Final Project Proposal

MATH 596

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We live in a rather boring world, full of inconsistencies and patterns that we fit our lives into. We still love it and try to capture its best shades for safe storing. Unfortunately, time goes and the sharpness of our pictures and data speedily fades. My final project would revolve around digital media enhancement and resolution improvement.

We have many different pictures from as long as a century ago. However, by the modern standards, they're all of pretty poor quality. Even more modern ones, suffer from information and data rotting. I saw a fascinating research that explored image quality enhancement by using Convolution Neural Networks. [1] What happens is that we apply a pretty standard-issue neural network and attach Convolution layers, which are very common in visual learning applications. By properly reducing the error during backpropagation and feeding smaller-sized images into the network and giving it an output of the same image, but bigger sized, we can find such a model that would be able to find a correlation between them. This would allow us to give a system a never-seen-before low resolution image and expect a better quality result.

References

[1] W. Shi, J. Caballero, F. Huszár, J. Totz, A. P. Aitken, R. Bishop, D. Rueckert, and Z. Wang, "Real-time single image and video super-resolution using an efficient sub-pixel convolutional neural network," 2016.

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