

**2019 Fifth International Conference**  
**on**  
**Image Information Processing**  
(ICIIP -2019)  
**November 15 - 17 , 2019**  
**Jaypee University of Information Technology**  
Waknaghat, District Solan, Near Shimla, Himachal Pradesh, INDIA

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**What can AI see in artworks?**

New technological advances that help to create a better understanding of analyzed artworks will be introduced. The presentation will address the untangling of information contained in datasets representing pieces of art acquired in different modalities such as infrared, ultraviolet or x-ray part of the spectra. These imaging modalities are used to acquire more detailed information about artwork composition and the way how it was created. Such information can help to choose the proper method for its restoration and conservation, to verify the time of origin or to determine the authorship. There are many ways how the digital image can help. On the low-level processing, it can be used for the alignment of images, coming from different modalities and improve and/or fuse such registered data to better visualize acquired information. On a higher level, it can help to characterize used types of painting materials and to simulate the process of the artwork creation. The most complex analyzes consist of characterization of painter styles, forgery detection, virtual reconstruction of the overpainted art pieces, or extraction of underdrawings, to name a few examples. The underdrawings can be very useful because they can unveil original author intentions or help to date the artwork based on their content. From the digital image processing view, the talk will cover texture-based descriptors, application of wavelets, data fusion, and, the most recent results in the area of underdrawings detection based on deep convolutional networks. Practical aspects of dataset processing will be pointed out. Several use-cases, coming from international journals as well as from the speaker's own experience, will be described to demonstrate possible usage of digital image processing in art conservation and analysis.