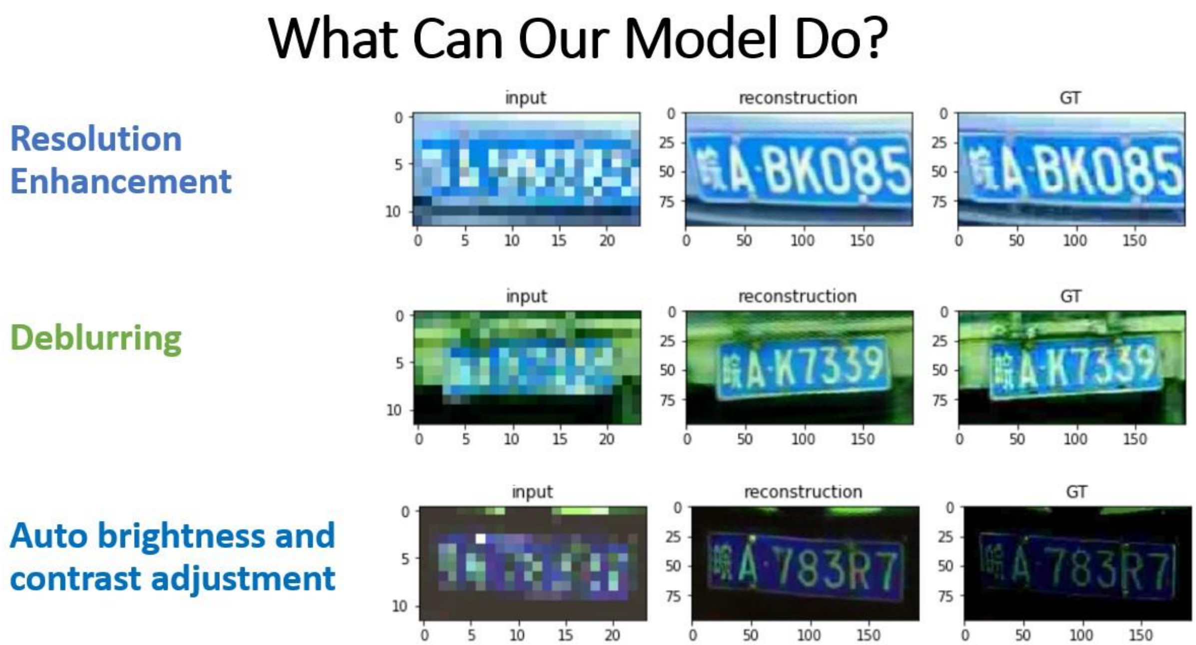
License Plate Enhancement - From TV shows to reality



