, Psychological and Biological View-points”**

Date: May 20, 2015

Time: 13:50-14:50

Place: MIRAIKAN Hall on the 7th floor of Miraikan

#### **Synopsis:**

Color image processing is necessary in various academic fields, but each field approaches it differently, and often incorrectly. It should really be done in a way that is meaningful from the physical, psychological, or biological point of view. In this paper, I introduce the database SOCS, which is a tool to combine the physical and psychological view-points, and two recent researches, one on the illumination estimation relating to the physical viewpoint, and the other on the genetic polymorphism relating to the biological viewpoint.



#### **Speaker bio:**

Johji Tajima graduated from the Faculty of Science, the University of Tokyo, in 1971 and received a doctorate in 1990 from the same school. From 1971 to 2003, he was a research member of NEC Corporation, engaged in research on image processing and pattern analysis, especially color image processing. During the period, he was a guest scientist from 1979 to 1980 at Forschungsinstitut fuer Informationsverarbeitung und Mustererkennung (FIM) in Karlsruhe, the Federal Republic of Germany.

Subsequently, he has been a professor at the Graduate School of Natural Sciences, Nagoya City University, from 2003 to 2014. Now, he is a Professor Emeritus of the University.

Prof. Tajima received the best paper awards for his papers from the Institute of Image Electronics Engineers of Japan (IEEEJ) in 1990 and 1998, and the Institute of Electronics, Information and Communication Engineers (IEICE) in 1991. He also published a book "Principles of Color Image Reproduction" in 1996.

He is a fellow of IEICE and IAPR (International Association for Pattern Recognition) for his contributions on color image processing and 3D vision.

He has served as a committee member of academic organizations, including as the general chair for MVA'92 and MVA2007, as well as the program chair for MVA2000.

<http://www.nsc.nagoya-cu.ac.jp/profile/tajima.html>

## **Talk 3: Prof. Ramin Zabih (Conell University)**

### **Talk title: “Research Opportunities in Creating Medical Images”**

Date: May 21, 2015

Time: 13:50-14:50

Place: MIRAIKAN Hall on the 7th floor of Miraikan

#### **Synopsis:**

While medical imaging researchers traditionally focus on registration or segmentation, an important challenge lies in creating high-quality diagnostic images for CT or MR. The underlying technical problem is a variant of motion deblurring, which requires a prior for solution. While good results can be achieved with widely-used first-order priors that only involve pairs of adjacent pixels, getting to the next level of performance requires patch-based priors. I will present a number of approaches to this problem, based on work my group has recently published in CVPR, ECCV, ICCV and TPAMI.



#### **Speaker bio:**

Ramin Zabih's research interests lie in computer vision and in medical imaging. He has worked on a variety of problems in early vision, including motion and stereo; many of these problems can be solved very accurately using algorithms based on graph cuts, which was given the Test of Time award at ICCV 2011 and the Koenderink prize at ECCV 2012. He served as a Program Chair for CVPR2007 and for the International Workshop on Computer Vision 2008, 2010 and 2012, and was a General Chair for CVPR 2013. He was the Editor-in-Chief of the IEEE Transactions on Pattern Analysis and Machine Intelligence from 2009 through 2012, and he now chairs the PAMI-TC, which runs vision conferences

CVPR and ICCV. He also is the president of the Computer Vision Foundation, a non-profit which now co-sponsors CVPR and ICCV with the IEEE Computer Society. Since the fall of 2013 He is at CornellNYC Tech with a joint appointment in Weill Cornell Radiology. His medical work has focused on the problem of MR image reconstruction, as well as on workflow issues.

<http://www.cs.cornell.edu/~rdz/>

## **Young Researchers Meeting**

Date: May 20, 2015

Time: 12:20-13:20 (Lunchtime)

Place: Conference Room 1 on the 7th floor of Miraikan

Fee: Free, but need a reservation

Submission due: April 20, 2015

### **Overview:**

The MVA Young Researchers meeting will provide students and young researchers with an opportunity to present and discuss their works. This meeting is also intended to promote networking and friendship between young researchers through communications in a relaxed and informal atmosphere.

### **Eligibility:**

All students and young researchers in academic and industrial institutions, who attend the MVA conference, are eligible. Meeting:

Buffet lunch will be provided. Participants can freely interact with others. To promote interaction, participants wear name tags with their name, affiliation, and research abstract.

