Supplemental Material: JointFontGAN: Joint Geometry-Content GAN for Font Generation via Few-Shot Learning

1 EXAMPLES OF FONT DATASET

Fig. 1 and Fig. 2 show some examples of Capitals64 and SandunLK64 font datasets used in this work.

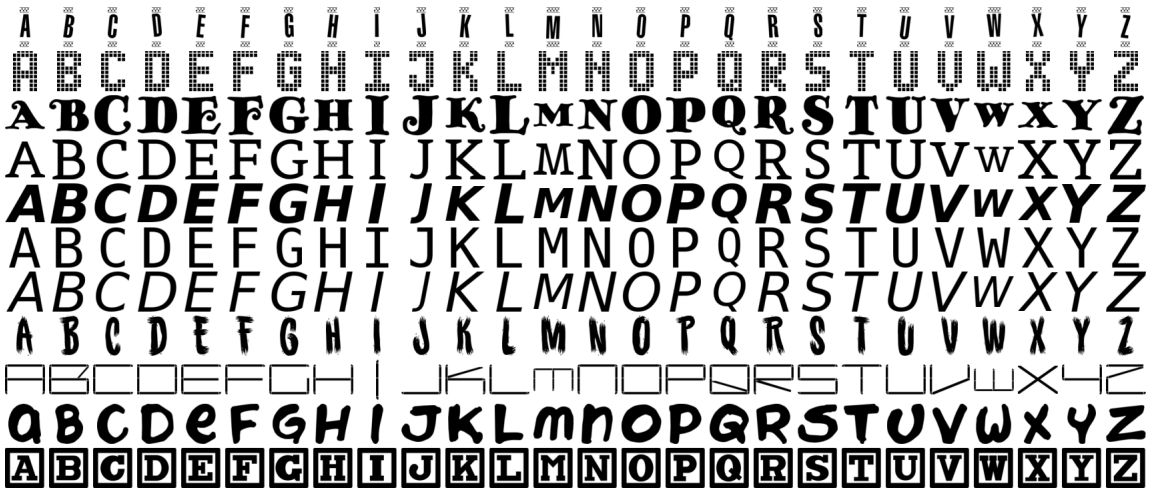

Figure 1: Examples of Capitals64 font dataset.

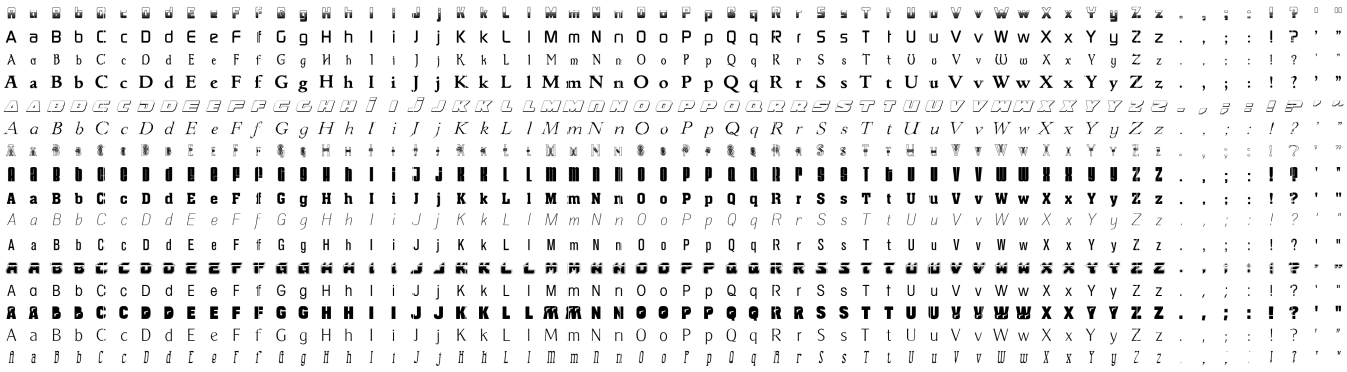

Figure 2: Examples of SandunLK64 font dataset.

2 ADDITIONAL RESULTS ON FONT GENERATION

Fig. 3 and Fig. 4 show some additional visualization comparison results of our JointFontGAN model, zi2zi [2], and Glyph Network in MC-GAN [1] on Capitals64 dataset.

3 ABLATION STUDY – TESTING L_1 ERRORS

Fig. 5 shows the L_1 error curves (on testing) for ablation study on Capitals64 dataset during the training stage for different epochs, which can further explain the effects of the proposed main components.

