Style Consistent Kannada Font Generation

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Problem Statement

- The project is to automate the generation of new fonts for the Kannada scripts.
- We also attempt to achieve style transfer, by incorporating the style available from the various fonts available in English to the letters of the Kannada script.
- The current advancements in web-technologies focussing to provide the best customer experience to not just English speakers but to non-English speaking users as well, has created a greater demand for good quality fonts for a variety of local languages.

Background

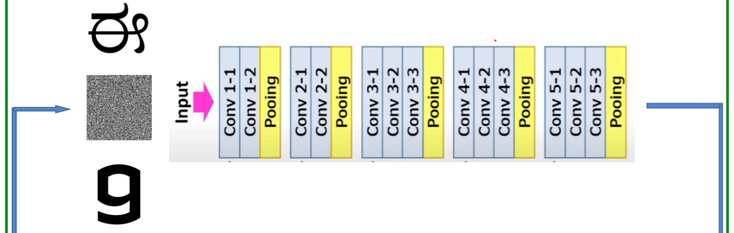
- Although a lot of work has been done in the field of style transfer, it is usually done for languages that have abundance of existing fonts.
- These methods usually depend on the large amount of data already being available.
- Indian Languages such as Kannada do not have many available fonts, and hence these methods are not applicable.
- Hence we need to develop a new approach to generate fonts for languages like Kannada.

Dataset and Features

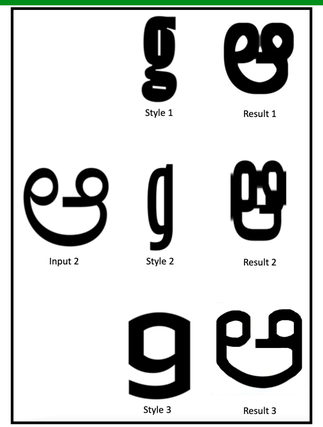
- The data Requirement for the project is
  1. Glyph image of the alphabet ‘g’ in various fonts of English language
  2. Glyph image of all letters of the Kannada language along with all the maatras.
- GPU power to generate the new fonts.

Design Approach

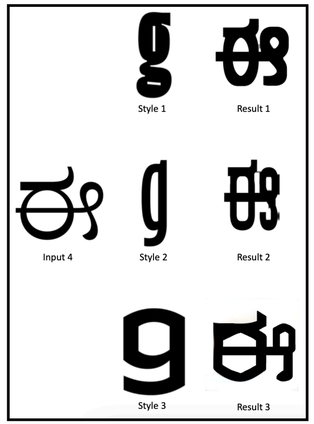
- We use the Neural Style Transfer approach to achieve style transfer.



Results and Discussion



- Default Style loss function works on colour patterns and shapes, which is not applicable to black fonts.
- Hence we developed our own loss function to capture the style of fonts



- Style Transfer was successful from English fonts to Kannada.
- The fonts generated contain some noise.
- However this can be removed using simple Image processing techniques.

Summary of Project Outcome

- Noise present in the generated images can be removed using simple image processing techniques.
- The limitation of the method is that it works well with thick fonts only.

Conclusion and Future Work

- We successfully achieved style transfer using Neural Style Transfer Approach.
- This method can be extended to generate fonts for other Indian languages as well

References

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Research paper

2. Samaneh Azadi, Matthew Fisher, Vladimir Kim, Zhaowen Wang, Eli Shechtman, Trevor Darrell, “Multi-Content GAN for Few-Shot Font Style Transfer”, Dec. 01, 2017. [Online] Available: https://arxiv.org/pdf/2006.06676.pdf [Accessed Jan. 16,2021]

Team Details

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