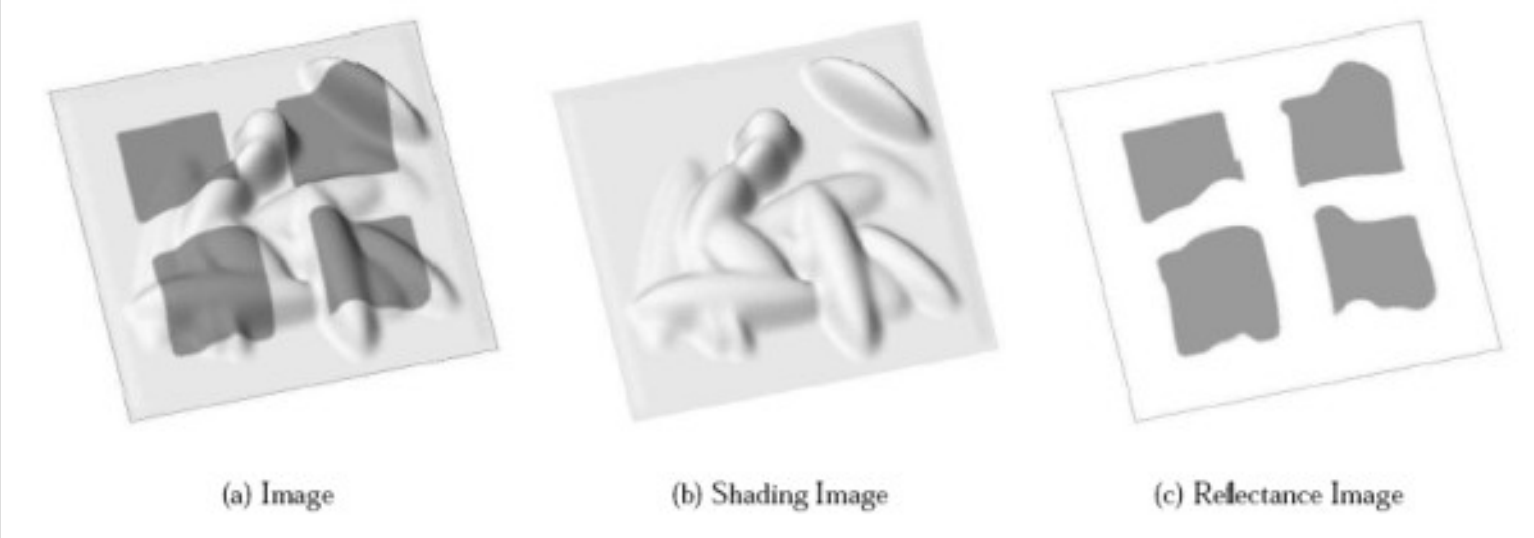
Recovering Intrinsic Images from a Single Image



Opposition by Nik Melchior

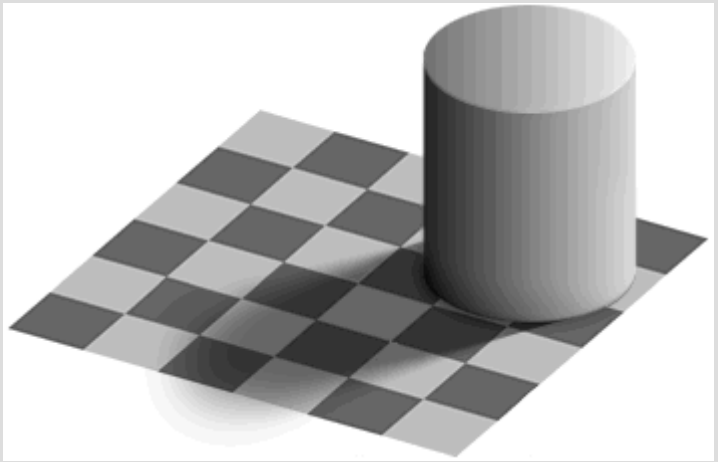
Respect: method for factoring large numbers!

$$I(x,y)=L(x,y)R(x,y)$$

- Additional information required
  - Knowledge of physics
  - Generalization about real-world objects
  - Additional assumptions

Purpose

- Described as a mid-level algorithm to support
  - segmentation
  - object recognition
  - shape from shading
  - image manipulation
- Does not seek to explain geometric causes for image features



