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PORTFOLIO

My portfolio includes some projects on different topics focusing on computer vision with applications in text image synthesis and manipulation, unsupervised image generation, image-to-image translation, and self-supervised learning. Below are a few of the primary projects on which I've worked.

1. CONTROLLABLE UNSUPERVISED GENERATIVE MODEL



Highlights

- Designed a controllable unsupervised generative adversarial network architecture
- Disentangled the content and style in an unsupervised fashion
- Applications in image style transfer, attribute manipulation, domain transfer, etc. without label supervision

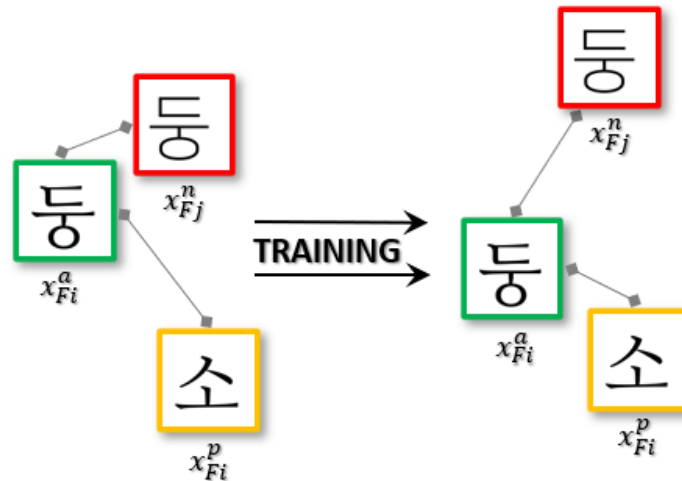
Programming Language

- PyTorch

Publication

- Under review in Pattern Recognition Letters

2. FEW-SHOT FONT GENERATION



Highlights

- Developed Metric learning and Contrastive learning-based network architectures
 - Learning font style latent space for few-shot font generation
- Component-guided Korean and Chinese font generation algorithms
- Applications in text image editing, font library creation, cross-lingual font generation

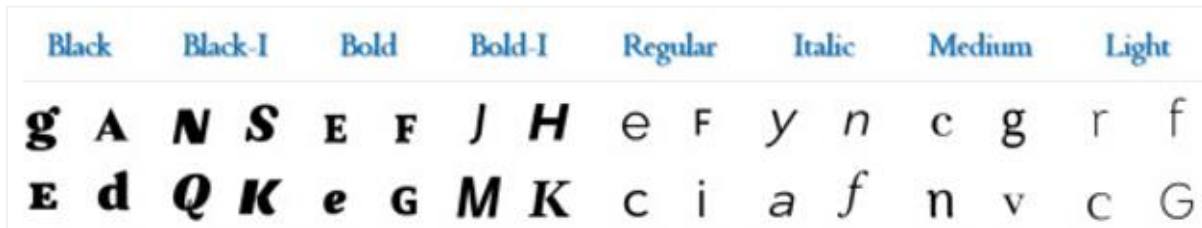
Programming Language

- PyTorch
- TensorFlow

Publication

- **Hassan, A. U.**, and Choi, J., “Fontnet: Closing the gap to font designer performance in font synthesis,” AI for Content Creation (AI4CC), CVPR, 2022.
- **Hassan, A. U.**, and Choi, J., Under Review, AAI, 2023.
- Park, J., **Hassan, A. U.**, Choi, J., “CCFont: Component-Based Chinese Font Generation Model Using Generative Adversarial Networks (GANs),” MDPI Applied Science, 2022.
- Park, J., **Hassan, A. U.**, Choi, J., “Few-Shot Korean Font Generation based on Hangul Composability,” KTSDE, 2022.

3. FONT FAMILY GENERATION



Highlights

- Font family data collection, preprocessing, and labeling
- Developed a generative model for real-time font family generation
- Applications in Variable font for typeface variations

Programming Language

- PyTorch

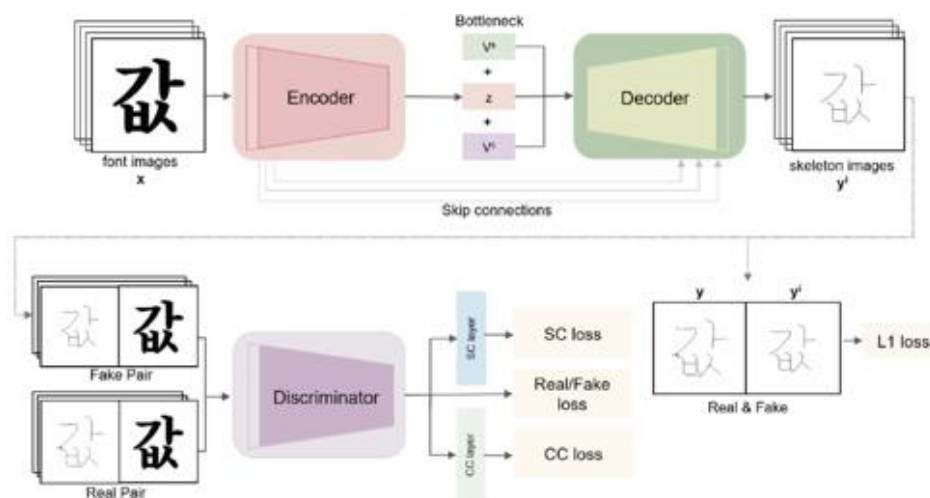
Publication

- **Hassan, A. U.**, Ahmed, H., and Choi, J., “Unpaired font family synthesis using conditional generative adversarial networks,” Knowledge-Based Systems, 229, 107304. <https://doi.org/10.1016/j.knosys.2021.107304>. (2021)

