EE 368 Project Proposal: Subject Detection and Manipulation

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Team

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Goals

This project will focus on subject detection and segmentation, using the labeled database of 20,000 images in [4] below. The output of this algorithm will be used for at least one simple manipulation (subject resizing, background replacement, etc.) to demonstrate its capabilities. If time permits, we will then implement the system in real time on the android platform as a stretch goal.

Work to be carried out

Following [1] we will use low depth of field, face detection, and other methods for detecting salient objects for identifying the subject within a photo. Other features such as centrality, borderness and shape may also be used [2, 3], in addition to whatever potentially novel methods we determine allow us to improve accuracy.

The following image is an example of an ideal subject detection probability map. Real algorithms will differ significantly, but nonetheless aim for this kind of ideal result.

A majority of the project time will be spent implementing and optimizing the algorithm to achieve acceptable error rates. The manipulation code will be a relatively simple toy project that will be used to demonstrate how well the subject detection works and to give an idea of its applications. If time allows, this manipulation may be done on the android platform, but will not be necessary for a successful project.

References


