# ELEN E6770 Network Virtualization & Cloud Computing

## Project Proposal

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## Implementation: A ML-based photo color enhancement application on the cloud

### Introduction

There are many web and mobile applications today that do photo adjustments backed by machine learning models. In this project I am going to develop a simple application that enhance color of photos.

Users upload their photos to the application, the ML model process the photos and output enhanced images and provide a link for users to download the enhanced images. An end-to-end workflow of the proposed application is shown in Figure 1.

A screen shot of a computer

Description automatically generated

Figure 1 End-to-end workflow

### Approaches & Steps

1. The ML model I need can be found in the paper [1] or [2]. I am going to implement one of these models and train the model on my local machine.
2. The model and some other service logic will be wrapped into a Flask (a light-weight Python web microframework) application.
3. The application will be containerized using Docker.
4. The Docker container will be hosted on Amazon EC2 and start providing services.
5. Users should be able to interact with the application from a web page. So I will design a simple UI.
6. User guide and design documentation will be written along with the development process.

### References

[1] Jongchan Park, Joon-Young Lee, Donggeun Yoo, and In So Kweon. Distort-and-recover: Color enhancement using deep reinforcement learning. In CVPR, 2018.

[2] Yuanming Hu, Hao He, Chenxi Xu, Baoyuan Wang, and Stephen Lin. Exposure: A white-box photo post-processing framework. ACM Trans. on Graphics (SIG-GRAPH), 37(2):26, 2018