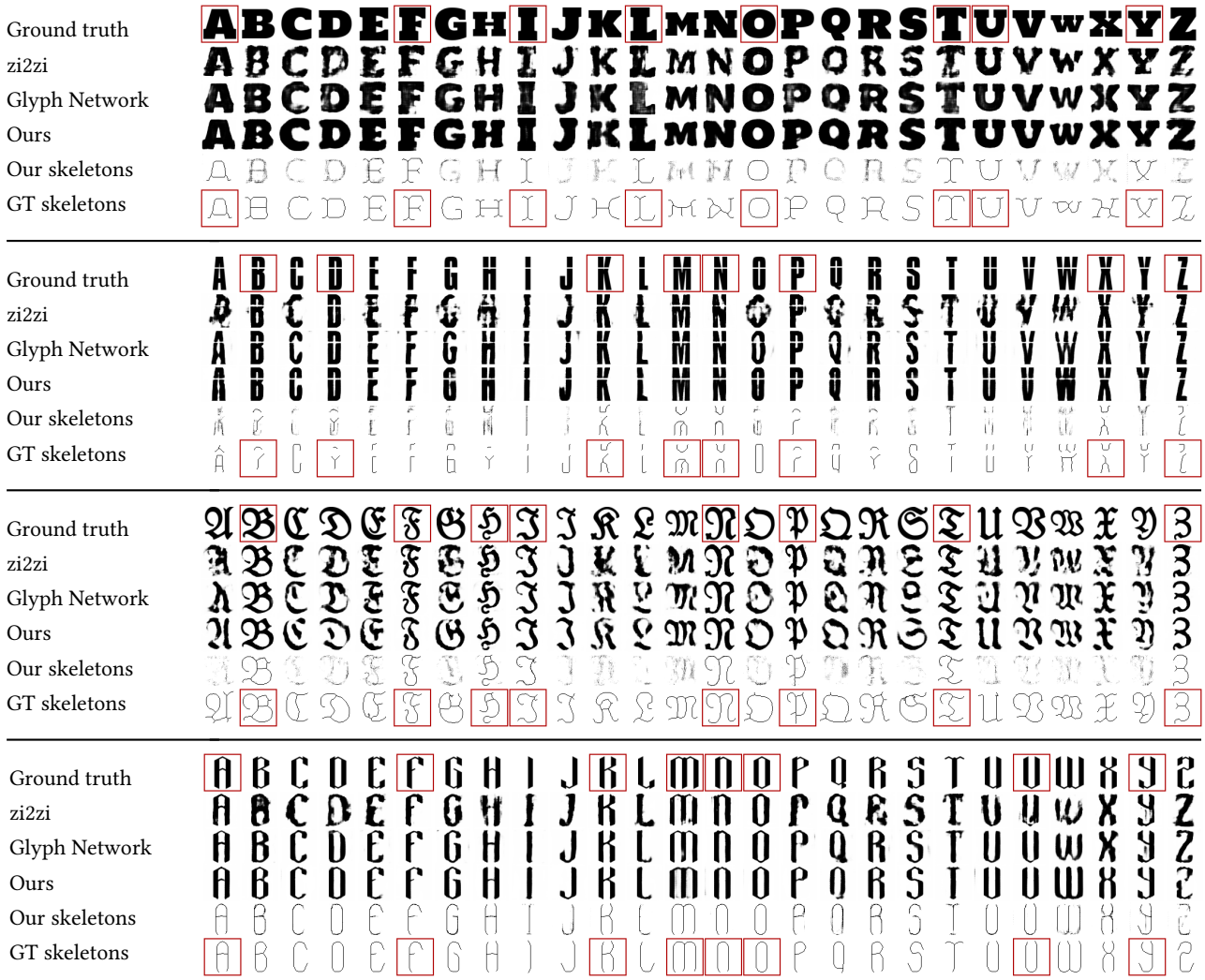

Figure 3: Additional visualization comparison for our JointFontGAN model on Capitals64 dataset. The ground truth glyphs and the few-shot reference sets (marked in red boxes) are shown in the 1st row. The 2nd row shows the results of zi2zi [2]. The 3rd row shows the results of Glyph Network in MC-GAN [1]. The 4th row shows the results of our model. The 5th row shows our skeleton results. The 6th row shows the ground truth skeletons and the few-shot reference sets (marked in red boxes).

4 QUALITATIVE ANALYSIS OF THE NUMBER OF OBSERVED LETTERS

Fig. 6 shows the qualitative performance of our method with three different few-shot observed letter settings (i.e., one, four, and eight random input samples) on Capitals64 dataset.

5 QUALITATIVE RESULTS ON COLORED / ORNAMENTED GLYPHS

In order to demonstrate the further capability of generating colored / ornamented glyphs, we apply a two-stage model followed by a (similar) Ornamentation Network in [1] with three RGB channels to our JointFontGAN. Some preliminary results are shown in Fig. 7 with visualization comparison results of our JointFontGAN + Ornamentation Network (without fine-tuning) and MC-GAN [1]. It is worth to mention that although the primary goal of our current work is to improve quality of generated (gray-scale) glyphs by adapting to the geometric variability and content scalability, our colored results are better than those of MC-GAN (e.g., more consistent font styles and font contents). We will explore some new methods to focus on the colored / ornamented glyph generation in the future.

