Call for Papers—IEEE Open Journal of Signal Processing
Special Issue on
Applied Artificial Intelligence and Machine Learning for Video Coding and Streaming

Please note that IEEE Open Journal of Signal Processing (OJSP) is a Gold Open Access journal, however, open access fees for papers accepted in this Special Issue will be waived; i.e. accepted papers will be published free of charge.

Scope:

Video traffic constituted 75% of all IP traffic in 2017 and will constitute 82% of all IP traffic by 2022. Improving video coding methods and video networking schemes is therefore vital to cope with this increasing demand. In recent years, we have witnessed how Artificial Intelligence (AI) and Machine Learning (ML) revolutionized the field of video coding and streaming as these new solutions now offer state-of-the-art in many high-level and low-level image and video related tasks. A range of Convolutional Neural Networks (CNN)-based video coding tools (rate-distortion optimization, deblocking filters, interpolation filters, chroma from luma prediction methods), learned entropy coding, end-to-end image compression techniques, decision trees based encoder speed ups, fuzzy network bandwidth prediction, and video network resource allocation via reinforcement learning are among these efforts. MPEG Ad Hoc Group on deep neural networks based video coding and JPEG's learning-based image coding activity, are among recent initiatives which show that significant effort is required to advance this field and overcome the existing challenges such as improving the compression efficiency, lowering the overhead of computations of these AI/ML tools, finding suitable loss functions and optimization criteria, managing network resource according to user experience, accurately predicting network status, and working towards explainable AI. As both academic and industry efforts in this direction have been increasing tremendously, this is the right time to focus on this topic.

For this Special Issue, we invite submissions of papers from the academia and the industry reporting on the latest scientific and engineering results and findings in applying AI and ML to video coding and steaming. Topics of interest include, but are not limited to:

- Towards applicable end-to-end learned image/video compression
- Interpretability and explainability of learned models for video compression
- Low complexity, energy efficient, and memory efficient AI/ML for image/video coding
- Distance metrics and optimization criteria for AI/ML-based compression techniques
- Standard-compliant techniques to integrate AI/ML into video coding and streaming
- Generative models for video compression and enhancement of compressed video
- Pre/post processing AI/ML techniques to enhance image/video coding
- AI/ML-based video saliency detection and coding
- AI/ML-based network resource prediction and content adaptation for video streaming
- AI/ML-based solutions for co-optimization of network and video coding
- Smart network resource allocation for video streaming services
- AI/ML-based video traffic classification and prediction for video communication
- AI/ML-based video quality assessment, and QoE estimation for video streaming
- Real-time AI/ML-based video enhancement for efficient video coding
- ML-based packet video network fault detection, isolation, and diagnosis

Deadlines:

- Initial Paper Submission: ~~December 15, 2020~~ **January 25, 2021**
- Initial Paper Decision: ~~January 30, 2021~~ March 15, 2021
- Revised Paper Submission: ~~March 1, 2021~~ April 1, 2021
- Final Decision: ~~March 15, 2021~~ May 1, 2021

Submission:

Please follow IEEE OJSP's paper format and requirements. Once your paper is ready, please submit it via IEEE OJSP's submission site https://mc.manuscriptcentral.com/oj-sp, and be sure to select this Special Issue when submitting. For more information, please contact the lead Guest Editor Dr. Marta Mrak at marta.mrak@bbc.co.uk.

Guest Editors:

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