Modeling and simulation of the appearance of ancient precious textiles

In 1520, from the 7th to the 24th of June, a famous meeting took place between François I and Henry VIII, near Calais in France. The aim of this encounter was diplomatic and it was the subject of a luxury competition on the part of both kings, in order to impress each other. The name "Field of the cloth of gold" has remained in history because of the gigantic camp that was set up for this meeting (600 to 700 tents), some of which (Francois I 's tent for example) are covered with precious textiles such as cloth of gold.


English school, *The Field of the Cloth of Gold*, v.1545.Royal collection (Hampton Court)

The project

Our research group is working with a team of IRHiS laboratory historians (University of Lille) to reconstruct this camp in order to illustrate its size and richness. According to this general goal, we would like to recruit a post-doctoral student in computer graphics who specializes in modeling and simulating the appearance of textiles. The work will focus on modeling and simulation of the various precious textiles used by the courts of François I and Henry VIII, on and in the ephemeral structures erected during this meeting. More specifically the textiles that are concerned by this study are, on the one hand, the cloth of gold and on the other hand, the textile tapestries and decorations that seem to have been present in large numbers in the camp.

The models developed must be usable in a photorealistic context, in order to offer historians and the general public, a restitution as close as possible to their appearance, and declined in versions compatible with real-time rendering, in order to be used in interactive tools for cultural mediation.
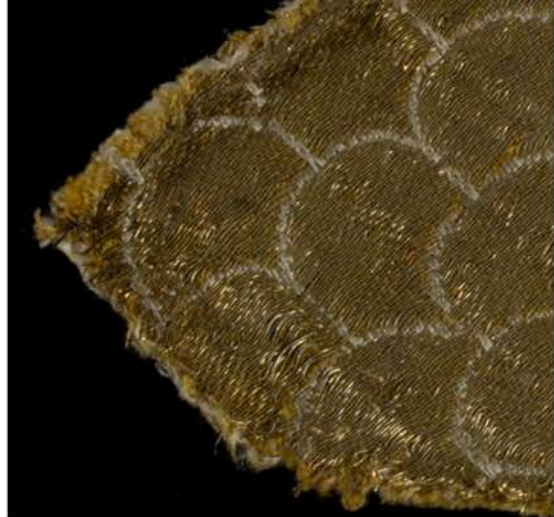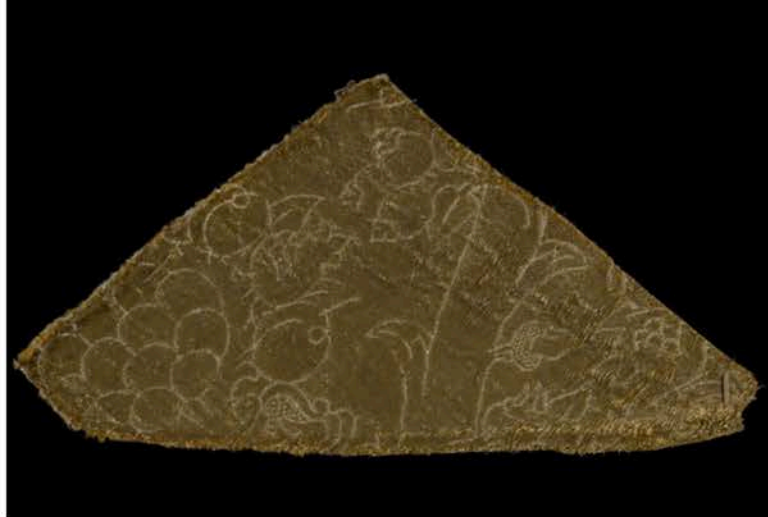
A fragment of « gold sheet », ca. 1475 to ca. 1500, supposed origin: Italy. Victoria & Albert museum, Londres (right) zoom in on a part of it in which the golden threads and their light reflection are clearly visible.

Partners

Université d'Artois, Centre d'études supérieures de la Renaissance, University of Southampton, St Mary's University, Musée National de la Renaissance, Historic Royal Palace, Hampton Court Palace.

Funders

- CPER MAuVE Médiations visuelles, Culture numérique et Création : http://mauve.univ-lille.fr/
- ISITE-ULNE : http://www.isite-ulne.fr/index.php/en/home/
- SATT Nord : https://sattnord.fr/en/

Skills required

- knowledge of textile modeling and rendering ;
- knowledge of lighting simulations and real time rendering;
- good skills in C++;
- knowledge of the Pbrt photorealistic rendering engine and/or real time engines (Unity, Unreal) will be appreciated.

Duration : 12 to 18 months
Desired start date: September 2019 to January 2020.
Activity Location: LISIC – Calais
Remuneration: about 2100 € net monthly

CVs and cover letters should be sent by email to C. Renaud:

christophe.renaud@univ-littoral.fr

Recent bibliography

- Fujun Luan, Shuang Zhao, and Kavita Bala. 2017. Fiber-Level On-the-Fly Procedural Textiles. Comput. Graph. Forum 36, 4 (July 2017), 123-135. DOI: https://doi.org/10.1111/cgf.13230
- Pramook Khungurn, Rundong Wu, James Noeckel, Steve Marschner, and Kavita Bala. 2017. Fast rendering of fabric micro-appearance models under directional and spherical Gaussian lights. *ACM Trans. Graph.* 36, 6, Article 232 (November 2017), 15 pages. DOI: https://doi.org/10.1145/3130800.313082
- Shuang Zhao, Fujun Luan, and Kavita Bala. 2016. Fitting procedural yarn models for realistic cloth rendering. *ACM Trans. Graph.* 35, 4, Article 51 (July 2016), 11 pages. DOI: https://doi.org/10.1145/2897824.2925932