



G08-Font2Font

Final Present

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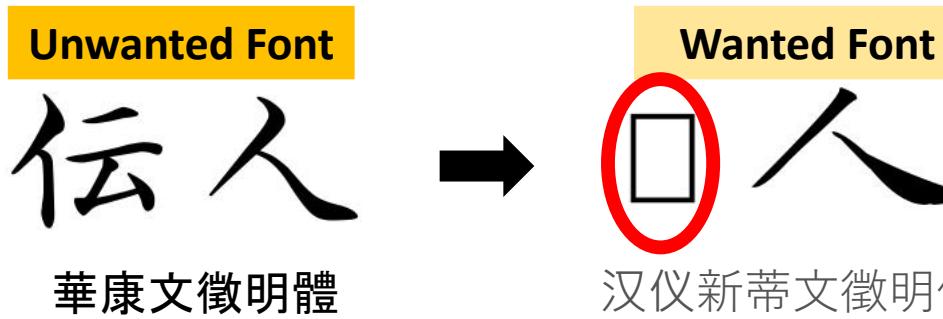
Outline

- **Motivations**
- **Encountered Problems**
 - Noise & blur on generated pictures
 - Model outputs are all same
- **Proposed Solutions**
 - Data augmentation
 - Generator feature combination
 - Font transfer learning
 - Difficulty-aware model architecture adjustment
- **Evaluations**

