

Experimental Variable Devanagari
Display typeface

P3 Project Report

Dishant Mehlawat / 216450010



P2 Project Report

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Project By :

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Project Guide :

Prof. Prasad Bokil

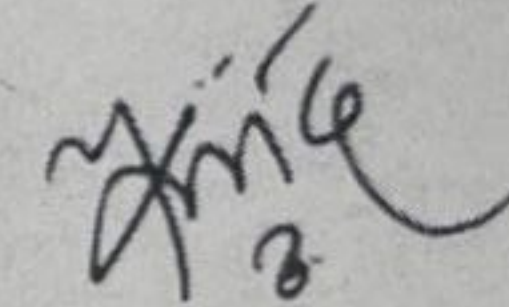
External Project Guide :

Kimya Gandhi

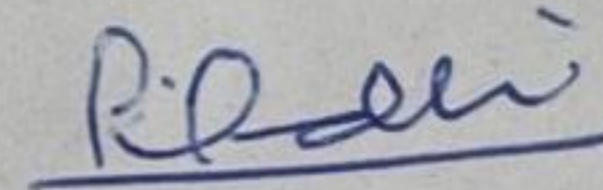
Approval Sheet

This project report entitled "Experimental Variable Devanagari Display typeface with Decorative Axis" by Dishant Mehlawat, 216450010 is approved for partial fulfillment of the requirements for Masters of Design Degree in Communication Design.

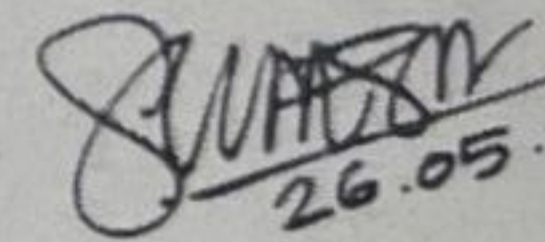
Project Guide: Prasad Bokil



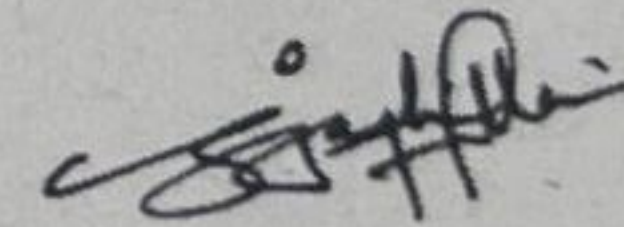
External Guide: Kimya Gandhi



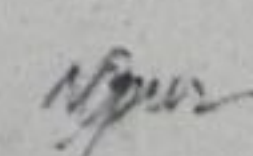
Internal Examiner: SUDESH BALAN


26.05.2023

Chairperson: Jayesh Pillai



External Examiner: / NOOPUR DATHE



Date: 03/05/2023

Place: Mumbai

Declaration

I declare that, this written submission represents my ideas in my own words and where others' opinions or words have been included, I have adequately cited and referenced the sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated any idea/data/ fact/source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been appropriately cited or from whom proper permission has not been taken when needed.

Name: Dishant Mehlawat

Roll no: 216450010

Date: 03/05/2023

Acknowledgment

I am grateful to **Prof. Prasad Bokil** for his valuable guidance at every stage of the project as well as all the professors and jury members for their feedback during every presentation.

I also thank My External Guide **Kimya Gandhi** for her valuable guidance and feedback at every stage of the project..

I thank all my dearest friends, and batch mates who spent their valuable time with and provided me the motivation, and other relevant resources regarding this project.

This project would not be possible without my college, IDC School of Design, IIT Bombay, and people associated with it. I hereby, thank all faculty members, administrative staff, mess workers, shop-keepers, and delivery guys inside the campus.

Typeface Used to write the report:

Acuta by Elena Albertoni and **Source Sans Pro** by Paul D. Hunt

Abstract

Indic scripts have a rich history and have been used for centuries in the Indian subcontinent. However, designing typefaces for these scripts presents unique challenges compared to Latin scripts. In recent years, Indian type designers have significantly progressed in developing complete and refined solutions for Indic scripts. With the expansion of digital media and the growing number of audiences, the demand for Indic fonts continues to rise. The digitization of Indic fonts with Unicode has significantly increased usage across multiple devices for various applications. With the advancements in font technology, a single optimized font can efficiently work in print and digital media.

The project investigates the diverse forms and styles of the Devanagari script through the development and experimentation of a variable font. The project utilizes innovative variable font technology to create two axis - the weight axis and the decorative axis. Unlike conventional variable fonts that merely alter the width or weight of a typeface, this project takes it a step further by incorporating the decorative axis. The decorative axis adds a new dimension to the font by changing its visual grammar, allowing for more flexible usage across various media and applications.

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Introduction

1.1.Variable Font Technology

Variable font technology has transformed the way designers and developers approach typography. With this technology, a font family can be defined in a single font file, making it easier for designers to work with typography. The font file contains various "master" font style variations and math-based rules allowing users to morph between those variations by adjusting simple numeric values. This results in a font file that can produce variations with relatively little file space.

These fonts can change dynamically based on various factors, such as weight, width, and even stylistic elements. For example, the Anek font, a variable Devanagari font created by the Ek Type Foundry, allows designers to adjust the weight and width of 9 Indian languages and Latin seamlessly. This font is optimized for print and digital media, making it an excellent choice for various applications.

