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Final Project Proposal

**Algorithm**

I will be implementing a neural network for license plate recognition. License plate recognition is composed of three primary steps: 1) localization of the plate region, 2) segmentation of the characters, and 3) recognition of the characters (Kocer). To begin, Canny edge detection is applied to the image of the vehicle. Using this image, the intensive transition points which define the boundary of the license plate can be found. Once the license plate is localized, the characters are segmented. This step includes histogram equalization, median filtering, and applying the blob coloring algorithm to the plate. Each blob is then used as the input of an Artificial Neural Network, or ANN, for recognition of which character the blob represents. Neural networks work by predicting the label of an input using a trained model (Lapedes). The Keras library will be used to create, train, and test the model in Python. The results of license plate recognition using this model will be compared to the results using two separate models, one for letters and one for numbers. Assuming all models are trained fully and there is no overfitting, using two models should improve the accuracy of the results by reducing the confusion between similar letters and symbols (“S” and “5”, “O” and “0”, etc.).

**Works Cited**

1. Kocer, H E., and K K. Cevik. "Artificial neural networks based vehicle license plate recognition." *Procedia Computer Science*. 3rd ed., Elsevier, 2011, pp. 1033-37.
2. Lapedes, Alan, and Robert Farber. "How Neural Nets Work." pp. 442-56.