Exposure Correction

Team Zion

Method Overview

Original

Create Illumination Map

Under expose Correction

Final Corrected Image

Fusion

Create Illumination Map

Inverted

Over expose correction

Learnings and Status

Learnings:

- Image Operations are not the real bottleneck. It is the learning part which involves sparse matrix LU decomposition
- LU decomposition is hard to parallelize since there is a lot of data dependency. No off-the-shelf libraries to use on GPU.

Status:

- Have a working algorithm which doesn’t use GPU.
- GPU implementations of image operations are buggy.
- Yet to add support for video.

Datasets

ExDark

- Largest known dataset for low light image enhancement.
- Versatile: contains night scenes, evening scenes, indoor scenes.

LOL Dataset

- Well known dataset for low light image enhancement
- Has clear segregation of high and low light images of same scene

Motion in the Dark Dataset

- Video dataset created for low light enhancement.
- First known non-synthetic lowlight video data.

Dog - ExDark

Original

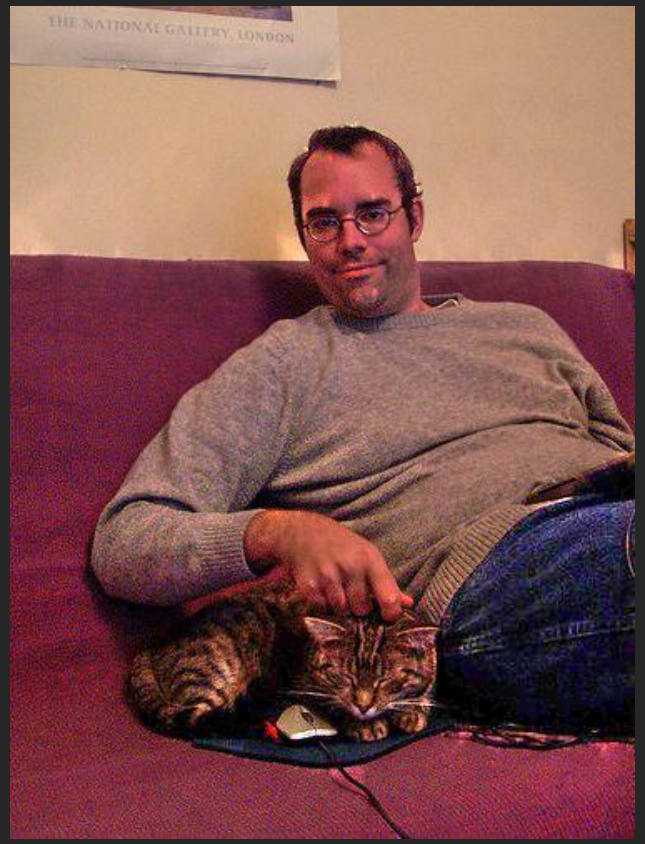
Underexpose Corrected

Overexpose Corrected

Final Corrected

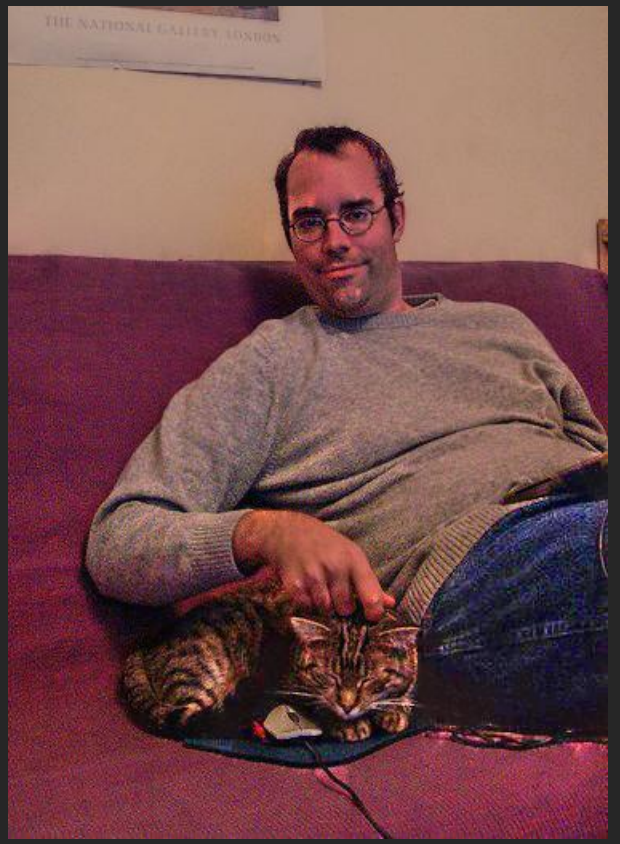
Person - ExDark

Original



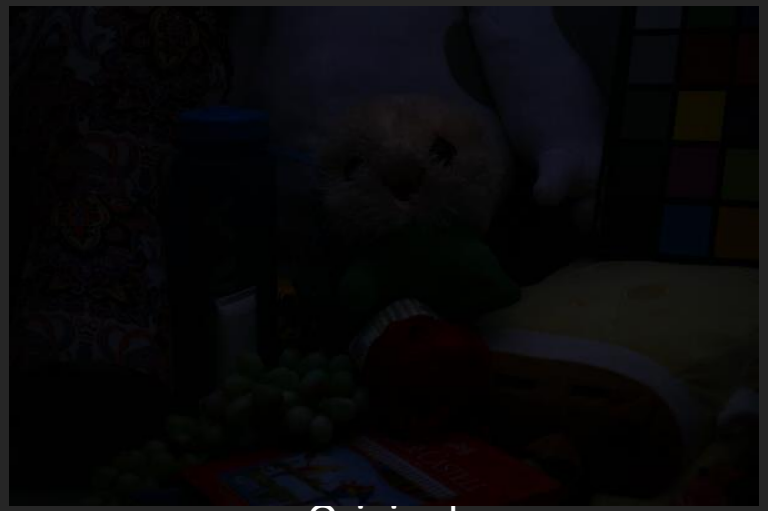
Underexpose Corrected

Overexpose Corrected



Final Corrected

Toy - LOL



Original

Underexpose Corrected

Overexpose Corrected

Final Corrected

Thank you

Vaishali Singh
Ch NVB Dattatreya
Navya Sai Penukonda
Rahul V