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AUTOMATIC MEASUREMENT OF WATER LEVELS BY USING IMAGE IDENTIFICATION METHOD IN OPEN CHANNEL

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Water level data is indispensable to hydrology research, and it is important information for hydraulic engineering and overall utilization of water resources. The information of water level can be transmitted to management office by the network so that the management office may well understand whether the river level is exceeding the warning line. The existing water level measurement method can only present water levels in a form of data without any of images, the methods which make data just be a data and lack the sense of reality. Those images such as the rising or overflow of river level that the existing measurement method cannot obtain simultaneously. Therefore, this research employs a newly, improved method for water level measurement. Through the Video Surveillance System to record the images on site, an image of water surface will be snapped, and then the snapped image will be pre-processed and be compared with its altitude reference value to obtain a water level altitude value. With the ever-growing technology, the application scope of image identification is widely in increase. This research attempts to use image identification technology to analyze water level automatically. The image observation method used in this research is one of non-contact water level gage but it is quite different from other ones; the image observation method is cheap and the facilities can be set up beside an embankment of river or near the houses, thus the impact coming from external factors will be significantly reduced, and a real scene picture will be transmitted through wireless transmission. According to the dynamic water flow test held in an indoor experimental channel, the results of the research indicated that all of error levels of water level identification were less than 2% which meant the image identification could achieve identification result at different water levels. This new measurement method can offer instant river level figures and on-site video so that a disaster prevention measures can be made accordingly.

Keywords: Image identification; Water Level; Video surveillance system.