Implementation

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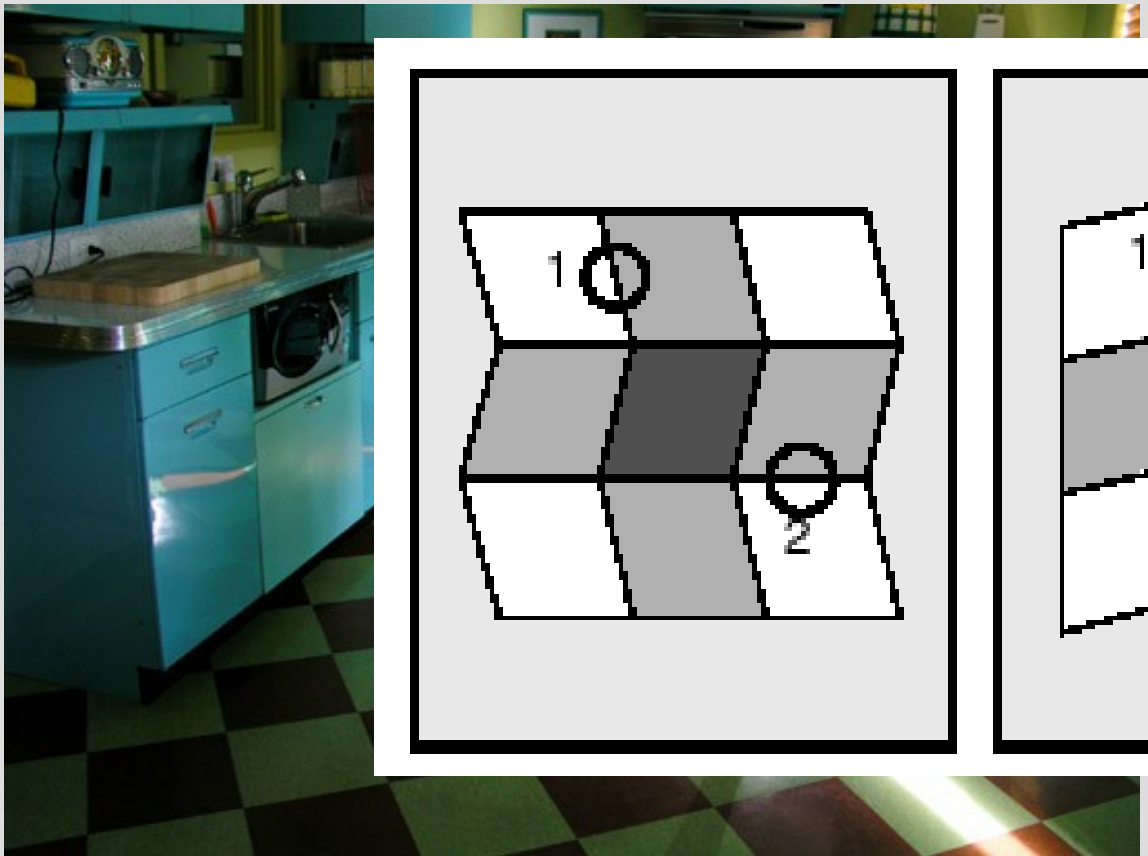
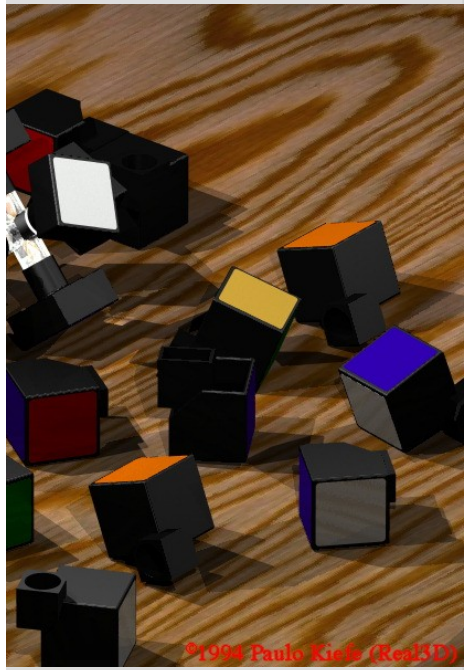
Binary classification of derivatives

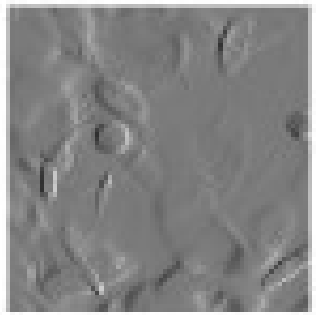
- Assumption: each image derivative is caused by shading change OR change in surface reflectance





Classifiers

- Trained on synthetic images with lighting coming from one direction
- “The primary limitation of this method lies in the classifiers. For each type of surface, the classifiers must incorporate knowledge about the structure of the surface and how it appears when illuminated.”



Evaluation

- No quantitative evaluation proposed!

(a) Original Image

(b) Shading Image

(c) Reflectance Image