DYPA

Dynamiques patrimon
et cultur

SÉMINAIRE DE ROBERT ERDMANN INTITULÉ : OLD MEETS NEW: UBIQUITOUS ARTIFICIAL INTELLIGENCE FOR CULTURAL HERITAGE

Séminaire de Robert Erdmann, Senior Scientist au Rijksmuseum et Professeur de l'Université d'Amsterdam, organisée en collaboration avec l'Université de Paris Saclay

Jeudi 12 octobre de 12h à 13h
Université de Versailles Saint-Quentin-en-Yvelines, 47, boulevard Vauban 78280 Guyancourt, Salle 526
Le séminaire se déroulera en anglais

Old Meets New: Ubiquitous Artificial Intelligence for Cultural Heritage

The simultaneous advent of super high-resolution imaging, high-speed internet, and massive data storage capacities have moved us from a world in which we didn't have enough technical data about cultural heritage objects to one in which we risk drowning in a data deluge. One solution to this problem is to apply advanced software tools throughout the data processing pipeline; since 2014, we have moved aggressively to develop and exploit artificial intelligence at the University of Amsterdam and the Rijksmuseum. We present overviews of several examples that serve to demonstrate its widespread application to both art history and art conservation. These include real-time quality assurance and advanced subpixel registration to create the new 717 gigapixel image of Rembrandt's Night Watch; automatic image enhancement (denoising and defocus deblurring) for visible photography and chemical imaging for Vermeer's paintings; automatic removal of ink from transmitted-light images of works on paper to reveal their watermarks; neural frame interpolation for dramatic enhancement of 3D object photography; automatic microstructural analysis to assist in interpreting 5 µm resolution imaging data of paintings; reconstruction of the missing pieces of the Night Watch from a small copy made by a different artist before it was cut down; an AI-based search engine that instantly queries a database of 2.3 million open-access cultural heritage images using free-form English queries; and more. In all cases, real-time online demonstrations showcase our strategy to make AI ubiquitous in the museum.

Bio:

Robert Erdmann is Senior Scientist at the Rijksmuseum and Full Professor of Conservation Science in the Faculties of Science (Physics) and of Humanities (Conservation and Restoration of Cultural Heritage) at the University of Amsterdam. Prior to earning his PhD from the University of Arizona in 2006, he started a science and engineering software company and worked extensively on solidification and transport phenomena at Sandia National Laboratories. Upon graduation, he joined the faculty at the University of Arizona in the Department of Materials Science and Engineering and the Program in Applied Mathematics, where he worked on multiscale material process modelling and image processing for cultural heritage. In 2014 he moved permanently to Amsterdam to focus full-time on combining materials science, computer science, and

imaging science to help the world access, preserve, and understand its cultural heritage.

INFORMATIONS COMPLÉMENTAIRES

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