### **Registration:**

We will accept the first 50 applicants by April 20. Eligible researchers who would like to participate in Young Researchers Meeting should apply in the registration for the MVA conference. After due date, participants will receive a notification from the organizers until the first week of May. Please create your name tag according to the notification mail.

## **Demo Session**

Date: May 20 and 21, 2015

Time: 11:00-17:30 (May 20), 10:00-16:50(May 21)

Place: Conference Room 2 on the 7th floor of Miraikan

The following nine institutions will demonstrate their products and technologies:

**“Computer Vision(CV) Accelerator” exhibited by Socionext Inc.,**

**“Low Latency Visual Intelligence on Myriad2” exhibited by Movidius,**

**“Ricoh's Next-Generation Machine Vision” exhibited by Ricoh Company, Ltd.,**

**“Point-Plane SLAM for RGB-D Sensors and Its Applications” exhibited by Mitsubishi Electric Research Labs (MERL),**

**“3D Style System™” exhibited by OMRON Corporation,**

**“NVIDIA® DIGITS™ Interactive Deep Learning GPU Training System” exhibited by NVIDIA,**

**“Let's Dance with Robot” exhibited by Dai Nippon Printing Co., Ltd.,**

**“Facial Image Analysis based on Deep Learning” exhibited by Chubu University and**

**“3RD EYE : Motorbike Collision Prevention System utilizing V2V Communication” exhibited by Keio-NUS CUTE Center, National University of Singapore.**

## Banquet

Date: May 20, 2015

Time: 19:10-21:30

Meeting Time 18:30

Meeting Location: TOKYO BAY CRUISE VINGT ET UN

The MVA2015 Banquet Cruise time is from 19:10 to 21:30. Please meet up at TOKYO BAY CRUISE VINGT ET UN at 18:30. Everyone needs a banquet ticket to join this event. If you are bringing family members, you may have the opportunity to purchase extra banquet tickets. Please ask at the MVA2015 registration desk.

### **Access :**

A one-minute walk from Takeshiba Station, Yurikamome Line (It is fifteen minutes by Yurikamome Line from Telecom Center Sta. to Takeshiba Sta.)

A 7-minute walk from Hamamatsucho Station, JR Yamanote Line / Keihintohoku Line.



## Technical Tour

Date: May 22, 2015

Time: 10:00 - 12:50

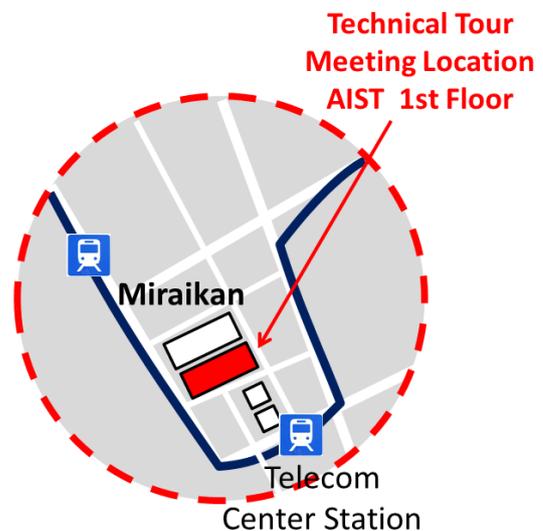
Meeting Time: 10:00

Meeting location: 1st Floor (Reception), the main building of AIST Tokyo Waterfront.

### **Tour schedule:**

10:00-12:00 Lab 1: Digital Human Research Group, Human Institute, National Institute of Advanced Industrial Science and Technology (AIST)

12:10-12:50 Lab 2: KMD Reality Media Project, Graduate School of Media Design, Keio University (Miraikan) (not include lunch)

