Key Takeaways

- Why and how digitize artworks?

- How to enjoy artworks online? Use ARTMYN

- From research to prototype to product, elaboration of a complex and robust solution
Why digitizing Artworks?

The Thinker at the Gate of Hell, Rodin
Crowd at Louvre Museum in front of Mona Lisa painting
Storage facilities of the Collections d'art de la Confédération, Bern.
Self Portrait, Meyer de Haan 1890
Girl In Front Of Open Window, Gauguin 1898
Charing Cross Bridge, Monet 1901
Reading Girl In White And Yellow, Matisse 1919
Harlequin Head, Picasso 1971
Woman with Eyes Closed, Lucian Freud 2002
Waterloo Bridge, Monet 1901
Do you enjoy art online?
Art sharing in the age of internet
Now think of a painting...
A tapestry of beautiful half-truths

17 Ladies with Ermines,
Leonardo Da Vinci

Image by F. Viegas & M. Wattenberg
eFacsimile: How to faithfully represent an artwork digitally?

- Google Focus Research Award (2011-2014)

- PI: Professor Martin Vetterli

- Project members:
  • Loïc Baboulaz, senior researcher (project lead)
  • Paolo Prandoni, senior researcher (advisor)
  • Julien Lalande, senior research engineer
  • Gilles Baechler, PhD student
  • Mitra Fatemi, PhD student
  • Niranjan Thanikachalam, PhD student
  • Zhou Xue, PhD student
  • Matthieu Rudelle, MS student
  • Pierre Gabioud, MS student

- Collaborations with Professor Sabine Süssstrunk (on light-field and mobile imaging)
“One eye sees, the other one feels ”
Paul Klee

Woman looking at Cana’s Wedding painting (Veronese)
Source: http://talktog.wordpress.com/
Artwork Hermeneutics

In front of a real Artwork

Meta-information
- Historical relevance
- Artist’s biography
- Viewer’s a priori knowledge
- ...

Aesthetics & Semantics
- Pictorial content
- Symbolic content
- Emotional response
- ...

Materiality
- Visual cues for sensuality
- Key to perceptual primitives
- Key to artist’s techniques
- ...

The Miraculous Draught of Fish, Witz

Guernica, Picasso

Portrait of Adele Bloch-Bauer I, Klimt

Materiality

Historical relevance

Aesthetics & Semantics

Meta-information

Viewer’s a priori knowledge

Artist’s biography

Pictorial content

Symbolic content

Emotional response

Visual cues for sensuality

Key to perceptual primitives

Key to artist’s techniques
Artwork Hermeneutics

In front of its digital photograph

Meta-information
- Historical relevance
- Artist’s biography
- Viewer’s a priori knowledge
- ...

Aesthetics & Semantics
- Pictorial content
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Artwork illustrations:
- The Miraculous Draught of Fish, Witz
- Guernica, Picasso
- Portrait of Adele Bloch-Bauer I, Klimt
“What distinguishes a collection of images on a screen is the evaporation of texture and physical depth”

Consequences of the Loss of Materiality

“*If we zoom into details in the museum, we see brushstrokes and the texture of the paint, whereas if we do the same in the lab, we just see pixels*”

Dynamic image for Art

- Deep zoom
- 3D surface topography
- Portrait of Fayoum
- Cuneiform tablet
- Free viewpoint
- Free illumination
- Hommage à Vallotton, Yoki
- Bible of Gutenberg

web real-time stream
Introducing... ARTMYN

Meta-information
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The Miraculous Draught of Fish, Witz
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Portrait of Adele Bloch-Bauer I, Klimt
Innovation Challenges

- A huge quantity of information to be processed within a small time frame

- An important variability between object structure and reflectance, i.e. painting, cuneiform tablet

- Ability to represent artwork truthfully with little information, accessible online fluidly

- A completely new first of its kind solution
ARTMyn: computational imaging for art

Acquisition → Processing → Rendering
- A fully automatized system
- 2 computed controlled motorized axes
- 58 illuminations
- A Fast camera taking 29 images/s
- 25,2 Mo pixels per image
- 730 Mo/s of information
ARTMYN: Computational Imaging for Art

- Fully automated algorithm
- Stitching and blending seamless hundred of images
- Huge topography variability
- From 700Go of data to few Go compression
- Reflectance and topography extraction
ARTMYN: Computational Imaging for Art

- Online Solution
- Real time interaction
- Web based (django, web-gl)
- Accessible on any device, any platform, any browser
Cuno-Amiet: Grammont, 1936
Application and Benefits of MATLAB

- Flexible and robust to deal from 4 lines of codes to a product delivery quality algorithm
- It was pure R&D, develop a new solution that could become a product, efficiency was the key as well as innovation
- A big user community of developers and researchers
- Debugging capabilities
Concluding remarks

- Better, Faster, Stronger
- Extending solution to new types of artworks
- Creating new tools for the art community (expert, teachers, restorer,...)
- Looking for talents
Thank you