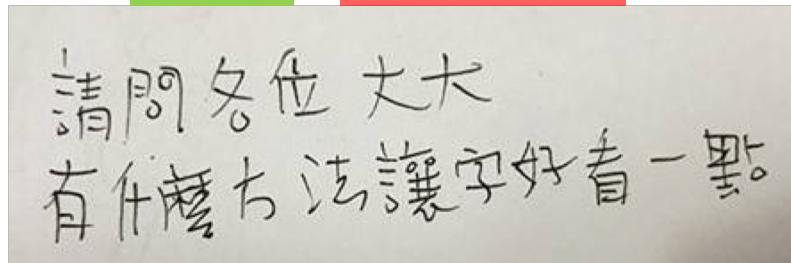


Motivations

- Missing words in Chinese fonts is unpleasant



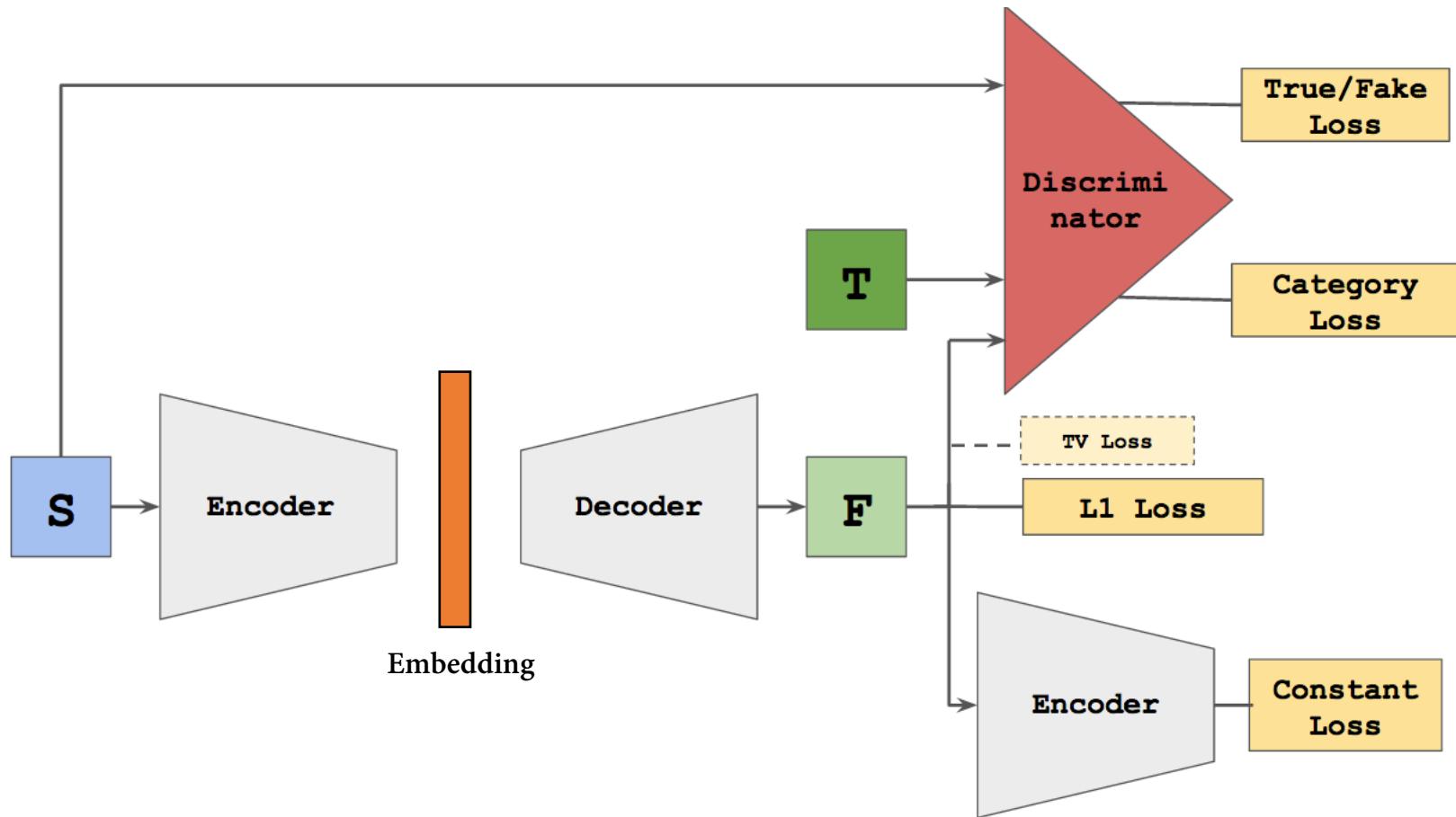
- Bad handwriting is hard to read, but often fast



Slow High Quality

大大

Zi2zi Architecture [1]