Overall, variable font technology has opened up new possibilities for typography design and made it easier for designers to create aesthetically pleasing and functional fonts. With the ability to adjust font characteristics on-the-fly, designers can now experiment with new typographic variations and create more engaging designs.

1.2.Aim

By experimenting with shapes and cutting-edge variable font technology, this project intends to investigate the different forms and styles of the Devanagari script before constructing the script's primary characters. The project aims to design a typeface with two adjustable axes: the decorative (called brush axes), inspired by my brush pen calligraphy and the weight axes. The ornamental axis gives the font a new dimension by altering its visual syntax, enabling more versatile usage across different media and applications.

1.3.Learning Objective

Through this project, I aim to learn about variable font technology and its potential applications in Indic scripts. The project also seeks to understand the proportions of the Devanagari script and investigate how negative and positive space can impact the script's legibility and aesthetic appeal. The project involves rigorous research, experimentation, and refinement to create a typeface that meets the evolving demands of digital media while preserving the rich cultural heritage of Indic scripts.

Brief history of Devanagari Script

The script is an essential part of the visual system of any culture. The Indian script is known as Lipi, a word derived from the Sanskrit root Lip, i.e. to smear. 'Devanagari' is a script of Indian national language. It is an ancient Indian script evolved from ancient Brahmi script. Devanagari is said to be a script that enables one to write any language in the world.

The Devanagari script is used for writing classical Sanskrit and its modern historical derivative, Hindi. Extensions to the Sanskrit knowledge are used to write other related languages of India such as Marathi and Nepal such as Nepali. In addition, it is used to write many other languages including Awadhi, Bihari, Braj Bhasha, Chhattisgarhi, Garhwali, Jaipuri, Konkani, Marwari, Santhali, etc.

The name Devanagari comes from the Sanskrit word Deva meaning God and Nagari meaning city, together they mean literally, the script of the 'City of the gods'. To write this particular script, one needs to hold the tool at a certain angle, with appropriate pressure and maintaining specified proportions of letter forms.

In its traditional form, Devanagari consists of 16 Swara (vowels) and 36 Vyanjana (consonants). The Tamra patra, Birch bark, wood, clay tablets,

cloth, paper, till the ink and pen, the writing techniques of Devanagari has evolved and so its structure.

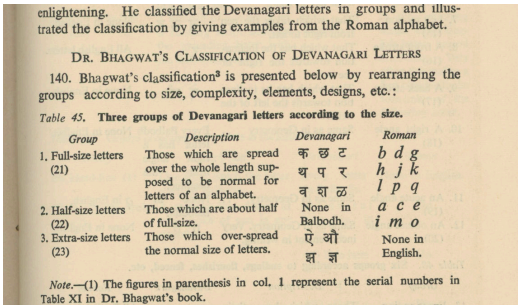
A. CONSONANTS														
1. Gutturals (कंठ्य)	क	ख	ग	घ	ङ									
	k	kh	g	gh	ṅa									
2. Palatals (तालव्य)	च	छ	ज	झ	ञ									
	c	ch	j	jh	ñ									
3. Cerebrals (मूर्धन्य)	ट	ठ	ड	ढ	ण									
	ṭ	ṭh	ḍ	ḍh	ṇ									
4. Dentals (दंत्य)	त	थ	द	ध	न									
	t	th	d	dh	n									
5. Labials (ओष्ठ्य)	प	फ	ब	भ	म									
	p	ph	b	bh	m									
	Palatals	Cerebrals	Dentals	Dento-Labials										
6. Semi Vowels (अंतःस्थ)	य	र	ल	व										
	y	r	l	v										
7. Sibilants (उष्म)	श	ष	स											
	ś	ṣ	s											
8. Aspirate (उष्म)	ह													
	h													
9. Cerebral (मूर्धन्य)	ळ	10. Compounds		क्ष	ज्ञ									
	ḷ			kṣ	jñy									
B. VOWELS														
1. Vowels	अ	आ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ॡ	ए	ऐ	ओ	औ
	a	ā	i	ī	u	ū	ṛ	ṝ	ḷ	ḹ	e	ai	o	ou
2. Vowel-signs	-	।	ि	ी	ु	ू	ृ	ॄ	ॢ	ॣ	े	ै	ो	ौ

Img 1: Image source: Page 175, *Typography of Devanagari* by Bapurao Naik

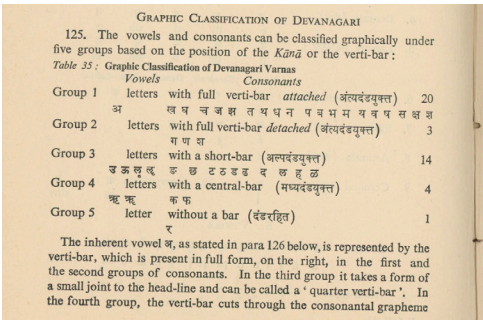
Anatomy of Devanagari

Unlike Latin, Devanagari does not have very well-known terms that can describe its anatomy. People who work extensively in this area have developed helpful terminologies to describe the letter-forms and their structure.

S. N. Bhagwat is usually credited with doing the first graphical analysis of Devanagari letter forms, albeit these were handwritten and not typographic. In his analysis from 1961, Bhagwat divided letter forms into categories based on their construction and shape, as well as created a scheme for anatomy. A more fine-tuned version of the same approach is seen in the work of Bapurao Naik, author of the monumental three-volume work *Typography in Devanagari*, published a decade later in 1971.



