Learning to See in the Dark

Improving Accessibility

Joseph Hines and John Zlotek

June 3, 2019

Paper Overview

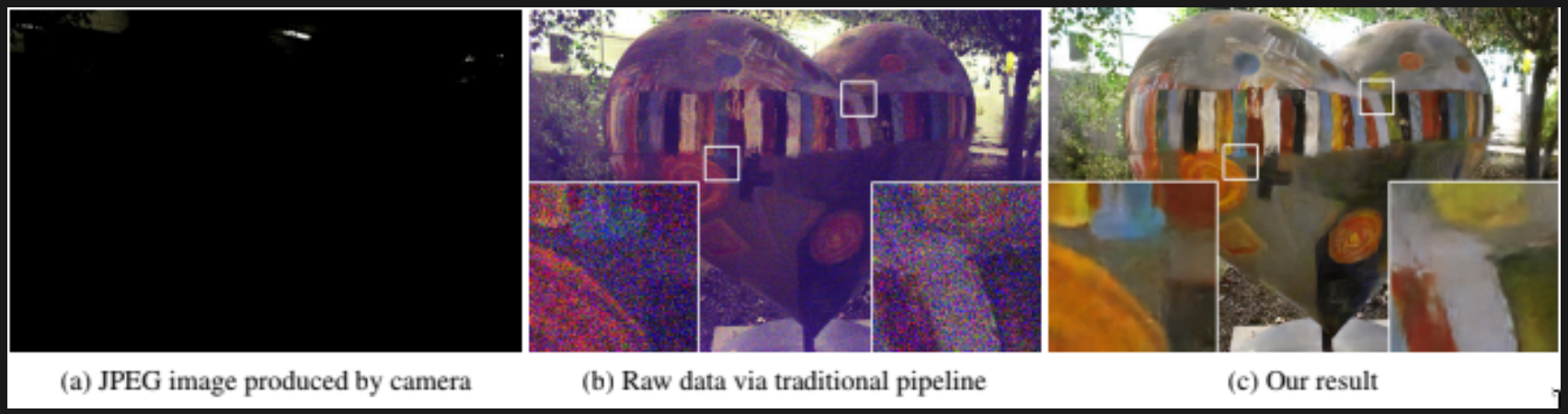
Goal and Approach

- High ISO is noisy
- Get long exposure quality with short exposures
- Train a model to reflect this

Their Results

(a) Camera output with ISO 8,000 (b) Camera output with ISO 409,600 (c) Our result from the raw data of (a)

Their Results



(a) JPEG image produced by camera (b) Raw data via traditional pipeline (c) Our result

Flaws of Current Implementation

Python2

- Support ending soon
- Rife with deprecation warnings
- Can hurt adoption

Provided Data/Models

- Unrealistic Hardware requirements to train
- Code is disjoint, tricky to get started
- Restricted to two Camera brands/RAW formats

Demo

Web App

- Increase exposure
- Encourage curiosity

Our Results/Improvements

- Implement batching to reduce training memory usage
- Support DNG (Smartphone RAW)
- Created a Web App
- Basic CLI + module
- Refactored shared code
- Created a IPython Notebook for Colab

Going Forward

Supporting more raw formats

a

General JPG/PNG implementation

b

Provide more information to why/how this works (visualization)

c

Better hosting solution for dataset

d

Put it in an App and charge $5

e