Encountered Problems

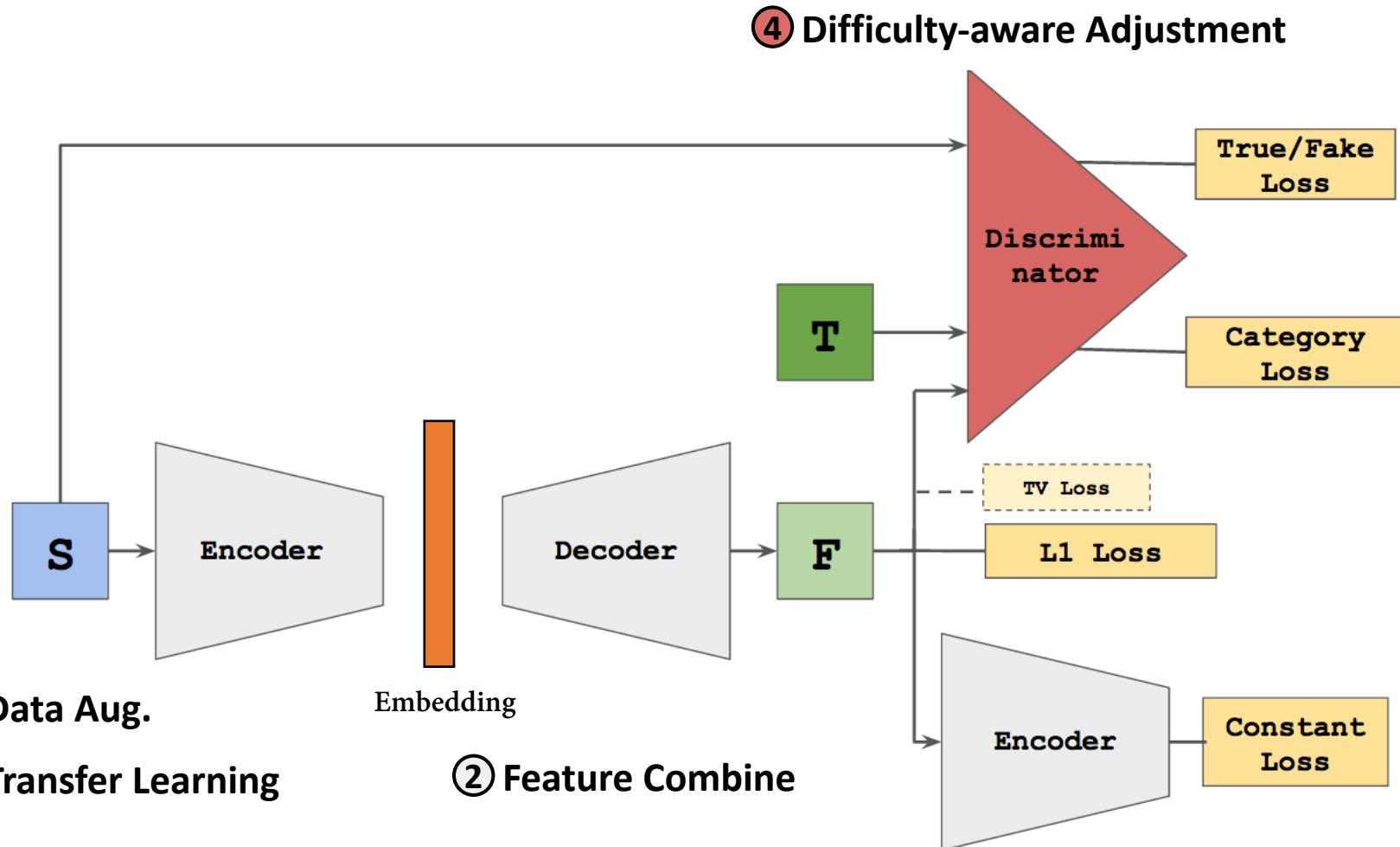
- Noise & Blur
 - 標楷體 -> 文徵明體

萬 佛 朝 宗

- Model outputs are all same on harder task
 - 新細明體 -> 文徵明體

書 卧 書 卧