Img 2: Naik, Bapurao S. *Typography of Devanagari* : Directorate of Languages



Img 3: Naik, Bapurao S. *Typography of Devanagari* : Directorate of Languages,

Both Bhagwat and Naik's schemes are less about letter anatomy, but instead highlight terms used for vowels and other signs.

The next notable attempt to formalize type anatomy was by Mukund V. Gokhale. An interesting aspect of his work is that he roughly used the human body — in conjunction with the thickness of a pen stroke — as a reference to define the vertical metrics of Devanagari letterforms.

Further to his 2009 paper, *Anatomy of Devanagari Typefaces*, Girish Dalvi has created a scheme for Devanagari letter parts and anatomy. In his paper, he points out that a previous scheme by Mahendra Patel is specific to a particular style of typeface; Dalvi tries to rectify that. For example, he not only defines parts like “knot,” but also offers options for how it could be represented: open, closed, or filled, much the same way a serif can be bracketed, wedge, hairline, etc. Several terms, such as contrast, axis, terminal, and counter have been borrowed from Latin type anatomy, which makes the scheme easy to use in multi script settings.



Img 4: Vowel and other signs used in Devanagari, shown in Adelle Sans Devanagari by Pooja Saxena

ANATOMY OF TYPE — DEVANAGARI. SHOWING ADELLE SANS DEVANAGARI REGULAR



Img 5: Common terms for Devanagari anatomy and vertical metrics, shown in Adelle Sans Devanagari. by Pooja Saxena

Exploring and Sketching different Variable font Styles in various scripts

4.1.Exploration

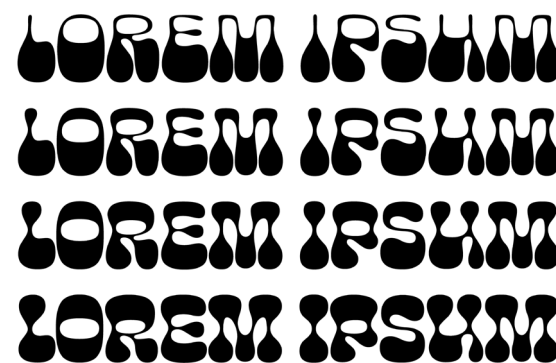
As a part of my exploration of variable fonts, I delved into different scripts, such as Latin and Devanagari. I searched for variable fonts on popular websites like Futurefonts.com and Ohnotype.co, Motaitalics.com, and more. I was inspired by the creativity of various designers who had explored interesting axes in their variable fonts.

One variable font that caught my attention was the Cheee font(Img 6), designed by James Edmondson in Latin script. The font features unique axes called the gravity axes. The gravity axes allow the weight to shift vertically with in font.

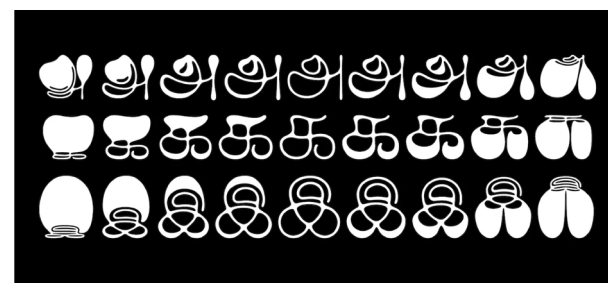
Another intriguing variable I explored was the Ilai font(Img 7) designed by Anagha Narayana in the Tamil script. Designer Anagha Narayanan took inspiration from counter-culture visuals, including movie posters and record covers. The design can speak in many different voices, from an

elegant monoline to a deliciously top- or bottom-heavy weight.

Overall, my exploration of variable fonts and the study of the forms and axes that designers have explored provided me with valuable insights into the potential of variable fonts in typography and graphic design.



