COMPUTER VISION

super resolution image

MEMBERS

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OUR OBJECTIVES

- Enhance image to be more aesthetic and sharpness
- Improve rocognization text in image
- Can utilize image with higher performance

DATASET

We used our generated images. Images contains a single line of text in various font family,font size, words, background colors, words colors, and position.

(a) Original Image

(b) Downsampled Image

(c) Median Blurred Image

(d) Gaussian Blurred Image

DATASET (CON.)

- training set *(30k)*
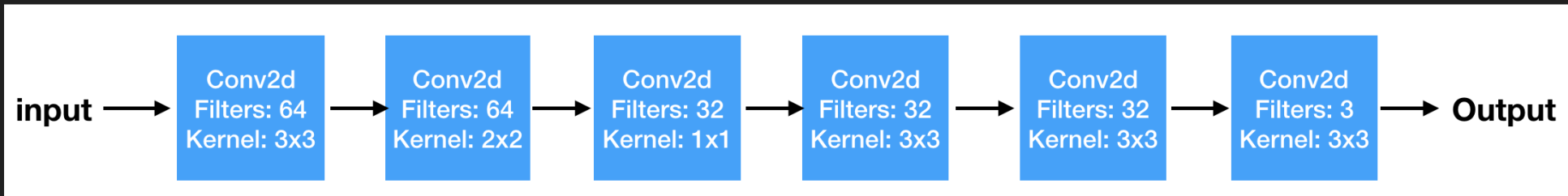- validation set *(20k)*
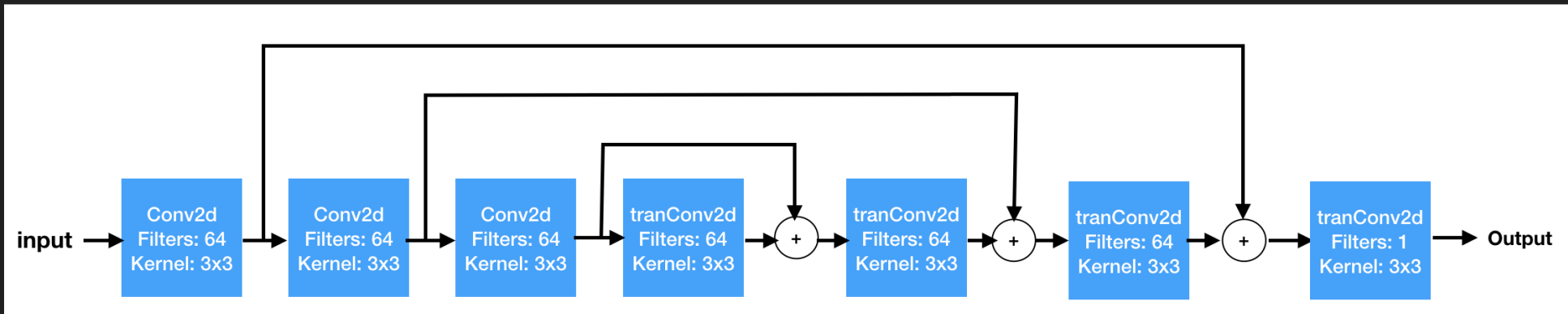- training set *(20k)*

download dataset

MODEL 1

(SRCNN)

input → **Conv2d** Filters: 64 Kernel: 9x9 → **Connived** Filters: 32 Kernel: 1x1 → **Connived** Filters: 3 Kernel: 5x5 → **Output**

MODEL 2

(CNN)

input → **Conv2d** Filters: 64 Kernel: 3x3 → **Conv2d** Filters: 64 Kernel: 2x2 → **Conv2d** Filters: 32 Kernel: 1x1 → **Conv2d** Filters: 32 Kernel: 3x3 → **Conv2d** Filters: 32 Kernel: 3x3 → **Conv2d** Filters: 3 Kernel: 3x3 → **Output**
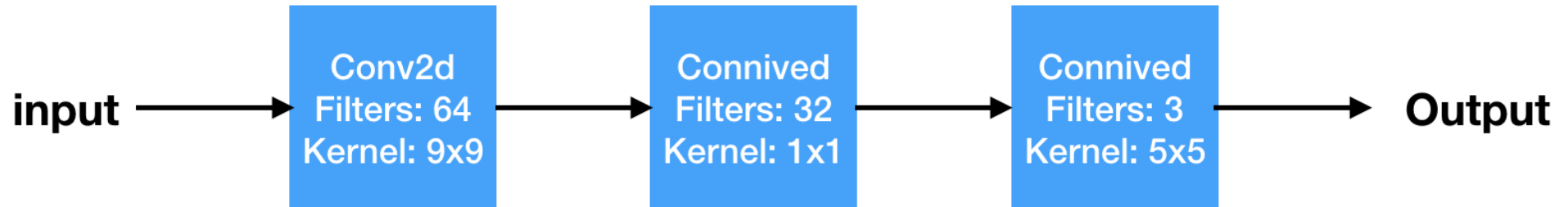
MODEL 3