Patent

- **Hassan, A. U.**, and Choi, J., “METHOD AND APPARATUS FOR GENERATING FONT FAMILY USING DEEP LEARNING,” Soongsil University Industry-Academic Cooperation Foundation, Patent, No. 2-2006-027849-9 (Korea), 2022.

4. TEXT IMAGE SKELETONIZATION



Highlights

- Character image skeletonization using an end-to-end generative adversarial network (GAN)
- Developed Skeleton-driven Korean font synthesis model
- Applications in object representation, manipulation, tracking, recognition

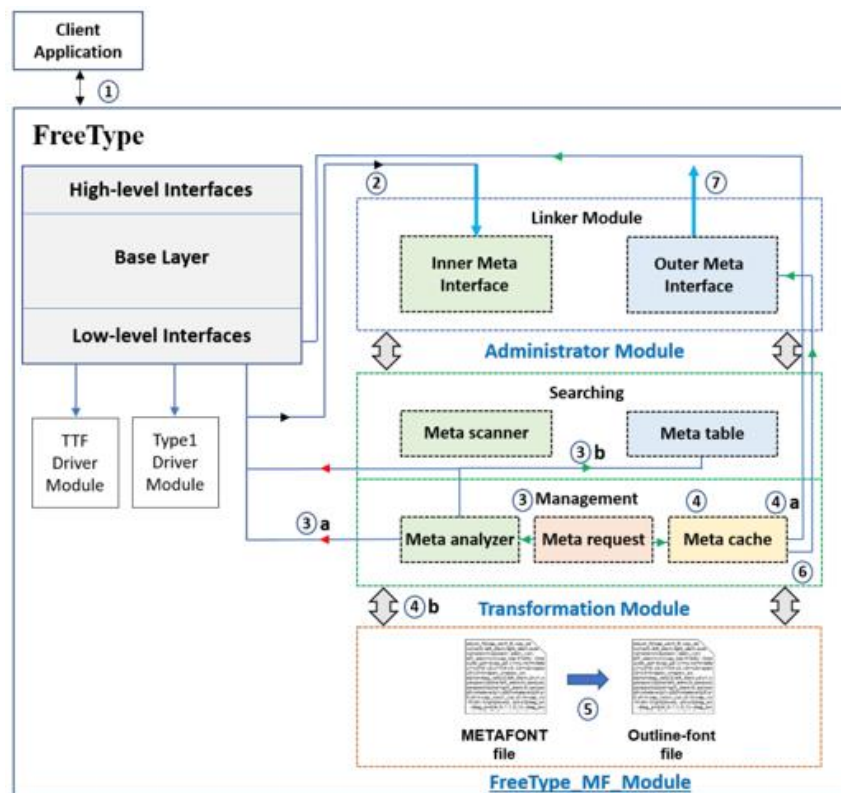
Programming Language

- TensorFlow
- [Code SkelGAN](#), [Code SKFont](#)

Publication

- Ko, D. H., **Hassan, A. U.**, Suk, J., and Choi, J., “SKFont: Skeleton-driven Korean font generator with conditional deep adversarial networks,” International Journal on Document Analysis and Recognition (IJ DAR), 1–13. <https://doi.org/10.1007/s10032-021-00374-4>
- Ko, D. H., **Hassan, A. U.**, Majeed, S., and Choi, J., “Skelgan: A font image skeletonization method. Journal of Information Processing Systems,” Journal of Information Processing Systems, 17(1), 1–13.

5. METAFONT MODULE FOR FREE TYPE RASTERIZER



Highlights

- Rasterized MetaFont in Linux operating system
- Integrated driver module of MetaFont in FreeType rasterizer

Programming Language

- C, Linux

Publication

- **Hassan, A. U.**, Jeong. G., and Choi, J., “FreeType MF Module: A module for using METAFONT directly inside the FreeType rasterizer,” TUGboat, Volume 39 (2018), No. 2).

6. DHL AND ENDICIA POSTAGE LABEL PRINTING EXTENSIONS FOR OPENCART



Highlights

- DHL Label Printing Extension serves OpenCart based online stores.
- You can generate DHL label directly from Order page of your store.
- Module settings allow you to change many configurations.
- You can set output format to image or PDF for your labels.
- You can also print labels directly from browser using Zebra Printer.
- You can generate unlimited number of labels using this extension.

Programming Language

- OpenCart, PHP, HTML, MySQL

Extensions

- [DHL Shipping Labels with Postage](#)

Demo

- [YouTube Tutorial](#)