

Learning to See in the Dark

Improving Accessibility

Joseph Hines and John Zlotek

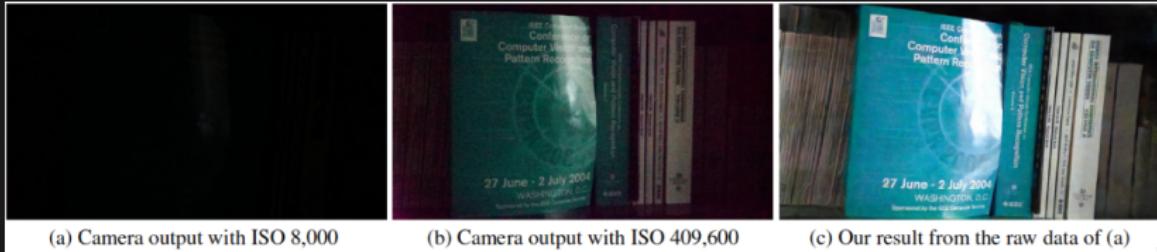
June 3, 2019

Paper Overview

Goal and Approach

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

Their Results

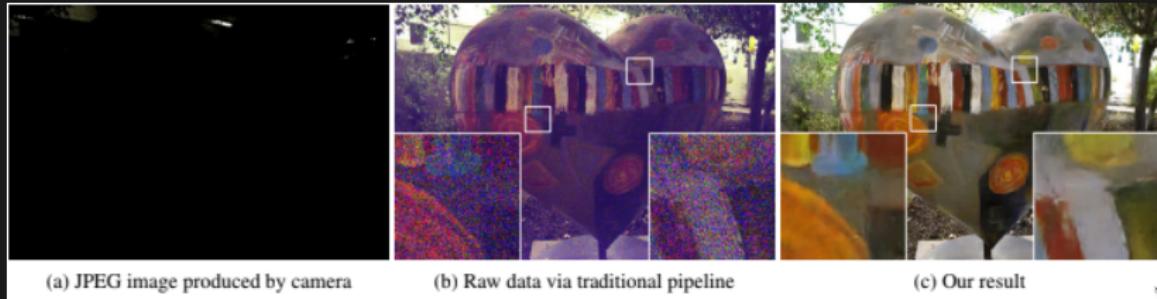


(a) Camera output with ISO 8,000

(b) Camera output with ISO 409,600

(c) Our result from the raw data of (a)

Their Results



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

Results







Ground Truth



Traditional Scaling



Our Model



Ground Truth



Traditional Scaling



Our Model



Contributions

- Implemented 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
- General JPG/PNG implementation
- Visualize the model
- Optimize the amplification parameter
- Better hosting solution for dataset
- Put it in an App and charge \$5

Thank you!