Geophysical Research Abstracts
Vol. 21, EGU2019-19157, 2019
EGU General Assembly 2019
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Research of Context Awareness Technology for Disaster and Safety based on Intelligent CCTV Information Technique

Jun Woo Lee, Ahlong Son, Jin Yi Park, and Ok Ju Kim
National Disaster Management Institute, Disaster Information Research Division, Seoul, Republic of Korea

In this research, we developed video analytic algorithms to water level detection and video analytic algorithms and Context awareness Technology for Disaster and Safety based on Intelligent CCTV Information Technique
We applied these technology to test-beds and verified the feasibility of field application evaluation.
The old water level detection algorithm used by horizontal profiling and optical flow.
When the water level is detected with large number of ROIs, the performance is degraded, due to the time cost of optical flow, it is necessary to improve the water level detection algorithm.
The improved algorithm is replace by the image matting algorithm from the texture analysis and optical flow estimation. With-in image matting algorithms have made it possible to expand and refine water areas.
The improved and enhanced algorithm has better speed performance than the existing algorithm. The speed depends on size of resolution and the number and size of ROIs set by the user. The larger the resolution or the larger the number of ROIs, the performance is degraded by existing algorithms based on optical flow. On the other hand, the improved algorithm maintains a high frame rate.
To evaluate the performance of new developed algorithm, the water level detection system has been installed in the control station at Ulsan city(test-bed) and it has been linked with the water level detection web GIS.
By pilot application, when detecting the water level, the event detection is generate by automatically and transmission to Web GIS.
We were able to confirm the field application through pilot application of the technology. In the future, the water level automatically detection system can be used in the field to recognize the disaster context awareness.