Proposed Solutions

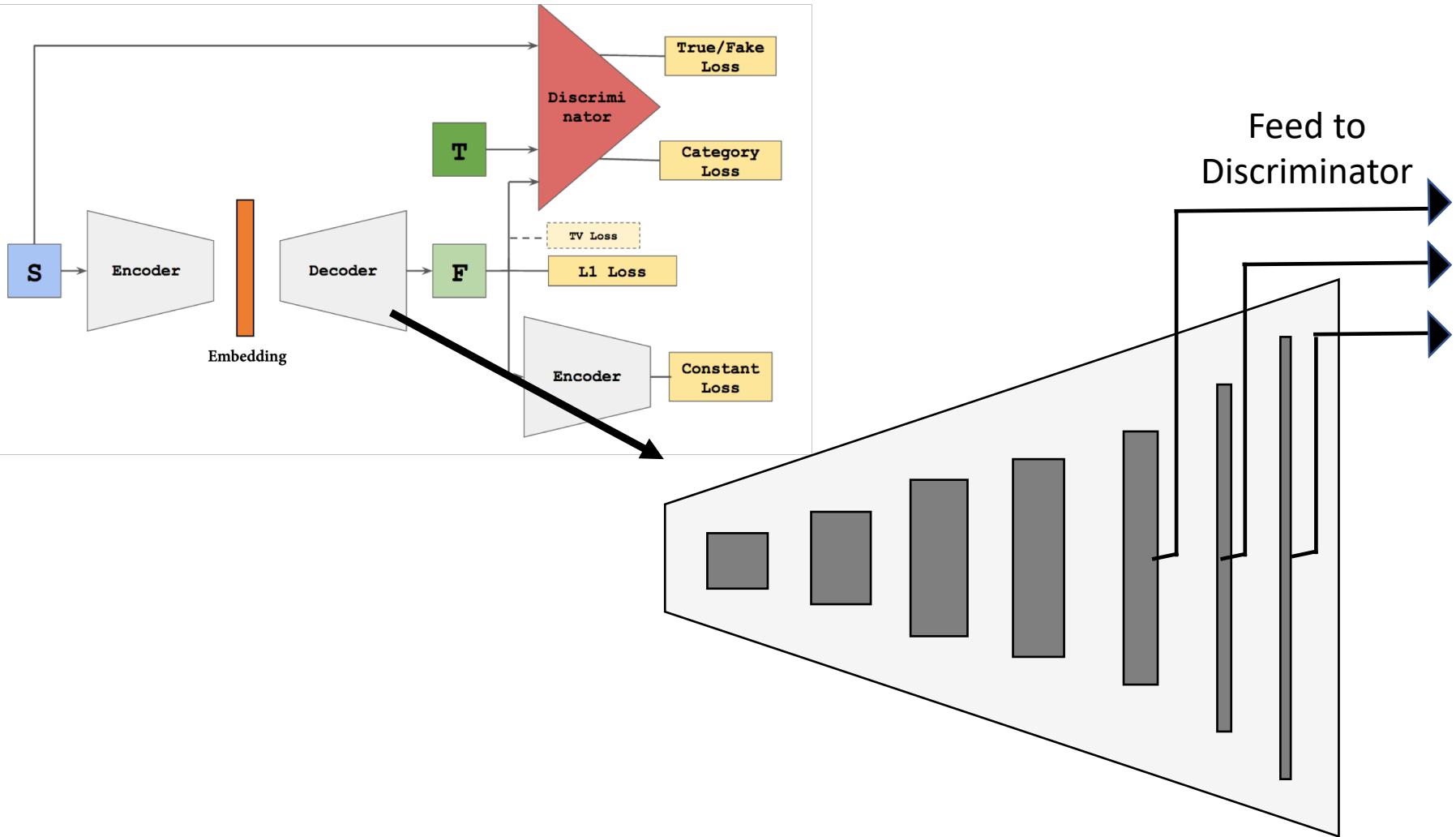




1 Data Aug.

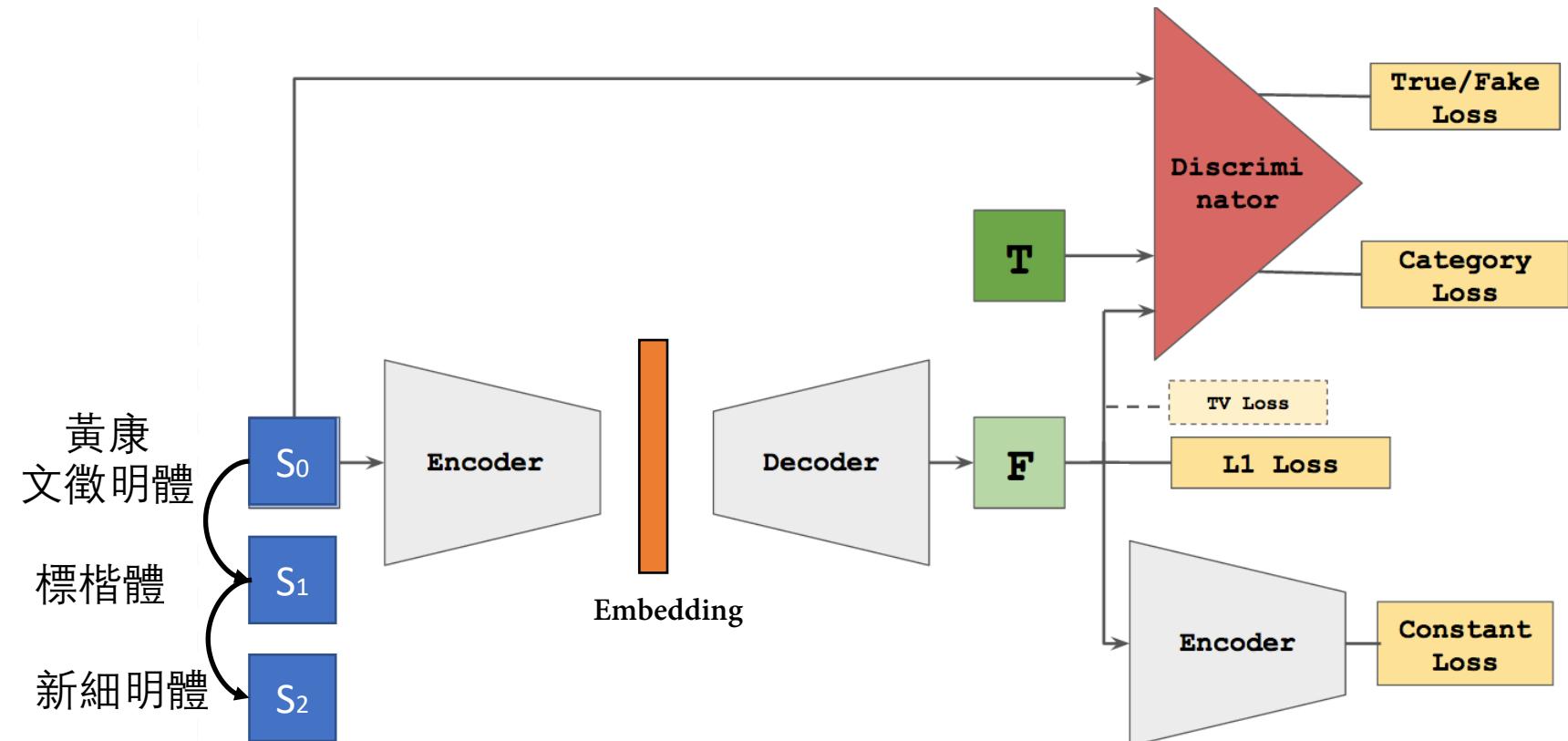
	Raw	Enlarge (Bold)	Blur	Rotate
In				
Test				

