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This issue constitutes the last issue of JRTIP's volume 9 concluding the year by noting further interest in the real-time theme of the journal. This is exhibited by two new dissemination channels that have been made available since Summer 2014: Springer's Journal App JRTIP and the Special Interest Group (SIG) "Real-time Processing of Image, Depth and Video Information" in the social network LinkedIn®.

The Journal App JRTIP for *Journal of Real-Time Image Processing* can be downloaded at http://bit.ly/app_JRTIP. This App keeps users informed about the JRTIP papers published as online-first and also provides the abstracts together with all the references made in the full version of a paper.

More than 160 members have already been selected and are registered in the SIG "Real-time Processing of Image, Depth and Video Information". The profile, discussions on research interests, promotions of call for papers and other aspects of this group are accessible via the link <https://www.linkedin.com/groups/Special-Interest-Group-Realtime-Processing-8118079/about>, where membership interest can also be expressed.

It is worth mentioning that the Thomson-Reuters' (better known as ISI) Journal Citation Reports® recently released Impact Factor (IF) of JRTIP is 1.111 for 2013. For all practical purposes, the IF of JRTIP has remained steady indicating a continuation of its success since it was first

provided for JRTIP in 2010. The IF is calculated by dividing the number of citations in 2013 to the published papers in the journal during the previous 2 years (2011 and 2012). To improve this metric, we encourage the real-time image processing community to properly cite articles in JRTIP from which their works benefit. It is also important for AEs to make sure the citations of previously published JRTIP articles that cover the subject of an accepted article are not missed.

Here, we would like to remind readers of the SPIE Conference on Real-Time Image and Video Processing which is scheduled to be held as part of SPIE/IS&T Electronic Imaging Conference from 7 to 12 February 2015 in San Francisco. A tentative program is included in this issue.

This regular issue of JRTIP comprises 7 original research papers plus one survey paper. The first two papers are related to H.264/AVC. The first paper entitled "Fast low-complexity computation and real-time architecture for H.264/AVC intraprediction" by Shih-Chang Hsia et.al. presents a fast and low-complexity architecture implemented for the computation of 16×16 luminance and 8×8 chrominance blocks of H.264 intraprediction based on recycled computation without any multiplier need. Center-based computation generates pixels in plane mode processed by two parallel cores with four parallel inputs and two parallel outputs to achieve the necessary processing speed. A configurable architecture provides parameters and generates predicted pixels in DC and plane mode within 239 processing cycles for YUV blocks achieving prediction speeds for H.264 encoding of HDTV in real time.

The second paper entitled "Predictive and distribution-oriented fast motion estimation for H.264/AVC" by the author team of Zhaoqing Pan introduces unsymmetrical-

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cross multi-grid-hexagon search because of its superior rate-distortion performance despite its high computational complexity for initial search point decision and hybrid search pattern, which is a disadvantage compensated by a fast motion estimation algorithm. The best motion vector distribution in natural video sequences is found by experiments leading to a combination of diamond search pattern and an asymmetrical cross search pattern jointly employed to locate the best matching block. On the basis of a similar rate-distortion performance, the motion estimation time of a recently improved unsymmetrical-cross multi-grid-hexagon search is shown to be reduced by approx. 39 % and up to 12 % compared to fast directional gradient descent search results, which are promising for video sequences with various motion activities and formats in real-time applications.

The third paper entitled “Coding modes-based frame skip avoidance scheme for low bit rate video coding” by Hui Yuan et.al. proposes a normalized mode affection factor to analyze the affection of each coding mode on the quality and bit rate of videos. Based on this factor and considering the store level of the buffer, a frame skipping avoidance scheme is designed that is experimentally confirmed to considerably reduce skipped frames while improving the rate-distortion performance.

The fourth paper entitled “Phase-correlation guided area matching for realtime vision and video encoding” by Alfonso Alba et.al. targets the pixel-to-pixel correspondence between two images of the same scene obtained at slightly different times or points of view by computationally intensive area matching involving a search for each pixel location in one image within a corresponding neighborhood location in another image. The presented method reduces the search space significantly and enables real-time performance for vision and video encoding algorithms without any dedicated hardware accelerators. Experiments conducted for video compression and transmission, estimation of optical flow and calculation of stereo disparity maps show up to 100 fps processing rates on standard dual-core PCs.

The fifth paper entitled “Fall detection system using Kinect’s infrared sensor” by Georgios Mastorakis and Dimitrios Makris addresses a supervision application by detecting walking falls accurately in real time and robustly based on velocity and inactivity information of falls. Measurements of velocity are done based on the contraction or expansion of width, height and depth of the 3D

bounding box captured by the KinectTM camera without any prior knowledge about the scene.

“Dual-mode detection for foreground segmentation in low-contrast video images” is the title of the sixth paper by Wei-Yao Chiu and Du-Ming Tsai which deals with the subject of video surveillance, more specifically with the detection of foreground objects in image sequences for object tracking, activity recognition, and behavior understanding. Because background updating models that use Gaussian (single or mixed) models cannot detect low-contrast objects toward responding to sudden light changes, this paper proposes a dual-mode scheme for foreground segmentation based on the most frequently occurring gray level of observed consecutive image frames getting set as the background pixel. The proposed method calculates gray level modes of individual pixels in image sequences by dropping the last image frame and adding the current image during an observed period. The experiments confirm that the method can quickly respond to illumination changes and extracts foreground objects in a low-contrast background environment.

In the seventh paper entitled “A GPU-accelerated real-time single image de-hazing method using pixel-level optimal de-hazing criterion”, the authors Jun Zhang and Shiqiang Hu present a graphic processing unit (GPU)-accelerated real-time image enhancing method to remove haze from a single hazy input image. This is achieved by combining a virtual hazy-free candidate image sequence into a final single hazy-free image sequence that is estimated from the input hazy image using all possible scene depth values. The inherent parallelism on pixel level leads to a straightforward implementation taking full advantage of parallel GPU acceleration. Visually, moderate haze-free results of mega pixel-sized images are achieved at rates of 80 frames/s.

Finally, a survey on “3D modeling of laser scanned and photogrammetric data for digital documentation: the Mosteiro da Batalha case study” presented by Adriano Oliveira et al. makes the last paper of this issue. The paper demonstrates how computer graphics and visualization techniques play an important role in real-time visualization, data management, modeling, and data fusion in an increasing number of applications such as surveying, structure analysis, architecture, archeology and cultural heritage. Typical modeling steps are applied within the context of creating digital documents used in the preservation of *Mosteiro da Batalha*.