Latex Template for the White Paper for the SPMag Special Issue on Signal Processing For Art Investigation

Signal Processor[(1)] and Art Investigator[(2)]

[(1)] Address and email,
[(2)] Address and email

1 Introduction

This is a LaTeX template for the White Paper for the SPMag Special Issue on Signal Processing For Art Investigation. The White Paper should not exceed 4 pages, double spacing, including authors names and affiliations, text, figures and tables and at least an essential bibliography.

The page format should look like the one displayed in this template. Latex is not mandatory and the template is only indicative.

2 Call for Paper

2.1 Context

Technical art history constitutes a relatively new sub-discipline of growing significance within art history that aims to apply scientific principles to the investigation of artistic questions. The improvement in recent decades of various imaging techniques (e.g. x-ray fluorescence, infrared, high resolution, multi-spectral, micro- and macro- raking light) together with the advent of high-speed processors, computers and large storage facilities have been crucial to the advancement of conservation science and technical art history. The data made available from these technical advances opens a door for Signal and Image Processing work aimed at assisting art experts in addressing challenging and fundamental questions such as authorship, dating, characterization of materials,

characterization of artistic style, and investigations in the change over time of the physical objects.

Having remained largely separate communities for many years, art history and the quantitative sciences (Mathematics, Computer Science, Signal and Image Processing) have recently been exploring interdisciplinary research activities in the form of workshops, conferences, research programs, journals, and new creative courses. There is, thus, a growing interest in art historical topics in Signal and Image Processing. Conversely, the arts can also prove useful to Signal Processing. Whether for cultural objects or industrial processes, the problem of aging is universal and technologies developed for the understanding and preservation of cultural objects may have important spin-offs in industry. Technical analysis of cultural heritage is a new area that presents challenging new problems for which achieved solutions are likely to have much wider applications than just the arts. However, it is clear that well-established collaborations are still far from being common or routine. There are several reasons for this – some historical (division between sciences and humanities,...), others structural (difficulties in finding dedicated funding, publication possibilities, ...).

In this context, the goal of this Special Issue is to contribute to bridging gaps between art history, conservation, connoisseurship, and the Signal and Image Processing communities, to gather significant contributions from interdisciplinary teams that span both fields and promote greater visibility of this new, challenging, and promising subject, as well as to promote new and original future interactions.

Contributions from interdisciplinary teams that include both art experts and signal processing researchers are strongly encouraged and will be preferred.

2.2 Submission Procedure

White papers, limited to four double-space pages, should summarize the motivation, the significance of the topic, a brief summary, an outline of the content, and key references. Prospective authors should use the web submission system at: `http://mc.manuscriptcentral.com/spmag-ieee`.

More information at `http://perso.ens-lyon.fr/patrice.abry/`

- A LaTeX White Paper template is available, its use is not mandatory.

- Please note that *Invitation* does not imply *acceptance* : submissions will go through the regular IEEE review process.

2.3 Schedule:

- White Paper due: July, 11th, 2014,
- Invitation Notification: Aug., 8th, 2014
- Manuscript due: Nov., 24th, 2014
- Acceptance/Rejection Notification: Jan., 16th, 2014
- Revised manuscript due: Feb., 6th, 2014
- Final Notification: Feb. 20th, 2015
- Final manuscript due: March, 6th, 2015
- Publication: July, 2015

2.4 Topics:

Relevant topics: include (but are not limited to) signal processing for the automation of:

- Canvas thread counting, Canvas roll-mate identification

- Brushwork characterization, Painter identification and style characterization via brushwork, Aids for dating and attribution of art objects, Forgery detection

- Period and style quantification and classification, Methods for quantifying and comparing color usage by artist, subject, school, or period

- Separation of artist's marks from material properties such as removal of canvas weave and stretcher bars from x-radiographs of paintings on canvas

- Methods for quantifying and comparing color usage by artist, subject, school, or period

- Texture characterization, Texture classification of photographic papers

- Laid paper mold-mate identification

- Dendrochronological tree-ring marking for wood panel supports

- Painting surface craquelure detection and simulated in-painting

- Assessment of small changes over time in art objects due to aging

- Paper watermark matching, Non-invasive under-drawing reconstruction

- Stitching of high resolution sub-images into large composites

- Multispectral image registration; Multispectral non invasive materials analysis

- Huge database searching for art objects with matching features

- Simulated color correction to counteract aging and degradation 3-D rendering from multiple 2-D images ; Reconstruction of shattered murals, ceramics, and statues

2.5 Guest Editors:

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3 Figures and tables

Figures can be added.

Figure 1: **Legend:** Put here a nice figure and write an explicit legend.

4 Bibliography

Bibliography can be quoted like this, [1].

References

[1] C. R. Johnson Jr., E. Hendriks, I. J. Berezhnoy, E. Brevdo, S. M. Hughes, I. Daubechies, J. Li, E. Postma, and J. Z. Wang. Processing for artist identification: Computerized analysis of Vincent van Gogh's painting brush- strokes. *IEEE Signal Processing Magazine (Special Section - Signal Processing in Visual Cultural Heritage)*, 25:37–48, 2008.