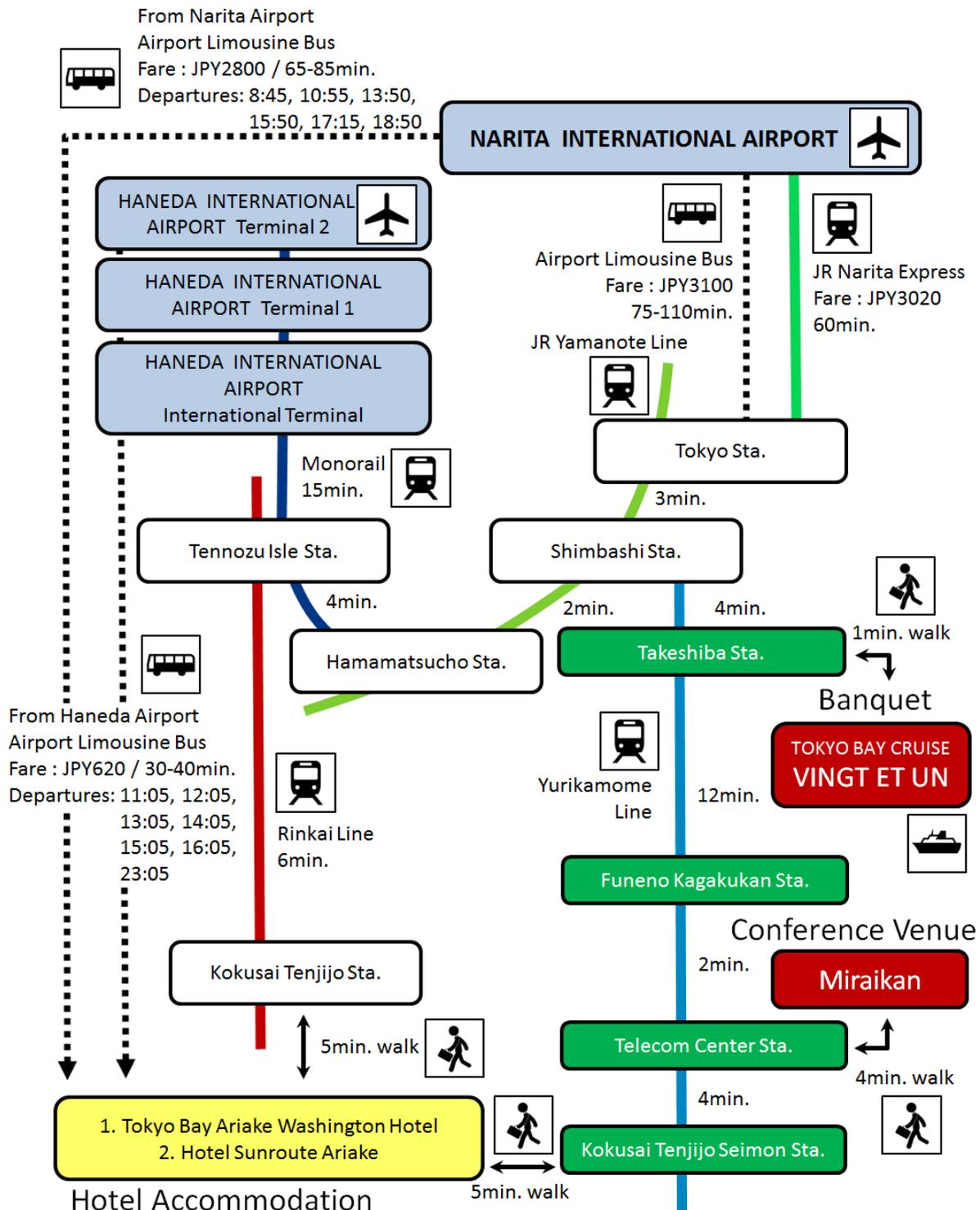


# CONFERENCE VENUE

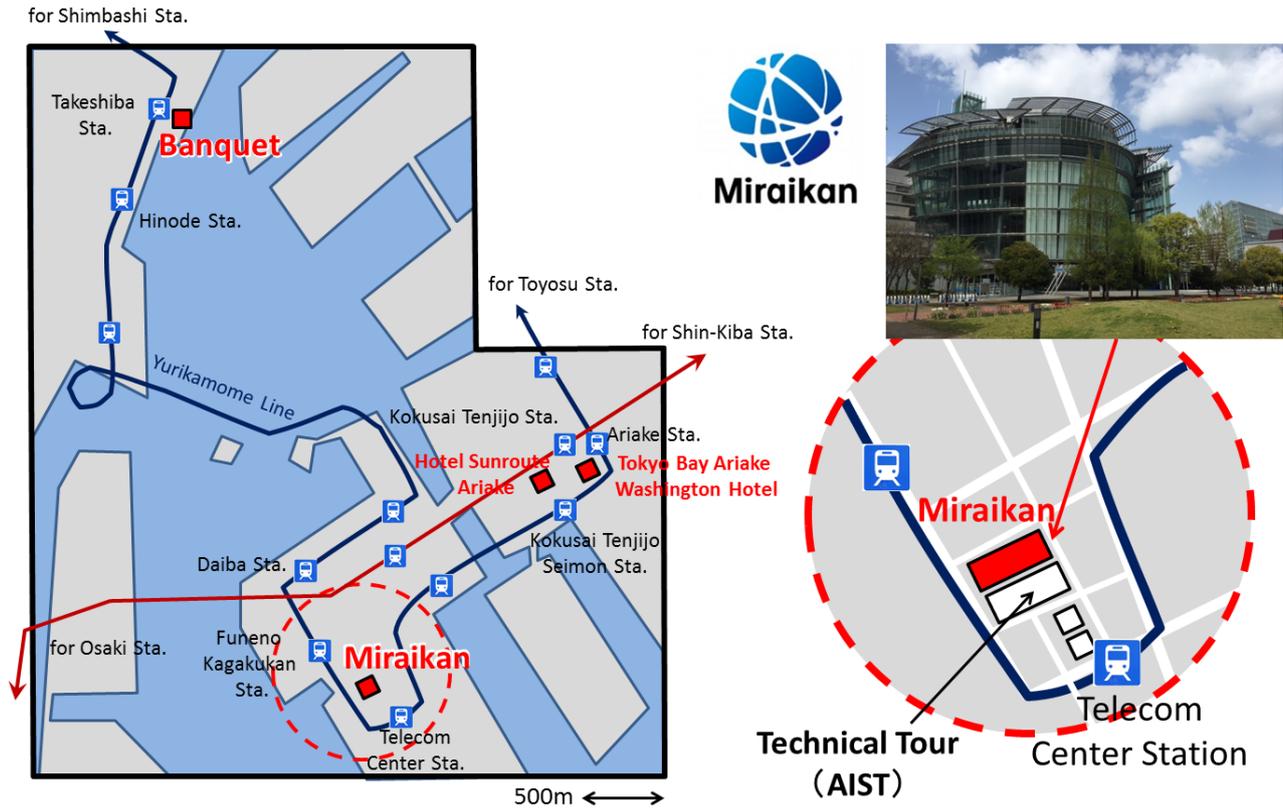
The conference will be held at the National Museum of Emerging Science and Innovation (Miraikan), Tokyo, Japan.  
 Miraikan: <http://www.miraikan.jst.go.jp/en/>.

