HDRI (High Dynamic Range Imaging) For Preservation of Historical Documents

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Motivation

- Great effort of digitally archiving historical documents
- Using Digital Cameras is most affordable and available
- Using Digital Cameras has some limitations :
 - Dimensions (2D)
 - Resolution (Limited)
 - Color Range (Low range)
 - DcamX(LDS church project) preserves documents in grayscale



Motivation

 Grayscale images loose information from the original image (even lower range)







Motivation

- Color images better than grayscale
- However, color images still have low range
- High Dynamic Range Imaging (HDRI) increases color range to better approximate that of the real world
- HDRI techniques haven't been applied for preservation of historical documents yet.
- We demonstrate that HDRI techniques allow better preservation of detail and contrast of document images even in gray scale



About HDR

- HDR combines images under different exposure
- Tone mapping reduces range while preserving contrast
- We used Photomatix software



HDR Example











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Traditional

Conclusion

- Digital Cameras are affordable and common for preservation
- However, traditional digital photography has lower color range
- High Dynamic Range Imaging (HDRI) increases color range to better approximate that of the real world
- HDRI techniques allow better preservation of detail and contrast of document images even when converted grayscale



Future Work

- Investigate how to implement it with Dcam (Grayscale)
- Investigate compression of HDR radiation map.
- Improve tone mapping technique



Special Thanks

Craig Johnson for his help and feedback. Chong Ahn for lending his Nikon camera.

Credits Debevec et al. *SIGGRAPH* 97. Photomatix software

Images H-DIBCO dataset – Slide 3

