Hello!

Hello.
ManGAN

by Felipe Coelho
+ Paulo André
+ Hélio Ricardo
+ Ernesto Marujo
COLORIZATION IS HARD
COLORIZATION IS HARD

light  texture  details
STYLE TRANSFER!
AND WHEN DESIGNING FROM SCRATCH?

NO PRIOR EXAMPLES!
ManGAN: Assisting Colorization of Manga Characters Concept Art using Conditional GAN
LINE-ART EXTRACTION!

ADAPTIVE THRESHOLDING
LINE-ART EXTRACTION!

ADAPTIVE THRESHOLDING
COLOR-HINT!

1) GENERIC
2) INCOMPLETE
   - Remove Patches
   - Blur

\[ K = \frac{1}{9} \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix} \]
COLOR HINT FOR TEST-SET?

JUST € BLUR IT.

\_(ツ)_/\
ARCHITECTURE: GAN
ARCHITECTURE: cGAN?
MY ARCHITECTURE (cGAN)
HOW TO TRAIN YOUR GAN

- LEAKY RELU

\[ f(y) = \begin{cases} 
  y & \text{if } y > 0 \\
  ay & \text{if } y \leq 0
\end{cases} \]
HOW TO TRAIN YOUR GAN 2

- ONE-SIDED LABEL SMOOTHING

PENALIZE
CONFIDENT
OUTPUT!

[1, 0, 0] -> [0.9, 0, 0]
HOW TO TRAIN YOUR GAN 3

- Batch Normalization

-Avoids gradient explosion
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
TRAINING RESULTS!
Please order the images according to the colorization quality, from best to worst. (example: 1, 3, 4, 2)
## RESULTS!

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>MANGAN (Ours) PREFERRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINAL</td>
<td>8.98%</td>
</tr>
<tr>
<td>DEEPCOLOR</td>
<td>88.67%</td>
</tr>
<tr>
<td>PAINTSCHAINER</td>
<td>81.64%</td>
</tr>
</tbody>
</table>
CONCLUSIONS!

- GREAT FOR TESTING COLORS
- BETTER THAN OTHERS
- STILL MAKES MANY MISTAKES
FUTURE WORK!

- MULTI-STEP PROCESS
- ARCHITECTURES
- HYPERPARAMS TESTS
REFERENCES!


REFERENCES!


THANK YOU ALL!!
Felipe
Paulo
Hélio
Marujo
QUESTIONS?
Thanks!

I am Felipe

you can find me at lodur.com.br