Department of Electrical and Computer Engineering

North South University

Senior Design Project

Deep learning based visual pollutant detection system

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DECLARATION

This is to certify that this Project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. Any material reproduced in this project has been properly acknowledged.

Students' Name & Signature

Ishaq Ali

Md. Sabbir Hossain

APPROVAL

We, Ishaq Ali (1530869042) and Md. Sabbir Hossain (1610661042), students of CSE-499 (Senior Design) (Section-4) from Department of Electrical and Computer Engineering, have completed our project entitled 'Deep learning based visual pollutant detection system' under the supervision of Dr. Mahdy Rahman Chowdhury, Associate Professor, Department of Electrical and Computer Engineering. We have fulfilled all terms and condition of this course and completed our project.

Supervisor's Signature

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Dr. Mahdy Rahman Chowdhury

Associate Professor

Department of Electrical and Computer Engineering

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Dhaka, Bangladesh

Chairman's Signature

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Dr. Mohammad Rezaul Bari

Associate Professor and Chairman

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ACKNOWLEDGEMENT

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Abstract

Most of us are familiar with mainly four types of pollutions. They are 1) air pollution 2) water pollution 3) sound pollution and 4) soil pollution.

But a very few of us know about ‘visual pollution’ since it is relatively a new concept. But it is gaining people’s attention slowly. Determining which object should be considered as a visual pollutant is quite a challenge because an object which is visually disturbing to one person may not be visually disturbing to another person. In this study, there are four classes 1) billboards and signage 2) telephone and communication wires 3) network towers and 4) street litter. A deep learning model has been used to detect visual pollutants in an image that was trained and tested on images that we collected using the Google search engine. Our study has a lot of applications in real life like image and video analysis, visual pollutant management, visual pollution index generation, server deployment, and many more. Our study suggests that higher levels of accuracy can be achieved by increasing the size of the dataset.