Requirement

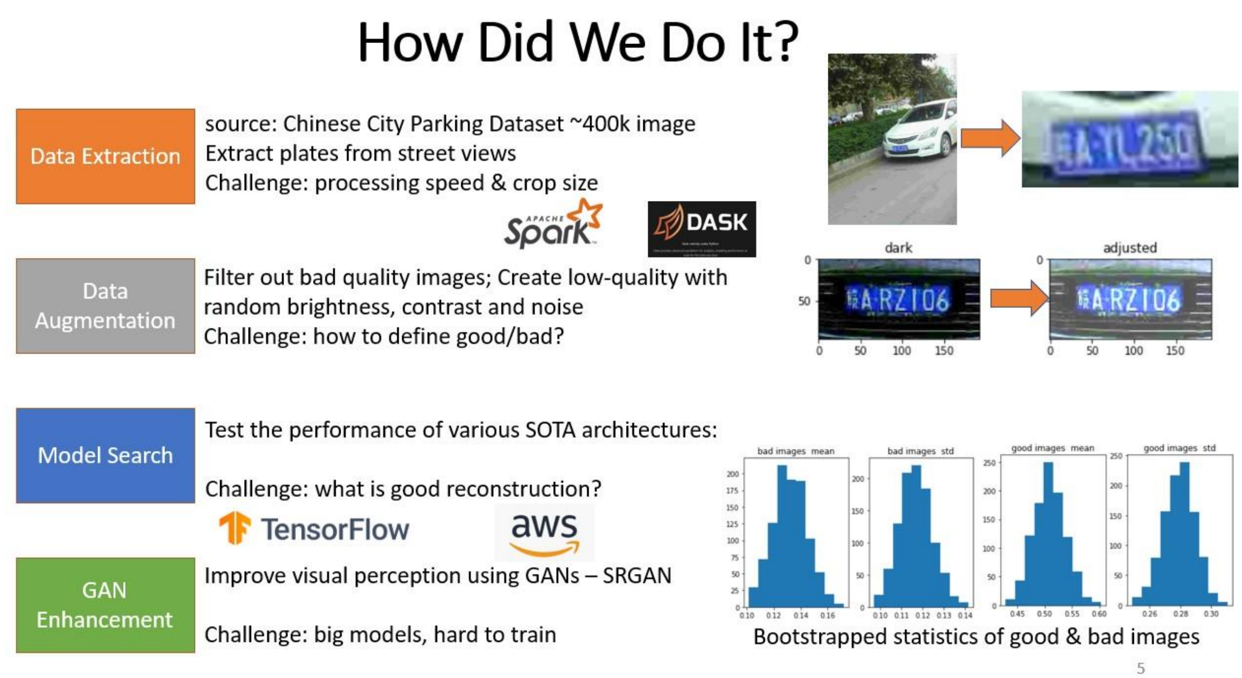
Preprocessing

- Dask >= 2.11.0
- PIL >= 6.2.2

Training & Evaluation

- tensorflow >= 2.1.0
- numpy >= 1.18.1
- matplotlib >= 3.1.3

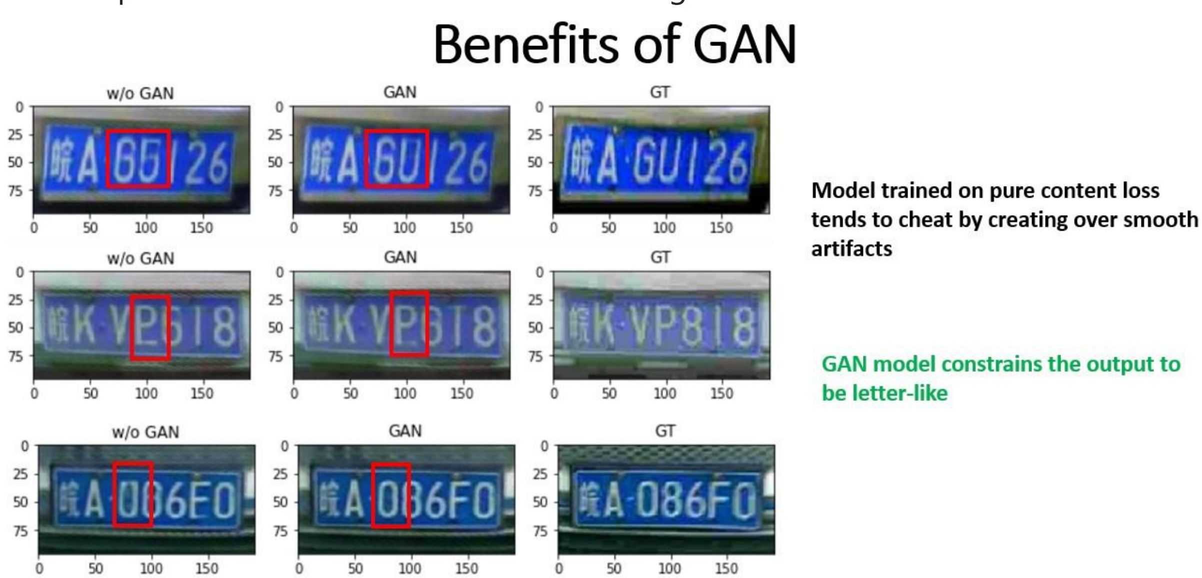
Pipeline



Before training the model it is important to preprocess the raw dataset using the preprocess.py script

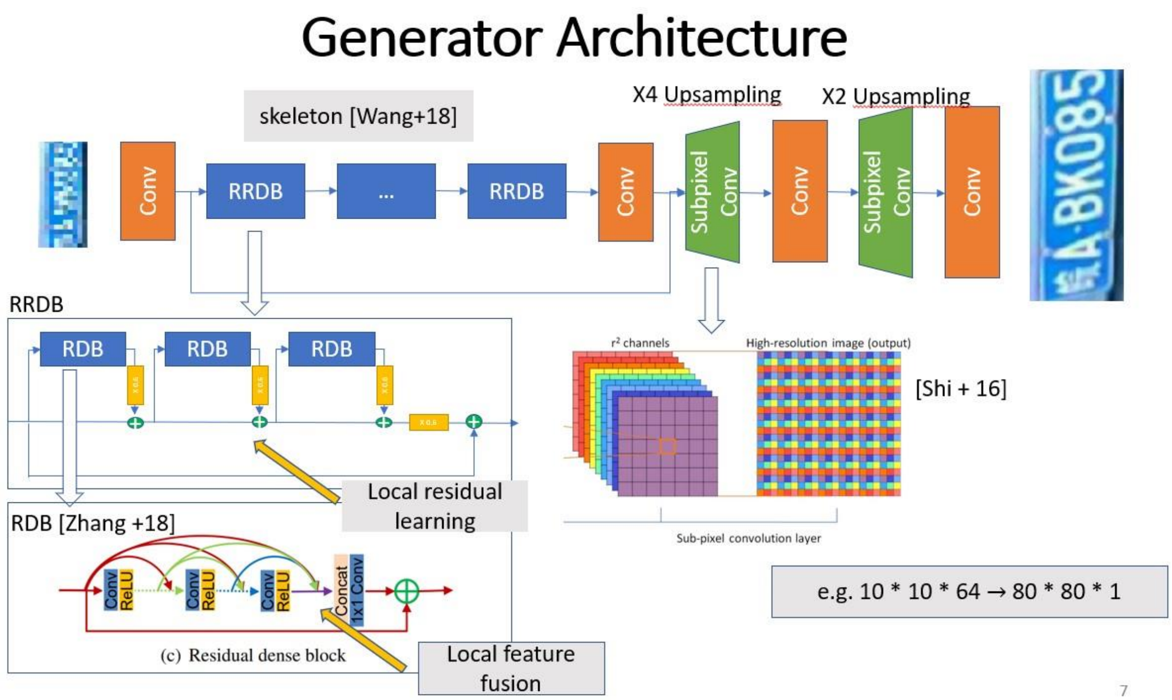
Model Architecture

Our plate enhancer model is trained in an adversarial fashion(GAN), meaning the generator is trained to create realistic reconstruction of images that can fool the discriminator, which is a binary classifier. Why GANs? Well, according to several papers, GAN network tend to create more realistic image reconstruction comparing to model solely trained in the supervised fashion. For instance, models that minimize Mean Square Error tend to have over-smoothing



artifacts. Therefore, there are two models - the generator(reconstructor) and the discriminator(classifier).

Generator



The generator is trained to minimize a novel hybrid loss function, namely the perceptual loss defined in the SRGAN paper

Discriminator