Exploiting Context for Semantic Scene Content Understanding

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Abstract

In recent years, much research has been focused on semantic image understanding.

However, limited by the state of the art, the majority of existing systems have taken a relatively low-level approach and fallen short of higher level interpretation and knowledge. Current research has started to emphasize ways for bridging the semantic and conceptual gaps that exist between man and computer by integrating knowledge-based techniques, human perception, scene content understanding, sensor fusion, psychology, and linguistics.

Context is critical in the human recognition process where the human visual system makes extensive use of the environment to facilitate object detection (e.g., where are the pedestrians? most likely along sidewalks).

Likewise, it can be used to improve the performance of automated image understanding systems. In this talk, we present a unique and unified perspective on exploiting a broad array of context in order to improve semantic scene content understanding.

These include spatial context (relationships between regions in the same scene), temporal context (elapsed time between pictures), and imaging context (camera sensor metadata about scene properties, such as exposure time and subject distance).

Author Biography

Jiebo Luo received his PhD degree in Electrical Engineering from the University of Rochester, Rochester, NY in 1995. He is a Senior Principal Scientist with the Kodak Research Laboratories. He was a member of the Organizing Committee of the

2002 IEEE International Conference on Image Processing and 2006 IEEE International Conference on Multimedia and Expo, a guest editor for the Journal of Wireless Communications and Mobile Computing Special Issue on Multimedia Over Mobile IP (2002) and the Pattern Recognition journal Special Issue on Image Understanding for Digital Photos (2005), and a Member of the Kodak Research Scientific Council (2001-2003). Currently, he is on the editorial boards of the IEEE Transactions on Multimedia, Pattern Recognition, and Journal of Electronic Imaging.

His research interests include image processing, pattern recognition, computer vision, medical imaging, and multimedia communication. He has authored over 100 technical papers and holds over 30 granted US patents. He is a Kodak Distinguished Inventor and a Senior Member of the IEEE