

# CS766 project proposal: Generating Chinese Handwriting

## Team member

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## Proposal

### 1) Briefly explain what problem you are trying to solve.

The problem we want to solve is transferring Chinese handwriting fonts. We are expecting to transfer an existing font to a more personalized font, based on some pictures from the personalized font.

### 2) Why is this problem important? Why are you interested in it?

Chinese calligraphy has a history of more than a thousand years. Good handwriting or calligraphy is often regarded as a kind of cultural expression and also has visual art values. Some calligraphists' works are so valuable that their works are worth millions of dollars. Many people are expecting that we can create a printable font based on their handwriting style. However, we only have a limited number of their works and there are more than 80,000 characters in Chinese. It is far from enough to create a font. Based on the description above, creating such a mapping model is both important and has many practical uses.

Most kids in China have at least a couple of calligraphy classes in school. At that time, students who have good handwriting may receive many compliments from the teachers. We are not the ones who have the best handwriting, and doing this project is kind of making our childhood dreams come true :-D

### 3) What is the current state-of-the-art?

Synthesizing handwritten Chinese characters is not a new concept, Xu et al.[6] tried an implementation in 2009 but the result is not impressive. Over the years, multiple image-to-image transformation algorithms have been proposed, including, EMD[1], Cycle-GAN[2], GANimorph[3], FUNIT[4], and people have been trying to generate Chinese characters based on those algorithms.

Some notable recent works include,

Chang et al.[7] used Cycle-GAN to generate hand-written Chinese characters.

Xie et al.[5] developed DG-font to mimic Chinese computer fonts.

**4) Are you planning on re-implementing an existing solution, or propose a new approach?**

We are planning on combining two ideas together and propose a new method based on the existing approaches. We would like to try the new method with the state-of-art technology to re-do the previous attempt and try to reach a higher accuracy.

**5) How will you evaluate the performance of your solution? What results and comparisons are you eventually planning to show?**

We would like to issue surveys and let humans do the identification of the generating handwriting and grade the results. One of the aspects will be whether the generating one is readable and can be identified easily. Another aspect will be whether the handwriting got the “style” correctly by comparison with the input. The ideal result will be that the algorithm can generate Chinese handwriting with the style of the input handwriting. The former research has achieved about 50% accuracy to successfully generate the handwriting, and we would like to improve the accuracy with the latest technology.

**Time Table**

Time	
3/7	Read existing papers in detail
3/14	Implement one algorithm mentioned in paper
3/24	Rudimentary testing on handwriting
3/31	Project Midterm Report
4/14	Identify issues with handwriting and optimize
4/24	Survey and evaluate performance
5/6	Finish project website

## Reference

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