Figure 4: Additional visualization comparison for our JointFontGAN model on Capitals64 dataset (continue). The ground truth glyphs and the few-shot reference sets (marked in red boxes) are shown in the 1st row. The 2nd row shows the results of zi2zi [2]. The 3rd row shows the results of Glyph Network in MC-GAN [1]. The 4th row shows the results of our model. The 5th row shows our skeleton results. The 6th row shows the ground truth skeletons and the few-shot reference sets (marked in red boxes).

REFERENCES

[1] Samaneh Azadi, Matthew Fisher, Vladimir Kim, Zhaowen Wang, Eli Shechtman, and Trevor Darrell. 2018. Multi-content GAN for few-shot font style transfer. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*. 7564–7573.

[2] Yuchen Tian. 2017. zi2zi: Master Chinese calligraphy with conditional adversarial networks. https://kaonashi-tyc.github.io/2017/04/06/zi2zi.html.

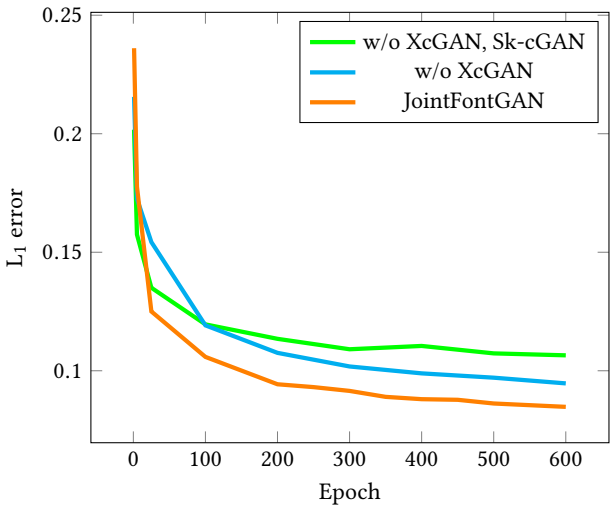

Figure 5: Testing L_1 errors for ablation study on Capitals64 dataset for different training epochs.

Figure 6: Visualization comparison for our JointFontGAN model with different numbers of few-shot observed letters on Capitals64 dataset. The ground truth glyphs are shown in the 1st row. The 2nd, 3rd, 4th rows show the results with 1, 4, 8 observed references, respectively (marked in red boxes).

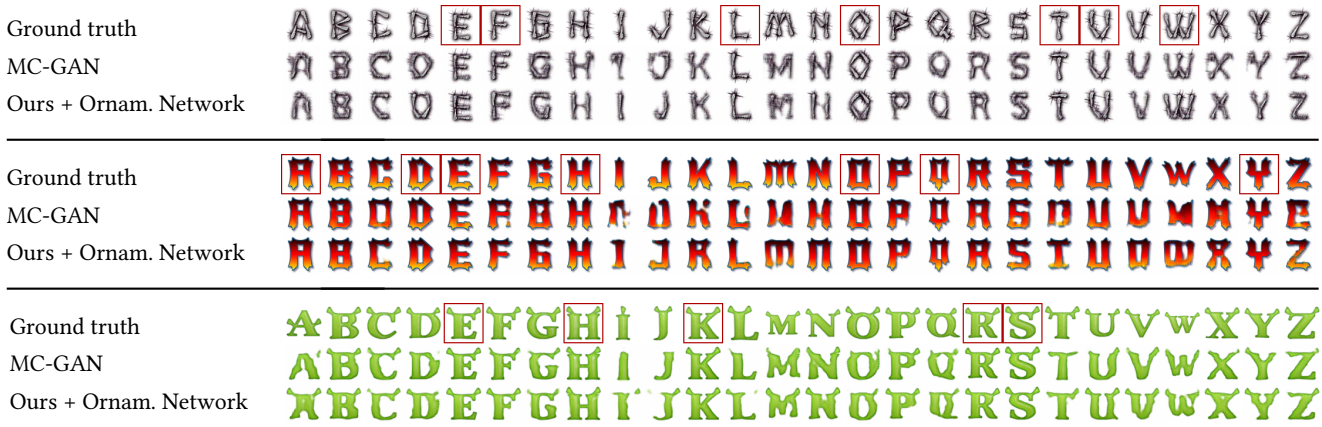

Figure 7: Visualization comparison for our JointFontGAN model + Ornamentation Network (without fine-tuning) on colored / ornamented glyphs of Capitals64 dataset. The ground truth glyphs and the few-shot reference sets (marked in red boxes) are shown in the 1st row. The 2nd row shows the results of MC-GAN [1]. The 3rd row shows the results of our model with Ornamentation Network.