

Real-time Crowd Monitoring using Infrared Thermal Video Sequences

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Abstarc :

Monitoring people in a crowded environment is a critical task in civilian surveillance. Most vision-based

counting techniques depend on detecting individuals in order to count their number. Counting becomes inefficient when it is required in real-time and when the crowd is dense. This paper proposes a novel technique for monitoring and estimating the density of crowd in real-time using infrared thermal video sequences. The research targets monitoring the crowd in Muslims' pilgrimage event (Hajj) while almost 3.0 million Muslims gather in Makkah to perform Hajj. During different Hajj phases the movement of the gathered Muslims is required at the same time from a place to another. Thus monitoring their crowd in real-time is crucial in order to take immediate decisions to prevent crowd disasters. A state of the art thermal camera has been acquired for the surveillance process. In addition, special software modules have been developed to analyze the captured thermographic video sequences in real-time. The results show high accuracy of the estimation of the crowd density in real-time.

Key Word :

Hajj, Islamic informatics, crowd density estimation, crowd monitoring, computer image understanding, Thermography, computer vision.

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