Interactive system for converting personal handwriting into font using flutter app for multi-purpose use

SYNOPSIS

KIT's College of Engineering (Autonomous), Kolhapur
Computer Science and Engineering

Final Year
SEM VII

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Project Guide:
Associate Prof. Deepali K. Jadhav
(Specialization: Database Engineering)

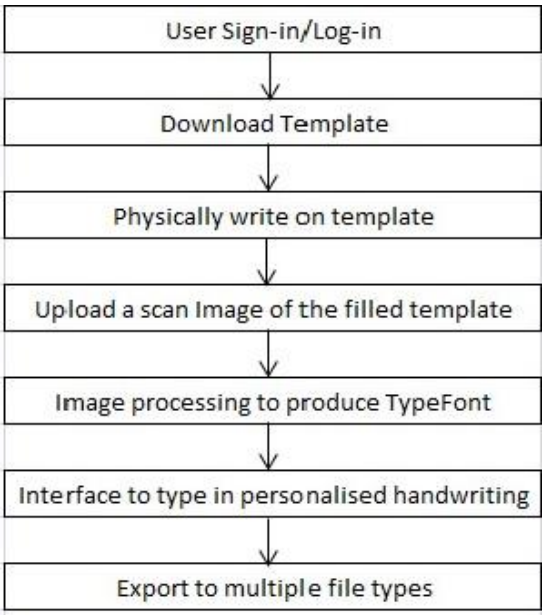
1. **Title: Interactive System for converting personal handwriting into font using flutter app for multi-purpose use**

2. **Team Members**

Group No.	Roll no	PRN No	Name
12	12	1718000194	Tanis ka Chougule
	20	1718000203	Vedika Hardikar
	22	1718000205	Shivam Hasurkar
	36	1718000224	Jaydatt Patil

3. **Problem Statement**

To develop an automated system where a user can create a new font with the help of images uploaded by the user and use/export font for other applications through the use of python, NLP, and CNN.



Block Diagram

4. Abstract

Our aim is to create an app that can convert your handwriting into a font, which in turn creates your own unique font. We see this as a step towards merging the physical and the digital world through documentation. Basically, this mobile application will run on an android phone and with the help of the mobile camera capture images of a paper where the English alphabets and digits are written in an orderly manner and convert into a font. Our app will help you in personalizing your documents along with minimizing your efforts. The content written with this font can be exported as .pdf, .docx and/or .png. Along with this, you can create your own handwriting font and export your font and use it in other applications over the internet.

5. Motivation

Currently, there are only limited fonts available to use for everyone and all are standard fonts used to type any document, and here is when your idea comes into the picture. By creating our own font file it will be easy to type instead of writing a document it not only gives a personal touch to the document but also increases the speed to complete the document as typing speed is eventually faster than writing speed. As you are using a font to type, your handwriting will be the same throughout unlike when you write on a paper. Also, there will be fewer to no chances of a spelling mistake. It will save the paper as it will be saved as a soft copy and would be easy to access anytime.

6. Objectives

1. To convert handwriting into a font
2. To create a unique font for every user
3. To help give a personal touch to every document
4. To make it very difficult to differentiate between handwritten and typed documents

7. Working and Literature Review

This project as planned is divided into two main tasks. The first one is to capture the user's handwriting and the second one is to convert that image into a font and further use it in different ways. We can finalize a template to write all 26 letters in capital and small along with the numeric from 0 to 9 and some special characters that we use. Users can print this template and write on it in their own handwriting and upload it on our application or they can write characters on a paper and upload the photo on our application. Once the picture is uploaded we can use an algorithm currently used by many websites to convert a .PNG file to .OTF or .TTF file. After conversion to translate the typed character into their handwriting we can access the .OTF or .TTF

file and print it on the screen at the same time. This end product can be exported into other formats for further use by the user. None of the previous works is well defined in this flow for a user to use everything on one platform. Multiple Computer Science concepts have been used for individual tasks like handwriting recognition, image processing. Glyphs is another format that is prominently used in previous work on an individual task of this project.

8. Software and Hardware requirements

1. **Python** language is used it makes tasks like image processing, natural language processing, and character recognition easy.
2. To develop a flutter app with desktop support **Flutter SDK** is used.
3. Laptop specifications to develop an app are **64-bit environment** along with **8 GB RAM.**
4. Software required for deploying is **Android OS > 7.0**.
5. The hardware requirement is a **mobile camera**.

9. Plan of work

Sr. No.	Tasks to be completed	Month
1.	Group formation	August
2.	Searching for topics	September
3.	Presenting and Finalizing Topic	October
4.	Requirement Gathering	October
5.	Research and Documentation	November
6.	Implementation Phase 1(Initial coding of the logic)	December
7.	Designing front-end and coding it in dart (flutter)	January
8.	Increasing code efficiency	January
9.	Testing	February
10.	Final Application	March

10. Bibliography/References

[1] Existing Website: "Calligraphr" - https://www.calligraphr.com

[2] IEEE paper titled, "Interactive genetic algorithm for font generation system" written by Kaori Yoshida, Yuta Nakagawa and Mario Köppen published in 2010 World Automation Congress. (https://ieeexplore.ieee.org/document/5665311)

[3] IEEE paper titled, "Component Extraction from Handwritten Chinese Characters for Font Synthesis in Personal Style Using Smartphone APP" written by Chen-Ying Hsieh and Jeng-Wei Lin. (https://ieeexplore.ieee.org/document/7794435).

[4] IEEE paper titled, "Complete font generation of Chinese characters in personal handwriting style", written by Jeng-Wei Lin; Chian-Ya Hong; Ray-I Chang; Yu-Chun Wang; Shu-YuLin; Jan-Ming Ho (https://ieeexplore.ieee.org/document/7410321)

[5] IEEE paper titled, "Interactive system for handwritten-style font generation", written by Jungpil Shin; K. Suzuki (https://ieeexplore.ieee.org/document/1357180)

[6] IEEE paper titled, "Multi-Language Online Handwriting Recognition", written by Daniel Keysers; Thomas Deselaers; Henry A. Rowley; Li-Lun Wang; Victor Carbune (https://ieeexplore.ieee.org/document/7478642)