Image Upscaling

By:

Joshua Berensen

Joshua Mathews

Thomas Peck

CS450 Machine Learning

Image Upscaling

I. Contact Information
- Joshua Berensen
- Joshua Mathews
- Thomas Peck
- The data that we analyzed was a dataset of high definition images from:.

II. Introduction
- The problem that we wanted to tackle was to use an AI to upscale images. The reason for this is that low quality images are all around us. Whether you take a quick photo of something with your phone or someone sends you an image through SMS; it can be frustrating having to accept the low resolution of the image. We hoped that through a convolutional neural network we could train an AI to know what High Definition png images were like, so that when it received a low-quality image it could turn around and spit it back out in high definition.

III. Data Preparation
- Actually obtaining a Dataset proved to be more difficult than we realized. There are pictures floating all over the internet that are free to use. We could either save pictures off one by one until we get a dataset large enough to train our network, or we could download a dataset that has already been curated. The downside to each of these was that saving pictures one by one takes a considerable amount of time. Therefore, getting a curated dataset seemed like the straightforward approach. Though there was an unforeseen downside here. Getting a complete dataset of High Definition images takes a lot of storage space. To process the data, we had to keep in mind the available storage of each computer that was to process the images as well.
  We are using downscaled images for inputs and full-sized images for targets in both the training and validation sets.

IV. Mining / Learning from the data
- We used a convolutional neural network to upscale the images.
- What was our process? How did the AI learn patterns? What algorithms did we try and why? What parameters did we use and why?
  (Mention everything, even dead ends)
  (also challenges faced and how we over came them)

V. Results
- What were our results?
  (include graphs and charts)

VI.   **Conclusions**
- Why are our results valuable? To a business owner or stakeholder?
Why are our results interesting?
Any limitations or ethical issues?

VII.   **Lessons Learned**
- What did we learn?
What would we do differently next time?