Img 6: Cheee By James Edmondson



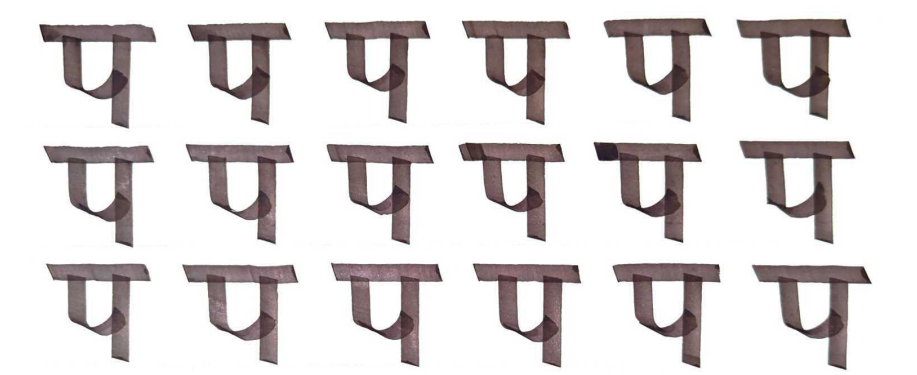
Img 7: Ilai by Anagha Narayana

4.2.Sketching

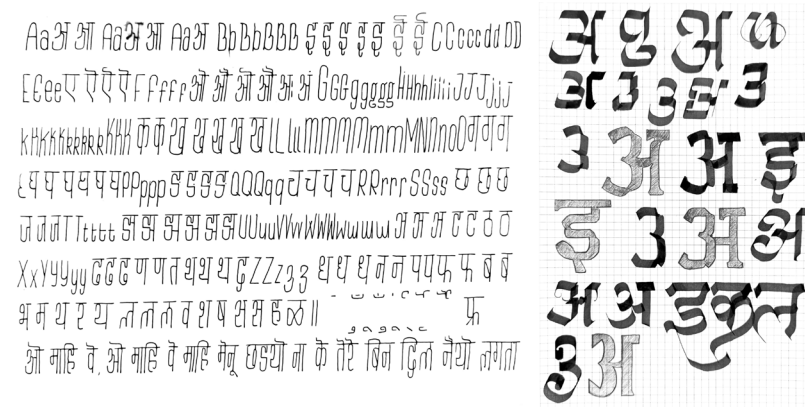
Sketching initially required practising the script with an angled pen on paper, then involved drawing various shapes and styles using various mediums.(Img 8-15)



Img 8: Letter 'क' using 45° cut pen



Img 9: Letter 'प' using 45° cut pen



Img 10.1 : Sketches on Paper

अ अ अ
अ अ अ अ

अ अ अ → अ
अ अ अ → अ

अ अ अ
अ अ अ

अ अ अ अ अ
अ अ अ अ अ

Img 10.2 : Sketches on Ipad

Understanding Variable Font Technology

5.1. Understanding Variable font file format

The font file formats govern the creation, storage, and use of fonts in various programmes. Following are the types pf file formats -

1.TrueType Font (TTF)

In the late 1980s, Apple and Microsoft created the TrueType Font (TTF). Each character in this font type has a simple outline structure for each character , making it simple to scale up or down without losing quality. TTF is widely used on both Windows and Mac platforms.

2.OpenType Font (OTF)

The TrueType Font format was replaced by OpenType Font (OTF). OTF is a more robust format with extra features, including ligatures, swashes, and characters. Microsoft and Adobe created it in the late 1990s. This format is widely used in desktop publishing and graphic design applications.

3.PostScript Type 1 (PS1)

PostScript Type 1 (PS1) is a font format that uses PostScript language to describe the outlines of each character. This format was popular

in the early days of desktop publishing and was widely used in Adobe applications such as Photoshop and Illustrator. However, this format has been replaced mainly by TrueType and OpenType fonts.

4.Web Open Font Format (WOFF)

WOFF is a compressed font format created exclusively for web use and debuted in 2009. Based on the OpenType font standard, it employs compression to lessen the size of font files, accelerating their download and enhancing website performance. WOFF2 was released in 2014 and is the replacement for WOFF. The result is reduced file sizes and quicker loading times because it provides even better compression than WOFF.

5. Variable Fonts (VF)

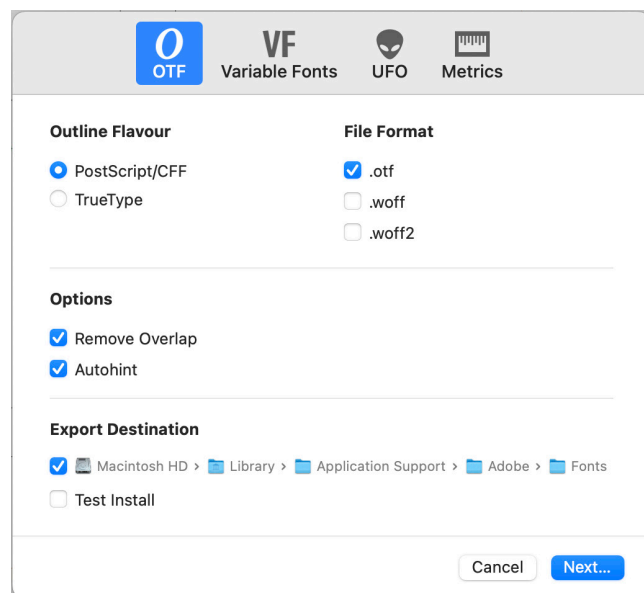
Developing typefaces with adjustable variations in weight, breadth, slant, and other qualities are made possible using variable fonts (VF), a relatively new font format. Applications that support OpenType features can use this format based on the OpenType specification. The variable font format is an effective tool for web design, branding, and other applications because it enables designers to generate a single font file that can be used for various styles and variations.

Due to their adaptability and ability to produce customised variations instantly without needing multiple font files, variable fonts have grown in popularity. A single VF file can contain a variety of design variations that can be readily modified with design tools or CSS. This makes it the perfect

answer for flexible web design because it enables designers to generate unique typography for particular applications or layouts.

5.1.1 Saving a font file in Glyphs App

When saving a font file in Glyphs App, OTF and Variable Fonts are the two major categories that appear (Img 11). Under the OTF format, we have two subcategories - Outline Flavour and file format. The Outline Flavour determine in which outline format the fonts will be exported.



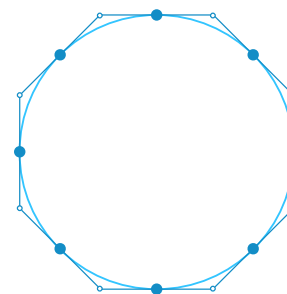
Img 11 : ExportWindow of Glyphs App

Outlines

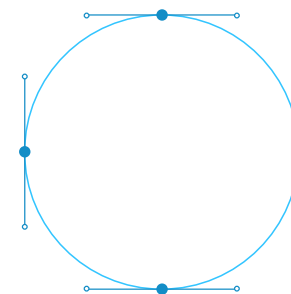
When we talk about "outlines" in fonts, we refer to the shapes and lines that make up each letter or glyph in the font. Outlines are created using a mathematical model called a Bezier curve. Two main types of Bezier curves are used to create font outlines: quadratic and cubic.

