

# IAPR MVA2015

**Proceedings of MVA 2015**  
**IAPR International Conference on Machine Vision Applications**  
**May 18-22, 2015**  
**Miraikan, Tokyo, Japan**



Sponsored by  
MVA Organization  
IAPR TC-8  
AIST JAPAN

***PROCEEDINGS OF  
THE FOURTEENTH IAPR INTERNATIONAL  
CONFERENCE ON  
MACHINE VISION APPLICATIONS***

***May 18-22, 2015***

***MIRAIKAN, Tokyo***

***JAPAN***

PROCEEDINGS OF THE FOURTEENTH  
IAPR INTERNATIONAL CONFERENCE  
ON MACHINE VISION APPLICATIONS

MVA2015

Copyright © 2015 by MVA Organization.  
All rights reserved.

ISBN 978-4-901122-15-3

Copyright or reprint permissions and order of additional copies should be addressed to:

MVA Organization  
President: Prof. Hideo Saito  
Department of Information and Computer Science  
Faculty of Science and Technology  
Keio University  
3-14-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8522, Japan  
[saito@hvr1.ics.keio.ac.jp](mailto:saito@hvr1.ics.keio.ac.jp)  
<http://www.mva-org.jp>

Printed in Japan.

---

# IAPR MVA2015

---

**IAPR INTERNATIONAL CONFERENCE  
ON MACHINE VISION APPLICATIONS  
MVA2015**

**May 18-22, 2015  
MIRAikan, Tokyo, JAPAN**

**Sponsored by**

*MVA Organization*

*IAPR TC-8*

*National Institute of Advanced Industrial Science and Technology (AIST)*

**Supported by**

*The Telecommunications Advancement Foundation*

*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*

## MVA CONFERENCE COMMITTEE

### General Co-Chairs

Yasuyo KITA (AIST)  
Hiroshi ISHIKAWA (Waseda University)

### Publication Co-Chairs

Norimichi UKITA (NAIST)  
Eigo SEGAWA (Fujitsu)  
Norichika YUI (Advanced Communication Media)

### Financial Co-Chairs

Yoshihisa IJIRI (OMRON)  
Ryuzo OKADA (Toshiba)

### Publicity Co-Chairs

Kunio NOBORI (Panasonic)  
Ichiro IDE (Nagoya University)  
Joachim DENZLER (Friedrich-Schiller-University Jena)  
Greg MORI (Simon Fraser University)  
Hongbin ZHA (Peking University)

### Web Co-Chairs

Shiro KUMANO (NTT)  
Yoshihiko MOCHIZUKI (Waseda University)

### Program Co-Chairs

Takeshi MASUDA (AIST)  
Björn STENGER (Toshiba Research Europe)

### Poster Chair

Takuya FUNATOMI (NAIST)

### Tutorial Co-Chairs

Kyoko SUDO (NTT)  
Hitoshi HABE (Kinki University)

### Technical Event Co-Chairs

Noriko SHIMOMURA (Nissan)  
Shotaro MIWA (Mitsubishi Electric)

### Local Arrangement Co-Chairs

Shunsuke KUDOH (The University of  
Electro-Communications)  
Shuntaro YAMAZAKI (Google)  
Masaki ONISHI (AIST)

### Secretaries

Yoshiko MATSUURA (The University of Tokyo)  
Toshiko KABASHIMA (Keio University)

### Organizing Committee Members

Kouta FUJIMURA (Factory Vision Solutions)  
Yohei MINEKAWA (Hitachi)  
Koichiro YAMAGUCHI (Toyota Central R&D Labs.)  
Takahiro YOSHIOKA (Fujitsu Laboratories)  
Masato ISHII (NEC)  
Yuko UEMATSU (Secom)  
Mitsuru AMBAI (Denso IT Laboratory)  
Takayuki SEMITSU (Mitsubishi Electric)

### Advisory Board Members

Masakazu EJIRI (R&D consultant)  
Katsushi IKEUCHI (The University of Tokyo)  
Masatsugu KIDODE (NAIST)  
Hideo SAITO (Keio University)  
Katsuhiko SAKAUE (AIST)  
Hiroshi SAKO  
Shigeru SASAKI (Fujitsu)  
Johji TAJIMA (Nagoya City University)

### Conference Advisory Board Members

Yoichi SATO (The University of Tokyo)  
Akihiro SUGIMOTO (NII)  
Masaaki MOCHIMARU (AIST)  
Masaki SUWA (OMRON)  
Kazuhiro SUMI (Aoyama Gakuin University)  
Darius BURSCHKA (Technische Universität München)  
Shigeki SUGANO (Waseda University)  
Eiichi YOSHIDA (AIST)

### Program Committee Members

Moataz ABDELWAHAB	Mattias JOHANNESON	Geovanni MARTINEZ	Myriam SERVIÈRES
J. K. AGGARWAL	Pieter P. JONKER	Piotr MIROWSKI	Takeshi SHAKUNAGA
Philippe BOLON	Masataka KAGESAWA	Guillaume MOREAU	Shiguang SHAN
Pierre BOULANGER	Sei-ichiro KAMATA	Daniel MORRIS	Yusuke SUGANO
Aurélio CAMPILHO	Shun'ichi KANEKO	Yasuhiro MUKAIGAWA	Yasuhiro TANIGUCHI
Sharat CHANDRAN	Hiroshi KANO	Vittorio MURINO	Masashi TODA
Chia-Yen CHEN	Abdelaziz KHIAT	Hiroshi NAGAHASHI	Akihiko TORII
Cheng-Chieh CHIANG	Makoto KIMURA	Hiroaki NAKAI	Du-Ming TSAI
Naoki CHIBA	Itaru KITAHARA	Akio NAKAMURA	Akira UTSUMI
Tae Eun CHOE	Reinhard KLETTE	Yuichi NAKAMURA	Koji WAKIMOTO
Sonya COLEMAN	Hiroyasu KOSHIMIZU	Frank NIELSEN	Paul WHELAN
Franck DAVOINE	Yoshinori KUNO	Heinrich NIEMANN	Toshihiko YAMASAKI
Robert FISHER	Takio KURITA	Munetoshi NUMADA	Takayoshi YAMASHITA
Hironobu FUJIYOSHI	Makoto KURUMISAWA	Kazunori ONOGUCHI	Kimitoshi YAMAZAKI
Guy GODIN	Raphaël LABAYRADE	Soon-Yong PARK	June-Ho YI
Igor GUROV	Shiyang LI	Erik RODNER	Pong C YUEN
Manabu HASHIMOTO	Tyng-Luh LIU	Takeshi SAITOH	Huijing ZHAO
Ki-sang HONG	Bao-Liang LU	Shin'ichi SATOH	
Hui-Yu HUANG	Atsuto MAKI	Shuji SENDA	

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

Dept. of Information and Computer Science, Keio University  
3-14-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8522, Japan