Cover Letter for ECE4513 Final Project 2022

Part A: Completed by Students

Paper ID	1	Student Name	Yifan WU, Yulong DAI, Yifan WANG	Topic Area	Image colorization
Title:	Bring old videos back to life -- Customized video colorization				

Abstract (200-300 words)	Image colorization is the process of estimating RGB colors for grayscale images or video frames to improve their aesthetic and perceptual quality. Deep learning techniques for image colorization have progressed notably over the last decade. Our project aims to raise a colorization method for portraits videos, which has an interactive interface to allow users to color hair, skin, clothes, and background for portrait. Specifically, image segmentation and end-to-end deep learning techniques will be used in the project.Here, we propose a *User Guided Video Colorization* based on color palette. The system enables to recognize all important parts of image. The user can depict any part of the person in any color. In this way, an old video is revitalized and turned into a new color video.Our dataset is the Hollywood2 dataset used in Bo, Zhang's paper. The dataset consists of portraits videos collected mainly from movie clips.The video will be divided into frames. In each frame the photo will be segmented into our normalized semantic framework and be processed into different image layers. Different layers will be colorized in reference to the corresponding exemplar uploaded by the user.The colorization algorithm contains two processes. The first is to build a semantic correspondence map and generate an aligned color reference, which yields a warped color image and a confidence map. Then we use our colorization network to combine the confidence map along with the last frame to colorize the next frame.The input image will be first divided into 4 parts, hair, skin, clothes, and background. Then users can feel free to select a reference image for each of these parts. The proposed algorithm can color the input image based on the reference image.

Part B: Completed by Course Staff

Review Comments from TAs	Paper Rating	
(Based on initial paper) Got some concerns. ---------------- (Update based on final submission) I like the paper.		
TOTAL: _____ Score in details:		

Proposal (20%)	Paper (50%):	Presentation (30%):	Bonus:

TA-in-charge		Instructor's Signature		Date	Dec. ___ 2022