Mixed drawing - merging traditional and digital drawing

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ABSTRACT

Author Keywords

mixed reality, projection mapping, drawing, touch input

ACM Classification Keywords

H.5.1 Information interfaces and presentation: Information interfaces and presentation

General Terms

Design, Human Factors

INTRODUCTION

- Motivation
- General approach

PEVIOUS WORK

TECHNICAL SETUP

- SAR markers, projection (main paper + additional cardboards)
- Touch Kinect
- Capture additional Camera
- Processing

DIGITAL TOOLS FOR TRADITIONAL DRAWING

Interacting with a projected image

- projection of an image in the canvas (choose the good position to trace the projected image)
- modification of the display (RST mutitouch gesture) + transparency

Compositing the image

- from a picture (scan)
- from a part of the drawing (copy and paste), or from a sketch/other paper
- from a DB, e.g. internet

Guiding the composition

- virtual construction lines
- automatic alignments (e.g. rock and rails)

Filtering the displayed content

- general filters
- · local filters

MIXING PHYSICAL AND DIGITAL DRAWING

Embedding digital content in the drawing

- images
- videos
- animated elements (e.g. gif)

Interacting with the drawing

- interactive elements (e.g. grass)
- changing (e.g. brightness from 3D spatial movements)

Creating animated drawings

• animated sequences

USER FEEDBACK AND DISCUSSION

on demande de faire un dessin qui necessite l'utilisation de "Digital tools for traditional drawing" on voit ce qu'ils en disent. On discute.

CONCLUSION

REFERENCES

- 1. Processing. http://processing.org/about/, 2013.
- Audet, S., Okutomi, M., and Tanaka, M. Direct image alignment of projector-camera systems with planar surfaces. In *Conference on Computer Vision and Pattern Recognition, CVPR 2010, San Francisco*, IEEE (2010), 303–310.
- 3. Bradski, G. The OpenCV Library. *Dr. Dobb's Journal of Software Tools* (2000).
- 4. Casiez, G., Roussel, N., and Vogel, D. 1€ filter: a simple speed-based low-pass filter for noisy input in interactive systems. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems*, ACM (2012), 2527–2530.
- 5. Cole, F., Golovinskiy, A., Limpaecher, A., Barros, H., Finkelstein, A., Funkhouser, T., and Rusinkiewicz, S. Where do people draw lines? In *ACM SIGGRAPH 2008 papers*, ACM (2008), 1–11.

Submitted for review.

- Flagg, M., and Rehg, J. Projector-guided painting. In Proceedings of the 19th annual ACM symposium on User interface software and technology, ACM (2006), 235–244.
- 7. Gernsheim, H., and Gernsheim, A. *The History of Photography: From the Camera Obscura to the Beginning of the Modern Era*. Thames & Hudson, 1969.
- 8. Gooch, B., and Gooch, A. *Non-photorealistic rendering*, vol. 201. AK Peters Wellesley, 2001.
- 9. Grabli, S., Turquin, E., Durand, F., and Sillion, F. Programmable rendering of line drawing from 3d scenes. *ACM Transactions on Graphics (TOG)* 29, 2 (2010), 18.
- 10. Haeberli, P. Paint by numbers: Abstract image representations. In *ACM SIGGRAPH Computer Graphics*, vol. 24, ACM (1990), 207–214.
- 11. Harrison, C., Benko, H., and Wilson, A. Omnitouch: wearable multitouch interaction everywhere. In *Proceedings of the 24th annual ACM symposium on User interface software and technology*, ACM (2011), 441–450.
- 12. Laviole, J., and Hachet, M. PapARt: interactive 3D graphics and multi-touch augmented paper for artistic creation. *IEEE Symposium on 3D User Interfaces 2012* (Mar. 2012).
- 13. Lee, Y., Zitnick, C., and Cohen, M. Shadowdraw: Real-time user guidance for freehand drawing. 1–1.
- 14. Raskar, R., Welch, G., Low, K., and Bandyopadhyay, D. Shader lamps: Animating real objects with image-based illumination. In *Rendering Techniques 2001:*

- Eurographics Workshop, United Kingdom, June 25-27, 2001, Springer Verlag Wien (2001), 89.
- 15. Rekimoto, J., and Saitoh, M. Augmented surfaces: a spatially continuous work space for hybrid computing environments. In *Proceedings of the SIGCHI conference on Human factors in computing systems: the CHI is the limit*, ACM (1999), 378–385.
- 16. Ronin, G. *Dessiner pas a pas (French Edition)*. Larousse.
- 17. Sellen, A., and Harper, R. *The myth of the paperless office*. The MIT Press, 2003.
- 18. Ullmer, B., and Ishii, H. Emerging frameworks for tangible user interfaces. *IBM systems journal 39*, 3.4 (2000), 915–931.
- 19. Vergne, R., Barla, P., Granier, X., and Schlick, C. Apparent relief: a shape descriptor for stylized shading. In *NPAR* '08: Proceedings of the 6th international symposium on Non-photorealistic animation and rendering, ACM (2008), 23–29.
- Wagner, D., and Schmalstieg, D. Artoolkitplus for pose tracking on mobile devices. In *Computer Vision Winter Workshop*, Citeseer (2007), 6–8.
- 21. Wellner, P. Interacting with paper on the digitaldesk. *Communications of the ACM 36*, 7 (1993), 87–96.
- 22. Wilson, A. Depth-sensing video cameras for 3d tangible tabletop interaction. In *Horizontal Interactive Human-Computer Systems*, 2007. TABLETOP'07. Second Annual IEEE International Workshop on, IEEE (2007), 201–204.