

Séminaires Neuro / Tokyo Institute of Technology

30 Octobre 2014, 10:30 – 12:00

Date et lieu des séminaires

Jeudi 30 octobre 2014, 10h30.

Université de Cergy-Pontoise, site de St-Martin 1, bât. A, 5ème étage, salle 570.

Learning Similarities for Rigid and Non-Rigid Object Detection

Abstract:

In this paper (to appear in 3DV 2014), we propose an optimization method for estimating the parameters that typically appear in graph-theoretical formulations of the matching problem for object detection.

Although several methods have been proposed to optimize parameters for graph matching in a way to promote correct correspondences and to restrict wrong ones, our approach is novel in the sense that it aims at improving performance in the more general task of object detection.

In our formulation, similarity functions are adjusted so as to increase the overall similarity among a reference model and the observed target, and at the same time reduce the similarity among reference and "non-target" objects.

We evaluate the proposed method in two challenging scenarios, namely object detection using data captured with a Kinect sensor in a real environment, and intrinsic metric learning for deformable shapes, demonstrating substantial improvements in both settings.

Short bio:

Asako Kanazaki received the M.S. degree in Mechano-Informatics from the University of Tokyo, Japan in 2010, and the Ph.D. degree (2013) in Information Science and Technology from the University of Tokyo, Japan. In 2010, she was a visiting researcher at Intelligent Autonomous Systems Group, Technische Universität München. She is currently an assistant professor in the machine intelligent laboratory of the University of Tokyo, Japan. Her research interests include object detection, 3D shape matching, semantic mapping of a real environment, and robot applications.

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Noise parameter identification from a single noisy image

Abstract:

Noise parameters are important to many image processing applications. For example, the performance of an image denoising algorithm can be much degraded due to the poor noise level estimation. Most existing denoising algorithms simply assume the noise level is known that largely prevents them from practical use. In this talk, I will present an algorithm to identify noise parameters from a single noisy image.

Short bio:

Masayuki Tanaka received his bachelor's and master's degrees in control engineering and Ph.D. degree from Tokyo Institute of Technology in 1998, 2000, and 2003 and joined Agilent Technology. He was a research scientist at Tokyo Institute of Technology from 2004 to 2008. He was a visiting scholar at dept. psychology, Stanford University from 2013 to 2014. He is currently associate professor at the Graduate School of Science and Engineering, Tokyo Institute of Technology. His research interests include image processing and computer vision.

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A Real-time Multispectral Imaging System using a Single Image Sensor**Abstract:**

In recent years, multispectral imaging has received increasing attention in many fields of computer vision and image processing applications. However, in practical use, existing multispectral imaging systems still have limitations in size, cost, and real-time processing. In contrast, we proposed a practical real-time multispectral imaging system using a single image sensor with a novel multispectral filter array and a high-performance demosaicking algorithm. Not only theoretical study, we also built a multispectral camera prototype that can capture a high-quality multispectral video at 30fps. In this talk, I will present technical details of the system and show some real applications of our developed multispectral camera prototype.

Short bio:

Yusuke Monno received the B.E., M.E., and Ph.D degrees from Tokyo Institute of Technology, Tokyo, Japan, in 2010, 2011, and 2014 respectively. From Nov. 2013 to Mar. 2014, he joined the Image and Visual Representation(IVRG) Group at École polytechnique fédérale de Lausanne(EPFL) as a research internship student. He is currently a postdoctoral researcher at the department of mechanical and control engineering, Tokyo Institute of Technology. His research interests are in both theoretical and practical aspects of computer vision and image processing.

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