

PROCEEDINGS OF THE NINTH

IAPR MVA 2005

IAPR CONFERENCE ON MACHINE VISION APPLICATIONS

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IAPR CONFERENCE ON MACHINE VISION APPLICATIONS
MVA2005

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Message from the Conference Chairs

It is our great pleasure to welcome all of you to the IAPR 2005 Conference on Machine Vision Applications (IAPR MVA2005). This workshop is co-sponsored by MVA Conference Committee, IAPR TC-8, and National Institute of Advanced Industrial Science and Technology (AIST).

This is the ninth conference since the first one was held in Tokyo in 1988. We hold this workshop in Tsukuba Science City. The city, with beautiful Mt. Tsukuba to the north, is well known as the location of Tsukuba Science Expo '85. It currently functions as an internationally-known center of science and technology; both the government and private firms continue to establish new R & D centers and educational institutes.

Recently the area of vision applications has been growing in factory automation, medical diagnosis, security, intelligent transport system, geographic information system, human computer interaction, and wearable computing. Then, we have received more than 200 extended abstracts from 25 countries in the world. Among them, 43 and 102 papers have been selected for oral and poster presentations, respectively. Unfortunately, however, some excellent papers have not been accepted due to the limitation of presentation slots. In addition to the accepted papers, three distinguished researchers have been invited to give their fruitful presentations. We thank those three speakers: Prof. Nobuyuki Otsu, Prof. Giulio Sandini, and Prof. Alex Waibel, for accepting our invitations. We have also selected three papers from those presented in the 1994 workshop, which is most influential to the Machine Vision research field in this decade.

Organizing a workshop is a challenging and interesting job. We would like to express our gratitude to the members of the MVA Organizing Committee who have done such a wonderful job of organizing the MVA 2005 workshop so successfully. Lastly, we express our hearty gratitude to all participants, and we hope that this workshop will be an informative and memorable one to all of you.



Mikio Takagi
Co-Chair, MVA2005
Shibaura Institute of
Technology



Katsuhiko Sakaue
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Yoshinori Kuno
Program Co-Chair,
MVA2005
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In So Kweon
Program Co-Chair,
MVA2005
KAIST

Most Influential Paper over the Decade Award

This award is given to the authors of papers appearing in IAPR MVA'94 which have been recognized as having had the most significant influence on machine vision technology over the subsequent decade.

An Autonomous Three-Dimensional Vision Sensor with Ears

Shigeru Ando

Abstract: This paper describes our newly developed intelligent sensor system which comprises two eyes and four ears on a movable head. It can acquire its dynamical visual and auditory image of its surrounding 3-D environment while showing humanlike behavior naturally and autonomously. The most important feature of the sensor system is in a unified sensory architecture throughout low-level and intermediate level visual and auditory functions. This enables us to achieve 1) rapid (5ms) and accurate ($\pm 2\text{deg}$) auditory localization, 2) rapid (0.5s/65536pixel) extraction of motion and texture features, 3) rapid (0.1s/4096pixel) reconstruction of 3-D object profile, 4) rapid (several TV frame times) eye movement and binocular fixation which is activated by auditory localization and motion detection. We describe in this paper the several key items for realizing this sensor.

Disparity Selection in Binocular Pursuit

Atsuto Maki, Tomas Uhlin and Jan-Olof Eklundh

Abstract: This paper presents a technique for disparity selection in the context of camera vergence in binocular pursuit. For vergence control in binocular pursuit, it is a crucial problem to find a disparity which is corresponding to the target among multiple disparities generally observed in a scene. To solve the problem of the selection, we propose an approach based on histogramming the disparities obtained from a phase-based disparity estimation algorithm. The idea is to slice the scene using the disparity histogram so that only the target remains. The slice is chosen around a peak in the histogram, a peak which is found by keeping track of the peak as it moves in time, using prediction of the targets disparity and location in the image. The tracking of the peak enables robustness against any dominant objects in the scene. The approach is investigated through experiments and shown to work appropriately.

Video Retrieval Method Using a Sequence of Representative Images in a Scene

Akio Nagasaka, Takafumi Miyatake and Hirotada Ueda

Abstract: We describe a new method that can quickly search an entire video. This method is used to first detect every shot change of a target video in real time. Then unique frame sequence features at the shot changes are found. The method we have developed and described enables real-time scene retrieval. It may also be an appropriate basis for an information filter that automatically selects appropriate videos or scenes among newly input video.

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