Quadratic Bezier curves are defined by three points: the starting point, the control point, and the ending point. The curve smoothly connects the starting and ending points, while the control point determines the curvature of the curve.

Cubic Bezier curves are defined by four points: the starting point, two control points, and the ending point. The curve smoothly connects the starting and ending points, while the control points determine the curvature of the curve. Cubic Bezier curves are more complex than quadratic curves, and are often used to create more complex shapes.



QUADRATIC CURVE
(TRUETYPE)



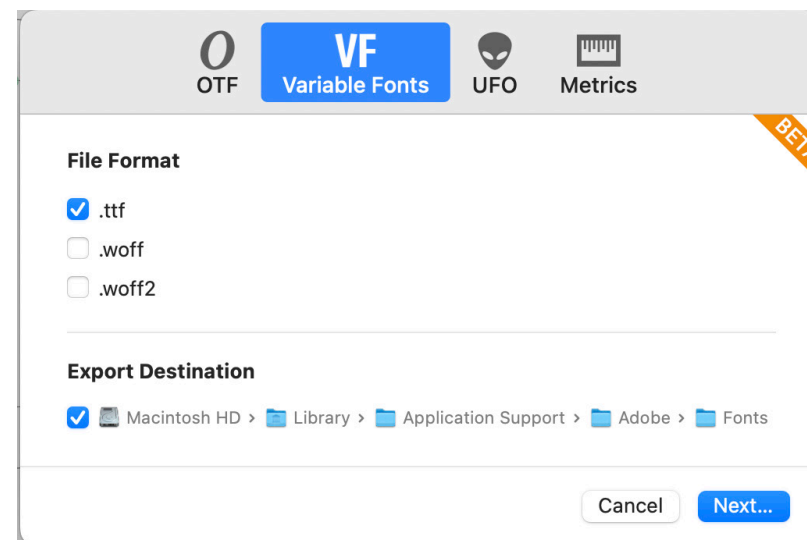
CUBIC CURVE
(POSTSCRIPT)

PostScript fonts are typically used for print publications, such as books, magazines, and newspapers, while TrueType fonts are commonly used for digital applications, such as web design and mobile devices. If your font is used mainly in print, the PostScript Outline flavour may be better due to its better-hinting capabilities and superior print quality. Suppose your font is used primarily in digital formats like websites or mobile apps. In that case, the TrueType Outline flavour may be a better choice due to its better support for screen rendering and compatibility with digital platforms.

The File Format under OTF section provides you with three file formats - .otf, .woff and .woff2. The .otf file format has become the standard format for professional-grade fonts. This format supports both PostScript and TrueType outlines, making it compatible with a wide range of software and platforms. WOFF and WOFF2 are highly compressed versions of the same font files which are developed for use on websites.

I chose the variable font(Img 12) option from the second category for this project, which gives us access to three file types:.ttf,woff, and.woff2.

Variable fonts can be exported in both TrueType Font (.ttf) and OpenType Font (.otf) file formats. However, TTF is often preferred over OTF for variable fonts because it has wider compatibility across different platforms and applications. TTF files can be used for print and digital media and can support Latin and non-Latin characters. On the other hand, OTF is primarily designed for digital media and is more commonly used for non-variable fonts.



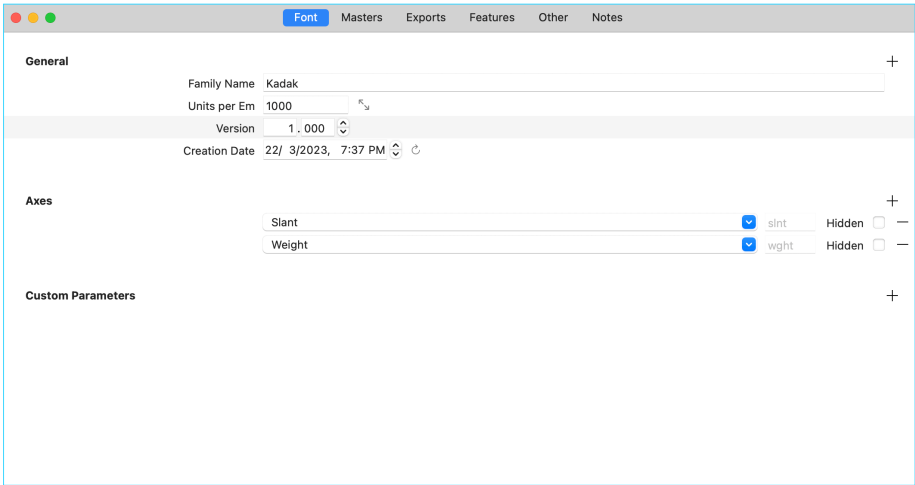
Img 12 : Export Window of Glyphs App

5.2 Understanding the Terminologies in Glyphs App

The font info window in the Glyphs app provides essential information about the font file, including its properties, metrics, and features. The window is divided into categories: Font, Masters, Export, Features, Other, and Notes.

