Single Retinal Image Restoration

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Single Retinal Image Restoration

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1. Retinal image formation described by the double-fundus reflection process is well-formulated in the optics community but hitherto ignored in the community of retinal image processing. (*This thesis*)

2. A general framework of retinal image enhancement/restoration consists of two procedures: illumination correction and dehazing. (*This thesis*)

3. The Center-surrounded Retinex theory is the bridge between retinal image illumination correction and retinal image dehazing and is unified under the framework of image denoising. (*This thesis*)

4. Non-learning-based cataract retinal image enhancement algorithms outperform deep-learning methods and a more comprehensible and reliable. (*This thesis*)

5. Illumination correction and blind-deconvolution are unified into a single framework-the Richardson-Lucy deconvolution to achieve retinal image blind deblurring. (*This thesis*)

6. Retinal image enhancement/restoration will benefit society by providing easier access to healthcare, and promoting better surgical outcomes. (*Impact*)

7. With the advent of image processing equipment, digital recording and processing of retinal images have replaced standard film-based fundus photography. (*Eli Peli, **Neuroscience & Biobehavioral Reviews***)

8. Philosophers defined the eye as a window to the soul long before scientists addressed this cliché to determine its scientific basis and clinical relevance. (*Anat London, Inbal Benhar, Michal Schwartz, **Nature Reviews** Neurology*)

9. Ears cannot speak, lips cannot hear, but eyes can both signal and perceive. For human beings, this dual function makes the eyes a remarkable tool for social interaction. (*Matthias S. Gobel, Heejung S. Kim, Daniel C. Richardson, **Cognition***)

10. A mathematical formulation of an often crude experience leads in an uncanny number of cases to an amazingly accurate description of a large class of phenomena. (*Physicist Wigner Jenő Pál*)