(Skip pooling + Convolution and Deconvolution)

EVALUATION

model	mse	mae	psnr
do nothing	1330.621	12.0985	17.926
SRCNN	583.965	8.952	21.784
model2	334.135	6.053	24.239
model3	100.618	3.096	29.728

Table : All blur types in gray scale

CONCLUSION

The best model is model3 which has PSNR=29.728. This model outperforms because it contains more and complex layers than other model since we pass the information from lower layer to the top layer. Hence, the model3 can capture more information than other model.

Example of results (gray-scale image)

give pretty list unless swe
manner unit apply frie
beside ie its representati
knife never plate
unable pressure part

(a) Median blur input images

contemporary strength
quickly criteria
everyday counter train p
criminal lady unusual
assert nod eager Jew

(b) Gaussian blur input images

concept punishment family
Barrel wealthy explain
toss recruit tablespoon
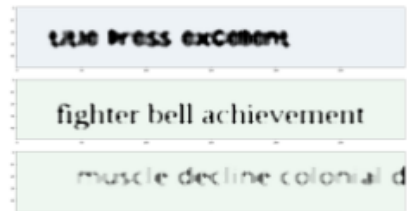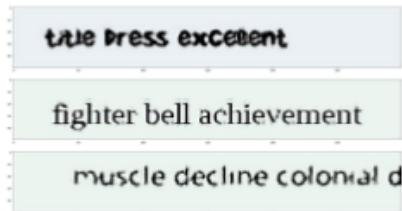marriage prescription pre
formal diverse prepare

(c) Downsampling blur input images

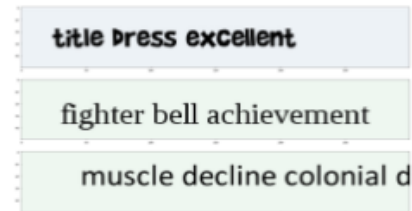fig : left*(blur)* center*(predict)* right*(original)*

EXAMPLE OF RESULTS (RGB IMAGE)

title Dress excellent
fighter bell achievement
muscle decline colonial d

title Dress excellent
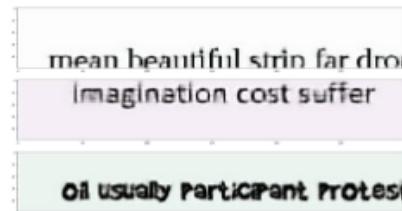fighter bell achievement
muscle decline colonial d

title Dress excellent
fighter bell achievement
muscle decline colonial d

(a) Median blur input images

mean beautiful strip far dro
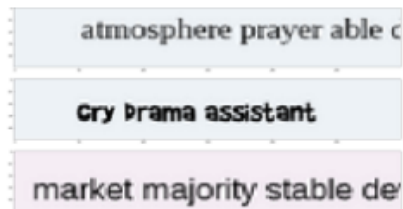imagination cost suffer
Oil usually Participant Protest

mean beautiful strip far dro
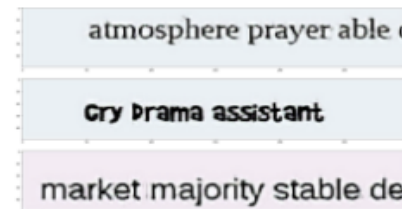Imagination cost suffer
Oil usually Participant Protest

mean beautiful strip far dro
imagination cost suffer
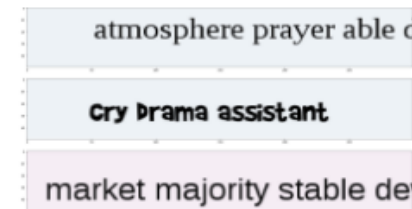Oil usually Participant Protest

(b) Gaussian blur input images

atmosphere prayer able d
Cry Drama assistant
market majority stable de

atmosphere prayer able d
Cry Drama assistant
market majority stable de

atmosphere prayer able d
Cry Drama assistant
market majority stable de

(c) Downsampling blur input images

fig : left*(blur)* center*(predict)* right*(original)*

CURRENT LIMITATIONS

1. Currently, we are still working on generated dataset since we don't have real-world data.
2. We have train and test on our environmnet as font family, font size, and backgroud were limited.
3. There are other techniques and models that we haven't tried.
4. Still dont't have the program for common user to use.