## Transportation Guide

Miraikan (National Museum of Emerging Science and Innovation) is close to the “Telecom Center Station” on the “YURIKAMOME” line of Tokyo Waterfront New Transit.

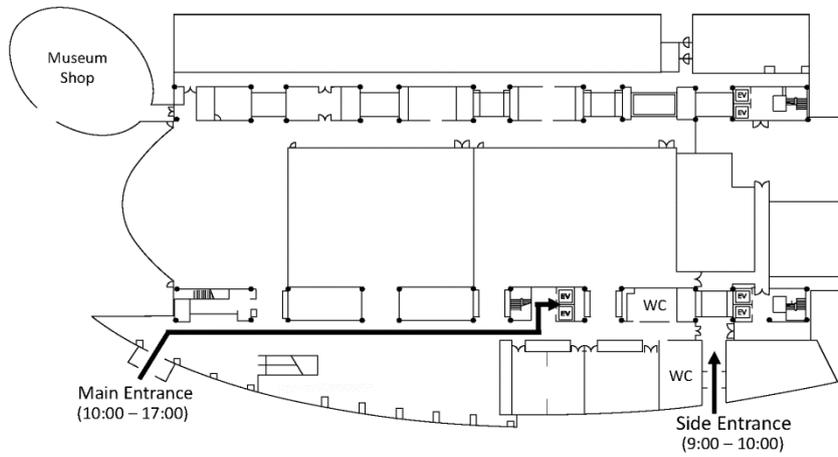


## Venue Map



## Floor Map

1F



7F