Font:

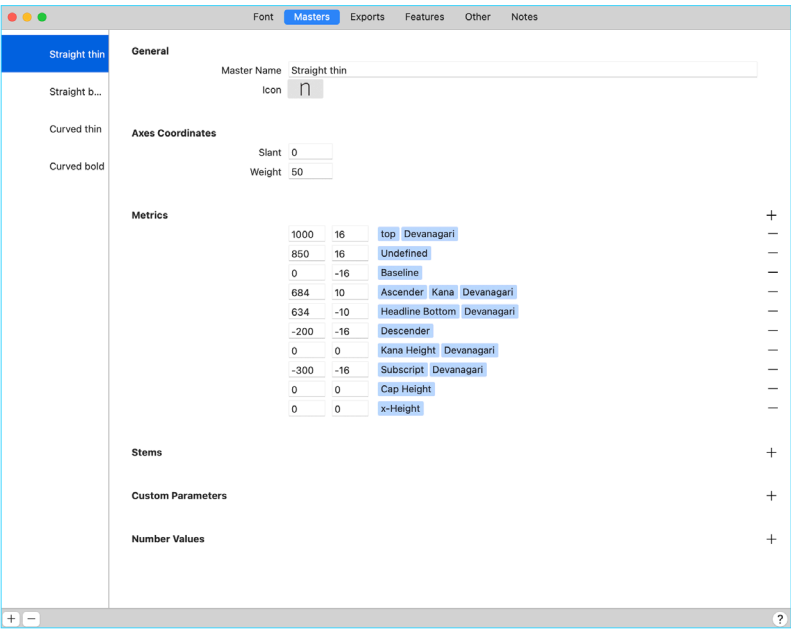
This section displays general information about the font(Img 13), such as the font family name, font style, version number and type of axes. It also includes properties such as the designer's name, copyright, and trademark information. Additionally, it displays the font's Unicode range.



Img 13 : Font Info Window of Glyphs App(Font)

Masters:

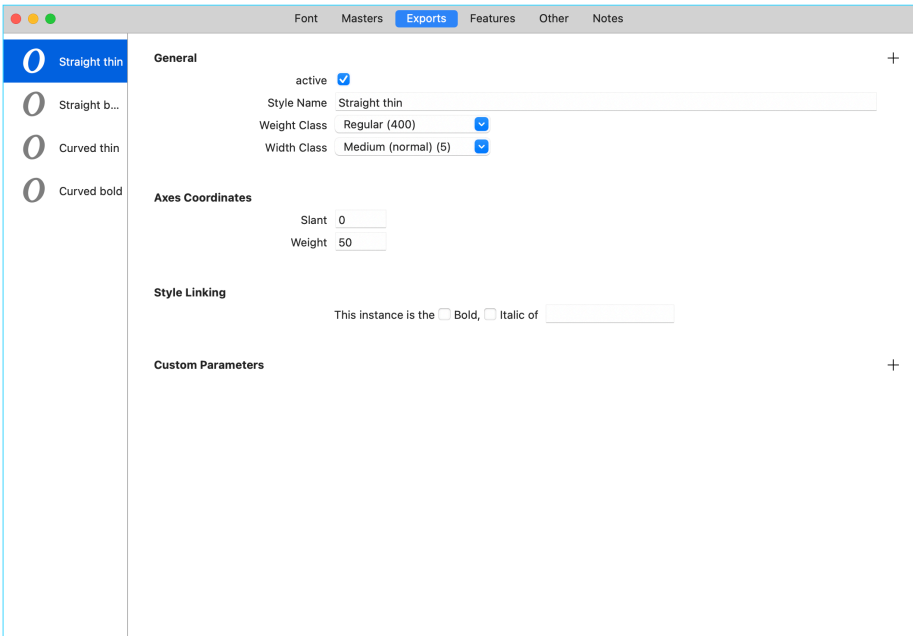
This section displays information about the font's masters(Img 14), which shows information about the underlying design variations of the font, called "masters". In Glyphs, a master is a set of glyph outlines that define a specific style or weight of the font. It shows the number of masters, the style name of each master, and the axes(explained in 6.1) coordinates for each master and metrics for each master.



Img 14 : Font Info Window of Glyphs App(Masters)

Export:

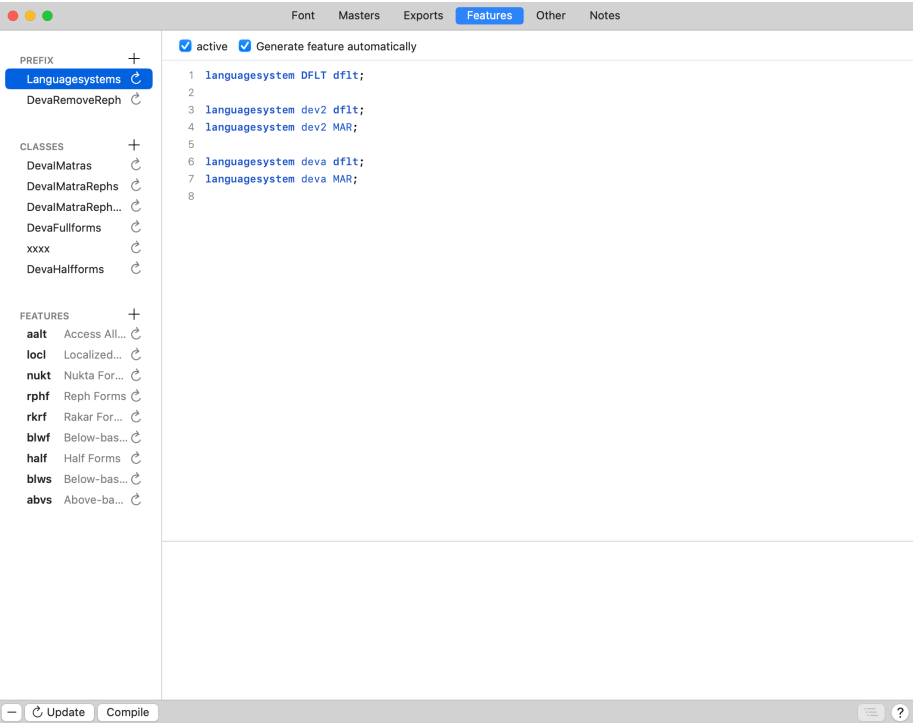
This section provides options for exporting the font file(Img 15). It includes settings for various font formats. It also includes font naming, glyph naming, glyph order settings and axes coordinates. The Axes coordinates allow you to specify the minimum, default, and maximum values for each axes in the font. For example, a font with weight axes may have a minimum value of 100, a default value of 400, and a maximum value of 800. The axes coordinates can be adjusted to fine-tune the interpolation between the masters and generate custom font instances.



