

Wearable omnidirectional stereo surveillance system

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【Outline of survey】

The world around us is increasingly filled with various dangers posed by situations such as stabbing incidents in public areas involving mentally disturbed persons, attacks in public schools, sex-related crimes, and incidents of terrorism as typified by the September 11 attacks in New York and the sarin gas release in the Tokyo subway. One measure that can be used to avoid getting involved in such incidents are environmental embedded surveillance systems. Such systems work best in circumstances for resolving crime issues in areas with crowds of people. However, such areas are not necessarily the most common place for the occurrence of many types of dangerous crimes, for example random killings and sexual assaults that usually happened in deserted areas. To facilitate responses in such cases, it is necessary to create a surveillance system that is portable, like various other types of anticrime devices, but one that can also detect the creeping approach of danger; this being complimentary to the installation of more conventional systems embedded in various environments. For this project, we propose developing a wearable omnidirectional stereo surveillance system.

【Expected results】

The results we expect from the project to develop a wearable omnidirectional stereo surveillance system.

- Development of a small, light-weight compounded omnidirectional sensor.
- Camera calibration for the compounded omnidirectional sensor
- Real-time pose estimation by the compounded omnidirectional sensor
- Omnidirectional 3-D range estimation
- Personal identification from sequences of walking images

【References by the principal researcher】

• Yasushi Yagi, Masahiko Yachida, "Real-time Omnidirectional Image Sensors", *International Journal of Computer Vision*, vol.58, no.3, pp.173--207, July-August, 2004.

Ryusuke Sagawa, Naoki Kurita, Tomio Echigo, Yasushi Yagi, "Compound Catadioptric Stereo Sensor for Omnidirectional Object Detection", In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, vol.2, pp.2612-2617, Sendai, Japan, Sep., 2004.

【Term of project】 FY 2005 - 2009

【Budget allocation】 76,500,000 yen

【Homepage address】 <http://www.am.sanken.osaka-u.ac.jp/>