Transform Low Resolution to High Resolution Images

**Abstract**

In this digital age, we constantly find ourselves in situations where we need to transfer images and videos in a fast and efficient manner. High resolution images often require more compute and network resources which can increase the overall cost of the infrastructure for an application. To avoid processing cost, we can transfer low-resolution (LR) images across the network and then reproduce high-resolution(HR) images at the receiving end.

We propose using Generative Adversarial Networks (GAN) based neural network to convert low- resolution images into high-resolution images. As part of the training phase, first, an HR image is transformed into LR image by down sampling. The LR image is then transformed into super resolution (SR) image using GAN generator. Using the backpropagation loss, we train the discriminator to distinguish the high-resolution images. We will be using a pre-trained model which we plan to enhance with hyperparameter tuning.

**Team Invincibles**

Atul Shah

Shailesha Maganahalli

Shreyus Puthiyapurail

Srilalitha Veerubhotla

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| **Team Member** | **Responsibility** |
| Atul Shah | Web UI development, research on available models, model design. |
| Shailesha Maganahalli | Data collection, Model training. |
| Shreyus Puthiyapurail | Web UI development, pipeline setup, visualizations |
| Srilalitha Veerubhotla | Model Design, training, testing., visualizations |

**Project Deliverables:**

1. Web UI for the end users to convert low resolution image to high resolution image.
2. Dataset comprising of low- and high-resolution images for training the model.
3. Deep learning model along with its associated test results and evaluation metrics.
4. Continuous Integration pipeline for application deployment.
5. Model Visualizations provided using Tensor board.