Img 15 : Font Info Window of Glyphs App(Exports)

Features:

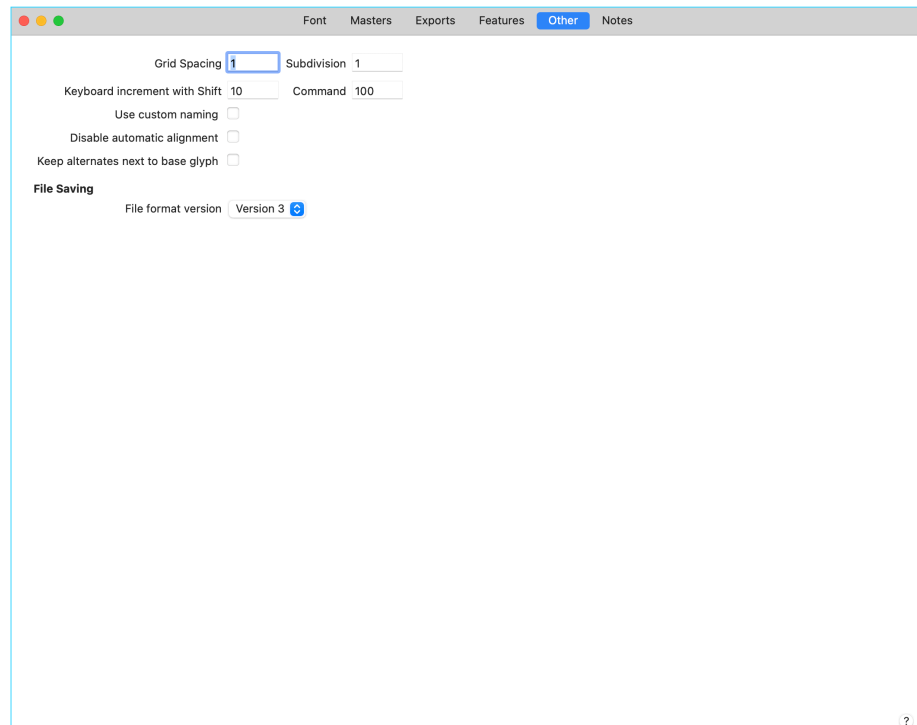
This section allows you to add OpenType features to the font file(Img 16). It includes options for adding ligatures, contextual alternates, and stylistic sets. You can also add custom OpenType features using the Feature code editor. For Devanagari typefaces, it automatically codes the needed feature into the font file for you once the anchors are added to the glyphs.



Img 16 : Font Info Window of Glyphs App(Features)

Other:

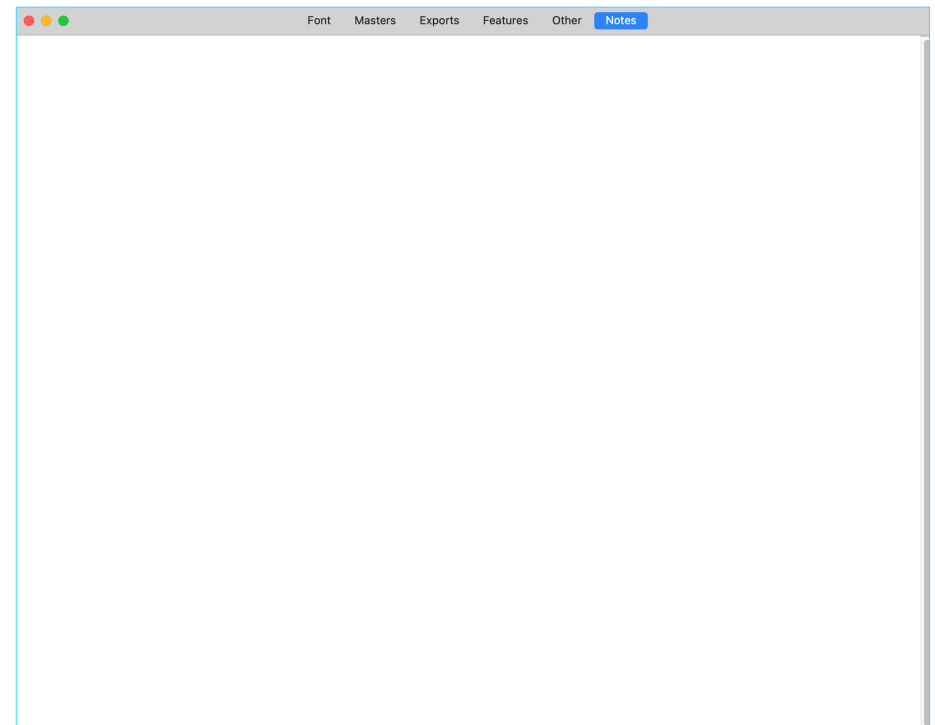
This section displays other font properties that don't fit the different categories(Img 17). It includes settings for grid spacing, stroke contrast, and ascender/descender heights. It also includes options for generating metrics and kerning.