2 Feature Combine



3 Font Transfer Learning

Train from easy to hard task (標楷體->新細明體)

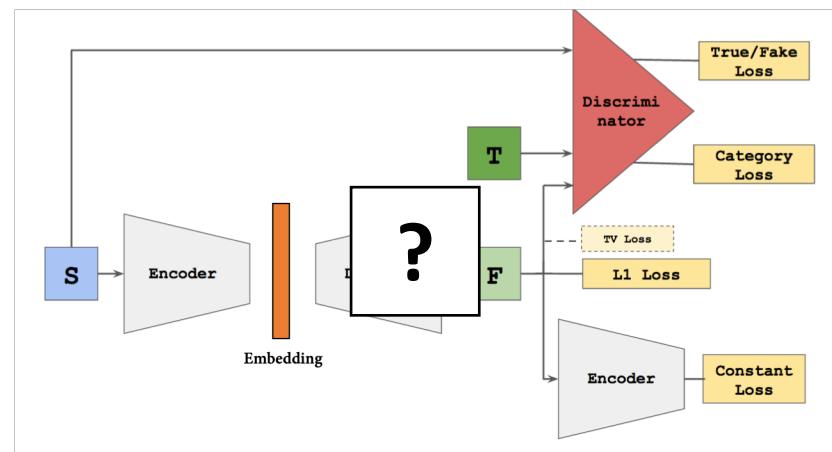
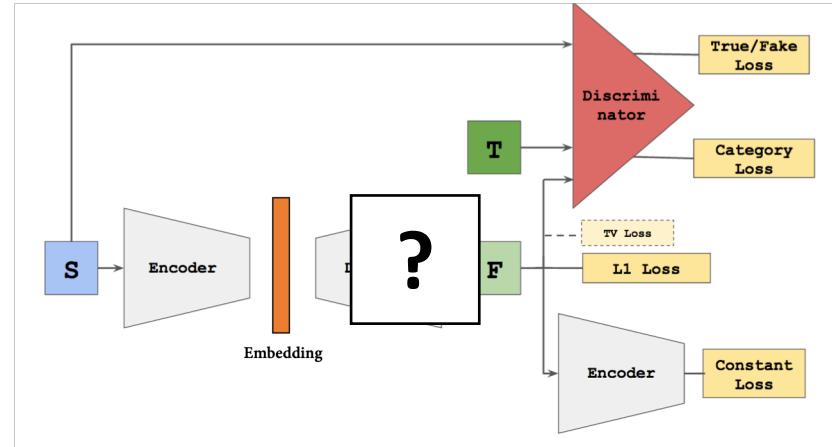


