

# Vignetting Effect in Photographs

Xiaoyan Zhang

**Institute for Media Innovation**

School of Electrical & Electronic Engineering, NTU

Supervisors:

Assoc Prof. Chan Kap Luk,

School of Electrical and Electronic Engineering, NTU.

Asst. Prof Martin Constable,

School of Art Design and Media, NTU.

# Vignetting Effect in Photographs

- Outline
  - Introduction
  - Related works
  - Future works

# Introduction

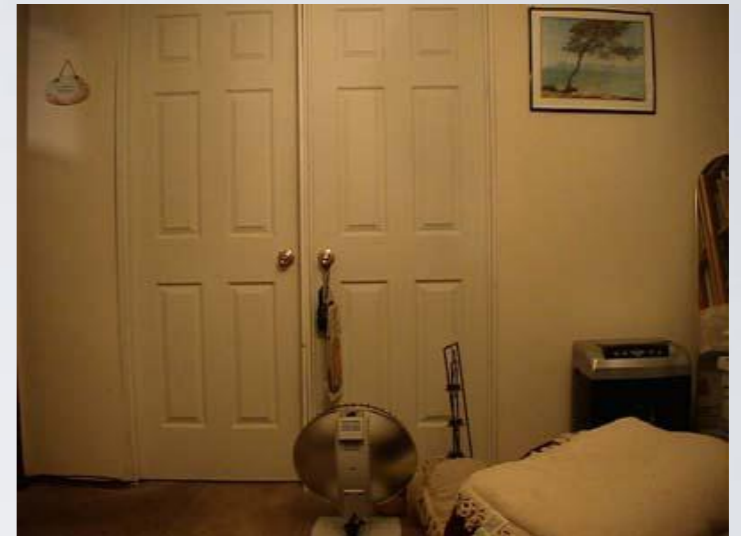
- **Vignetting:** an effect that is clear in the center and fades off at the edges by reducing the image's brightness or saturation at the periphery.



Ref: <http://en.wikipedia.org/wiki/Vignetting>

# Introduction

- **Vignetting in photograph (photo-style vignetting)**
- Often an unintended and undesired vignetting effect caused by camera settings or lens limitations
  - Natural vignetting
  - Pixel vignetting
  - Optical vignetting
  - Mechanical vignetting
- Sometimes purposely introduced for creative effect



Ref: <http://en.wikipedia.org/wiki/Vignetting>

# Introduction

- **Vignetting in paintings (painters-style vignetting)**
- Painters enforce weighted corners by selecting points of view that naturally presents them

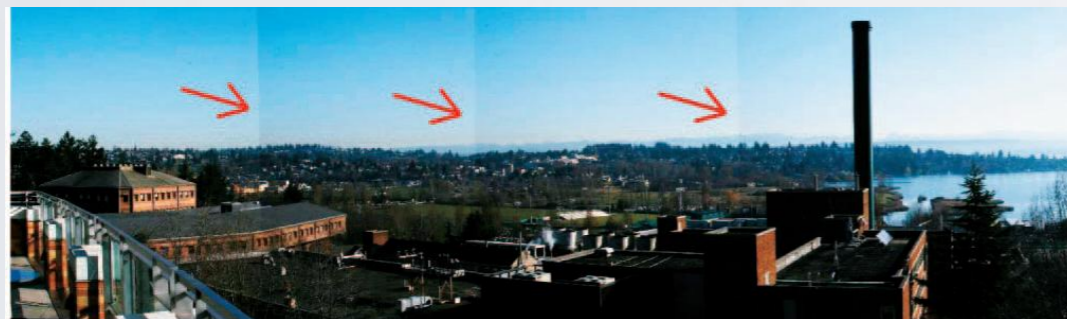


# Previous Works

- **Vignetting correction**
  - Remove vignetting effect
  - Applications: shape from shading, image segmentation, and image mosaicking, camera calibration



Ref: Y. Zheng, J. Yu, S. Kang, S. Lin, and C. Kambhamettu. Single-image vignetting correction using radial gradient symmetry. In Proc. CVPR'08, volume 2, pages 1–8, 2008.



Ref: Dan B Goldman. Vignette and Exposure Calibration and Compensation. IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE, VOL. 32, NO. 12, DECEMBER 2010

# Previous Works

- **Photorealism rendering: build lens model to simulate the vignetting effect**  
Ref: Jiaze Wu, Changwen Zheng, Xiaohui Hu, Fanjiang Xu. Rendering Realistic Spectral Bokeh Effect due to Lens Stops and Aberrations. The Visual Computer, 2012
- **Stylizing with false vignetting: learning from training data**  
Ref: Armin Samii, Tim Althoff. Iterative Learning: Leveraging the Computer as an On-Demand Expert Artist, 2011, University of California, Berkeley.
- **Photoshop: lens correction filter**
- **Instagram: lo-fi filter**



Original

Photoshop

Instagram

Painters-style

The painters-style is by Martin Constable, [http://opticalenquiry.com/photoshop/index.php?title=The\\_Vignette](http://opticalenquiry.com/photoshop/index.php?title=The_Vignette)

# Future Works

- Model each requirement as a filter
- Explore efficient fusion methods to combine all the filters to conduct the vignetting effect enhancement
- Assessment of the results



**Thank You!**

**Comments and suggestions?**