



## Call for Papers: Facing emerging challenges in multimedia forensics

While digital multimedia data are increasingly created, stored and broadcasted, accessible editing software and AI-based technologies allow to produce partially or entirely fake pictures, footages and audio recordings. In a society that rapidly evolves towards an overall digitalization, we must be prepared to face the implications that these technologies pose in many application domains, such as social media communications, legal investigations, digital markets, politics and propaganda.

Designing reliable authentication protocols to ensure the integrity of digital visual information thus becomes essential to preserve the trustworthiness of the information ecosystem and prevent harmful misuses. Multimedia forensics develops techniques for authenticating digital multimedia signals (images, videos, audio data) and preserving their dependability, by detecting possible manipulations and extracting information about their history. Recent advances in visual media technology have led to new processes for creating, processing, and broadcasting multimedia content. This includes modern AI-based technologies to generate visual data, which nowadays offer advanced tools to create new powerful manipulations, as well as the massive use of social networks and messaging platforms to share data among users. On the detection side, deep networks recently proved to be crucial in many forensic tasks but their potential deserves further analysis, including also the assessment of their vulnerabilities against adversarial attacks. The trustworthiness of media data and the ability of verifying their integrity are then threatened in more and more sophisticated and diversified ways. This calls for advanced multimedia forensics techniques able to cope with these new scenarios and with the different kinds of data under investigation.

This special issue intends to offer a venue for theory- and data-driven techniques addressing these challenges, seeking for solutions at the edge of signal processing, machine/deep learning, multimedia analysis.

The topics of interest include, but are not limited to the following:

- data-driven analysis for multimedia forensics problems
- detection of synthetic image/audio/video content (e.g., GAN-generated data, hyper-realistic computer graphics, AI-generated speech)
- analysis of digital humans (e.g., GAN-generated faces, visual face morphing)
- secure forensic analysis and authentication against adversarial inputs and strategic attacks
- physics-based techniques for media authentication (e.g., geometrical anomalies, scene illumination inconsistencies)
- provenance analysis and phylogeny reconstruction of multimedia content over social networks and sharing platforms
- modification detection of multimedia content shared over social networks, messaging apps, and other platforms
- signal forensics in the presence of advanced in-camera processing (e.g., stabilized videos, HDR imaging)

**Submission deadline:** 30 April 2020

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