4 Difficulty-aware Adjustment

Easy Task



Hard Task





Evaluation – Test Image

	標楷體	新細明體
zi2zi	萬 佛 朝 宗	齋 齋 齋 齋
Hierarchical	萬 佛 朝 宗	衆 值 衆 衆
Data Augmentation	萬 佛 朝 宗	萬 佛 朝 宗
Enhance Discriminator	萬 佛 朝 宗	萬 佛 朝 宗
Target Font Golden Data	萬 佛 朝 宗	萬 佛 朝 宗

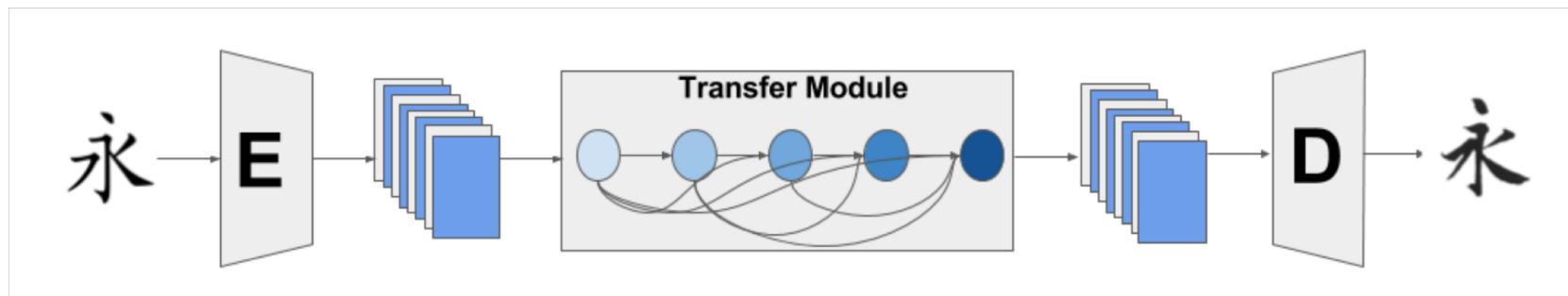
Evaluation - PSNR

	標楷體				新細明體			
	萬	佛	朝	宗	萬	佛	朝	宗
zi2zi	13.72	13.21	14.12	15.40	10.00	10.41	10.38	10.69
Hierarchical	13.27	12.22	13.65	14.51	10.80	10.57	10.53	11.08
Data Aug.	13.37	12.86	13.02	15.46	12.07	12.33	12.41	13.82
Enhance Discriminator	12.31	11.67	11.67	12.54	11.82	12.30	12.15	13.79

Back-up Slides

CycleGAN (WACV'18)

- **E** : Encodes image to lower dimensional space
- **Transfer Module** : Extract Features
- **D** : Decodes to target font



HGAN (BMVC'18)

- Feed Generator & Discriminator with different level of features

