

CS663 - Project Report

Blind Image Dehazing

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1 Project Summary

We intended to investigate and implement two popular dehazing algorithms, “The Dark Channel Prior” algorithm (CVPR ’09) and “Internal Patch Recurrence” algorithm (ICCP ’16).

We successfully implemented the “Dark Channel Prior” algorithm. Our implementation of the “Internal Patch Recurrence” is not complete, since we suspect we are missing some crucial details (details provided in this report). We hope to complete this in the next one month.

Our code is open sourced and available on Github at [martiansideofthemoon/blind-dehazing](https://github.com/martiansideofthemoon/blind-dehazing).

2 Dark Channel Prior - Results

Our implementation of dark channel prior is located here. We provide a breakdown of steps for one image and show estimated transmission maps and dehazed outputs for others.

2.1 Hazy Input



2.2 Dark Channel



2.3 Transmission Map



2.4 Raw Dehazed



2.5 Matted Transmission Map



2.6 Smooth Transmission Map

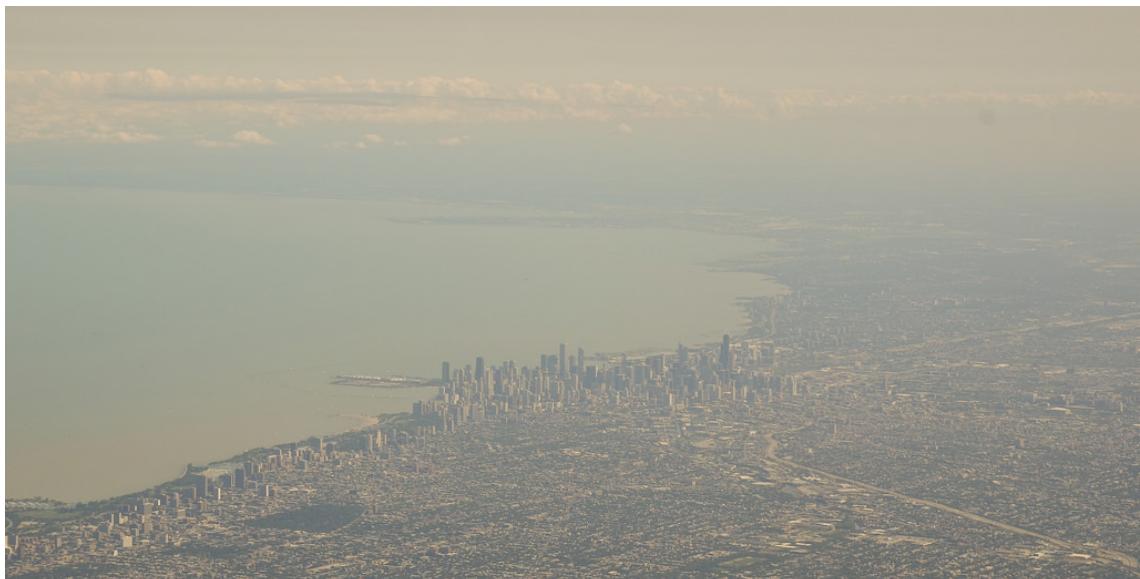


2.7 Final Dehaze



2.8 More Results

2.8.1 Chicago

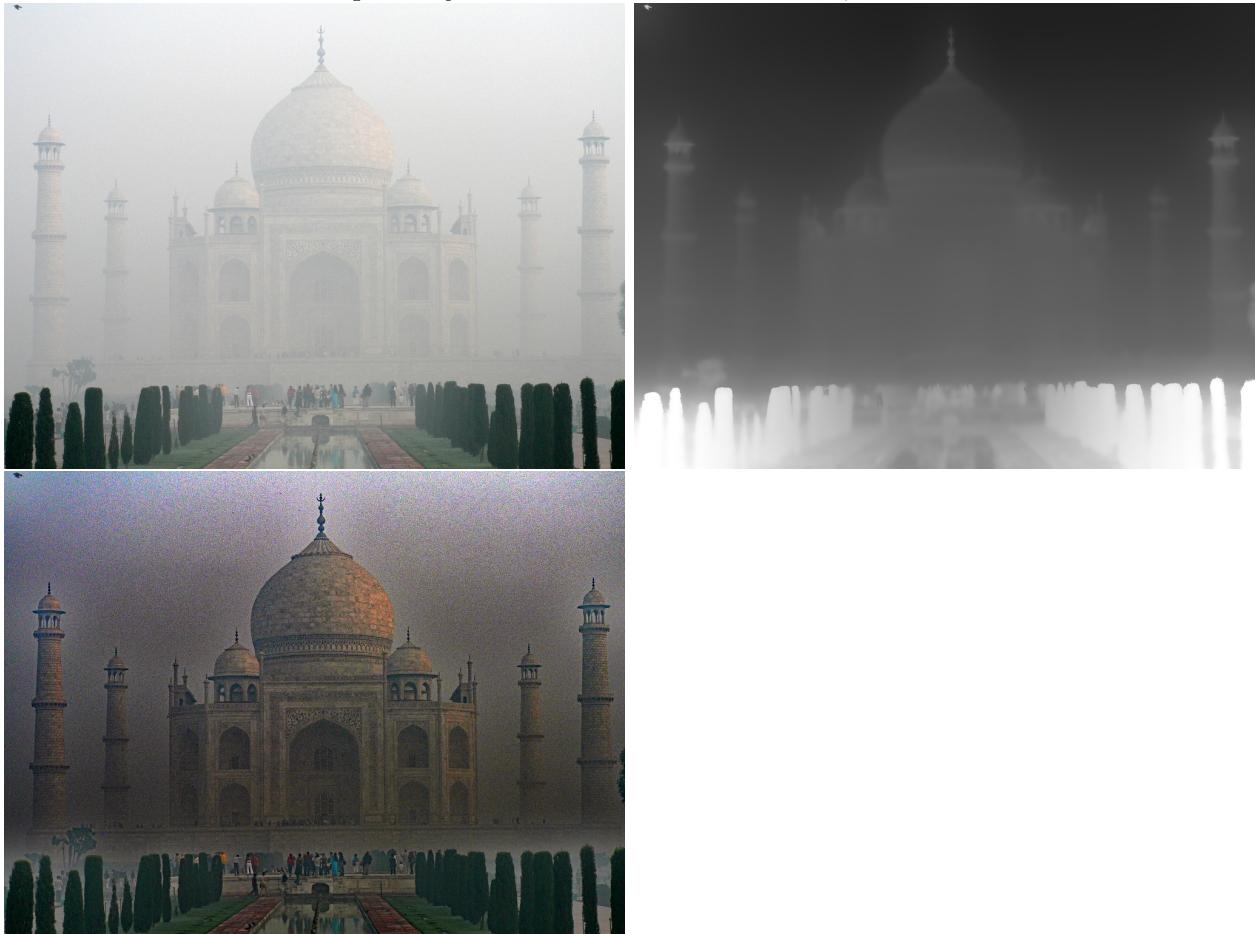


2.8.2 Delhi Haze



2.8.3 Taj Mahal

Notice the transmission map of Taj Mahal is underestimated here, since it looks similar to the haze.



2.8.4 Dubai



2.8.5 Red Train



2.8.6 Flags



2.8.7 Cones



2.8.8 Bench



2.8.9 Mountain



3 Patch Recurrence

We wrote the code to perform airlight estimation. However, it seems like we aren't sampling the image well. There seem to be a few missing details in the paper, and the actual procedure used to make pairs and extract patches is a lot more involved. We are in correspondence with the author. Here is a potential issue,

