Section

Electronic Multimedia

Section Editor-in-Chief

Prof. Dr. Jialie Shen

Department of Computer Science, City, University of London, London EC1V 0HB, UK

jerry.shen@city.ac.uk

Section Information:

The Section "Electronic Multimedia" reports on electronic multimedia technology, tools, and applications of electronic multimedia, including but not limited to circuits, networking, signal processing, systems, software, and systems integration.

Author Benefits

- **Open Access** Unlimited and free access for readers
- **No Copyright Constraints** Retain copyright of your work and free use of your article
- **Thorough Peer-Review**
- **2021 Impact Factor: 2.690 (*Journal Citation Reports* - Clarivate, 2022)**
- **No Space Constraints, No Extra Space or Color Charges** No restriction on the length of the papers, number of figures or colors
- **Coverage by Leading Indexing Services** Scopus, SCIE (Web of Science), CAPlus / SciFinder, Inspec, and other databases
- **Rapid Publication** First decision provided to authors approximately 14.4 days after submission; acceptance to publication is undertaken in 3.3 days (median values for papers published in this journal in the second half of 2022)

Section Electronic Multimedia

Selected Papers:

Deep Learning-Based Image Regression for Short-Term Solar Irradiance Forecasting on the Edge

Authors: Elissaios Alexios Papatheofanous, Vasileios Kalekis, Georgios Venitourakis, Filippos Tziolos and Dionysios Reisis

Abstract: Photovoltaic (PV) power production is characterized by high variability due to short-term meteorological effects such as cloud movements. These effects have a significant impact on the incident solar irradiance in PV parks. In order to control PV park performance, researchers have focused on Computer Vision and Deep Learning approaches to perform short-term irradiance forecasting using sky images. Motivated by the task of improving PV park control, the current work introduces the Image Regression Module, which produces irradiance values from sky images using image processing methods and Convolutional Neural Networks (CNNs). With the objective of enhancing the performance of CNN models on the task of irradiance estimation and forecasting, we propose an image processing method based on sun localization. Our findings show that the proposed method can consistently improve the accuracy of irradiance values produced by all the CNN models of our study, reducing the Root Mean Square Error by up to 10.44 W/m^2 for the MobileNetV^2 model. These findings indicate that future applications which utilize CNNs for irradiance forecasting should identify the position of the sun in the image in order to produce more accurate irradiance values. Moreover, the integration of the proposed models on an edge-oriented Field-Programmable Gate Array (FPGA) towards a smart PV park for the real-time control of PV production emphasizes their advantages.
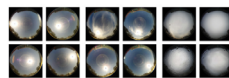
Image Segmentation Methods for Subpicture Partitioning in the VVC Video Encoder

Authors: Natalia Panagou, Panagiotis Belememis and Maria Koziri

Abstract: The emergence of the new generation video coding standard, Versatile Video Coding (VVC), has brought along novel features rendering the new standard more efficient and flexible than its predecessors. Aside from efficient compression of 8 k or higher camera-captured content, VVC also supports a wide range of applications, including computer-generated content, high dynamic range (HDR) content, multilayer and multi-view coding, video region extraction, as well as 360° video. One of the newly introduced coding tools in VVC, offering extraction and independent coding of rectangular sub-areas within a frame, is called Subpicture. In this work, we turn our attention to frame partitioning using Subpictures in VVC, and more particularly, a content-aware partitioning is considered. To achieve that, we make use of image segmentation algorithms and properly modify them to operate on a per Coding Tree Unit (CTU) basis in order to render them compliant with the standard's restrictions. Additionally, since subpicture boundaries need to comply with slice boundaries, we propose two methods for properly partitioning a frame using tiles/slices aiming to avoid over-partitioning of a frame. The proposed algorithms are evaluated regarding both compression efficiency and image segmentation effectiveness. Our evaluation results indicate that the proposed partitioning schemes have a negligible impact on compression efficiency and video quality.

Building Trust toward Sharing Economy Platforms beyond the COVID-19 Pandemic

Authors: Dan-Cristian Dabija, Luiela Magdalena Csorba, Florin-Lucian Isac and Sergiu Rusu

Abstract: The sharing economy has seen a worldwide boom in recent years. In tourism, such platforms are being increasingly used; however, analysis of consumers' behavior toward such platforms in the context of technological innovation since the COVID-19 pandemic is almost non-existent. The aim of the present research is to fill this gap by studying, with the aid of structural equations, factors that influence the attitudes and behavior of consumers of tourist services offered through sharing economy platforms. Under the impact of the adoption of new technologies, the perceived value generated by these platforms is considered in the context of the COVID-19 pandemic. Trust in tourism sharing economy platforms and their perceived value is determined by consumers' experience of using them, the authenticity of platforms, propensity toward technological innovation, and users' demand for novelty. Data collected from 548 respondents were modeled using structural equations in SmartPLS. Results show that experience, the authenticity of platform, openness to new things, and technological innovation are the determining factors that influence consumers' behavior on sharing economy tourism platforms. The originality of the research consists of the implementation, in a sharing economy context, of a new construct for this sector, which can also be used in other fields, namely that of pandemic fear. Furthermore, the way in which other constructs are included in the proposed conceptual model and the links between them presents additional novelty. Given the trend of increasing demand for such platforms and tourists' appetite for technological innovation, it will become a managerial challenge for businesses in this field to keep up with the constant evolution of cutting-edge technologies.
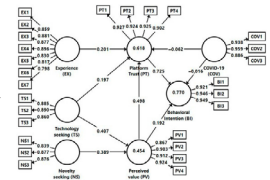
Invitation to submit

Advanced Technologies for Image/Video Quality Assessment
Guest Editors: Shaode Yu and Dingquan Li
Deadline: **30 April 2023**

Recent Trends in Explainable Artificial Intelligence (XAI) for Computer Vision
Guest Editors: Mohit Mittal, Rocío Pérez de Prado and Valentina E. Balas
Deadline: **15 June 2023**

Innovations and Challenges of Higher Education Institutions in the Post-COVID-19 Era
Guest Editors: Roberto Barchino, José Amelio Medina-Merodio, Antonio Moreira Teixeira and Miguel Morales
Deadline: **15 October 2023**

Mentor Program: Challenges and New Trends in Rendering for Virtual and Augmented Reality
Guest Editors: Ivan A. Nikolov and Claus B. Madsen
Deadline: **15 November 2023**

Customer Experience in Online Retailing
Guest Editors: Dan-Cristian Dabija and Cătălin Mihai Barbu
Deadline: **1 January 2024**

MDPI is a member of

Affiliated Society

PTZE

Follow

f facebook.com/MDPIOpenAccessPublishing

🐦 twitter.com/MDPIOpenAccess

in linkedin.com/company/mdpi

📷 instagram.com/mdpiopenaccess

🔴 weibo.com/mdpicn

💬 Wechat: MDPI-China

Subscribe

blog.mdpi.com