Img 17 : Font Info Window of Glyphs App(Other)

Notes:

You can add remarks or suggestions to the font file in this section (Img 18). You are welcome to discuss the design process, font selection, font inspiration, and other pertinent topics in this section.

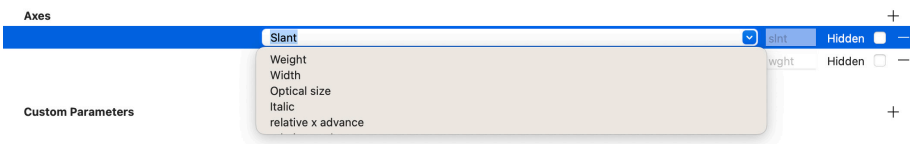


Img 18 : Font Info Window of Glyphs App(Notes)

Exploring Different Axes

6.1. Understanding Axes

An axes is a specific design element that can vary along a defined range in a variable font. Axes are used to create a wide range of font styles within a single font file. In a variable font, an axis can control various design features(Img 19) such as weight, width, slant, optical size, x-height, serif, contrast, and more. Each axis can have multiple instances and specific settings for that axes. For example, the weight axis may have light, regular, medium, semi bold, bold, and black cases. Using axes in a variable font allows designers to create a font that can adjust to different design needs without creating separate font files for each variation. For example, a designer can create a single variable font with weight, width, and slant axes, allowing users to customize the font style by adjusting the values along each axis. This can significantly reduce file size and loading time.



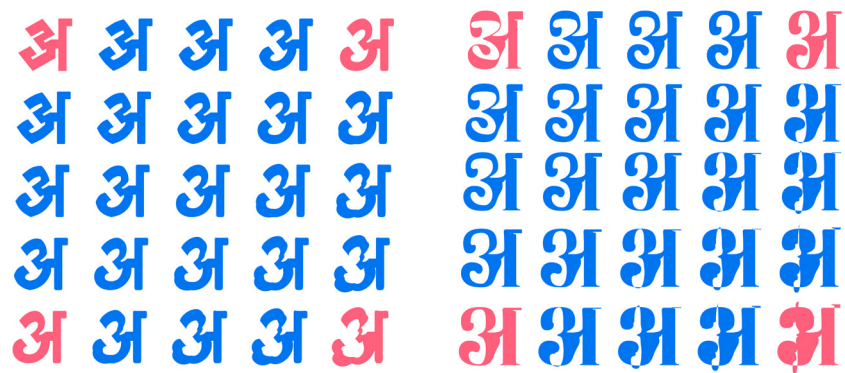
Img 19 : Font Info Window of Glyphs App(Axes)

6.2. Explorations based on Initial Sketches

Based on the drawing, I created some primary axes to comprehend how variable fonts and interpolations(interpolation refers to the process of generating intermediate font variations between two or more predefined font instances) work and take shape(Img 20 - 21). The red coloured characters are the masters and the blue coloured ones are the intermediated.



Img 20 : Exploration of Axes



Img 21 : Exploration of Axes

When designing a variable font, it is important to not only focus on achieving the optimal shape of the masters, but also to take into account the intermediate shapes. This is because certain desired alterations in shape may not translate seamlessly in practice(Img 22).



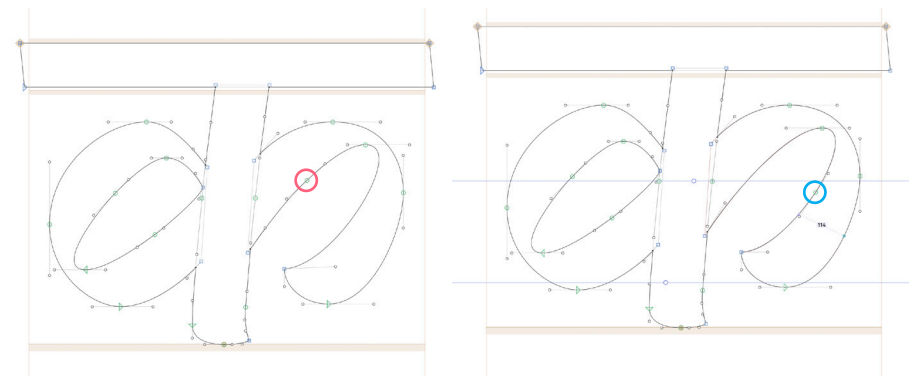
Img 22 : Deformed Intermediates

Deformed intermediates may occur due to two main reasons:

1. It is essential to ensure that the number of interpolation points are similar in number and the placement of the interpolation points effect(Img 24) the shapes of the intermediates. Unplanned placement of the interpolation points can result in distorted or irregular shapes in the intermediate forms which might look aesthetically displeasing (Img 23).

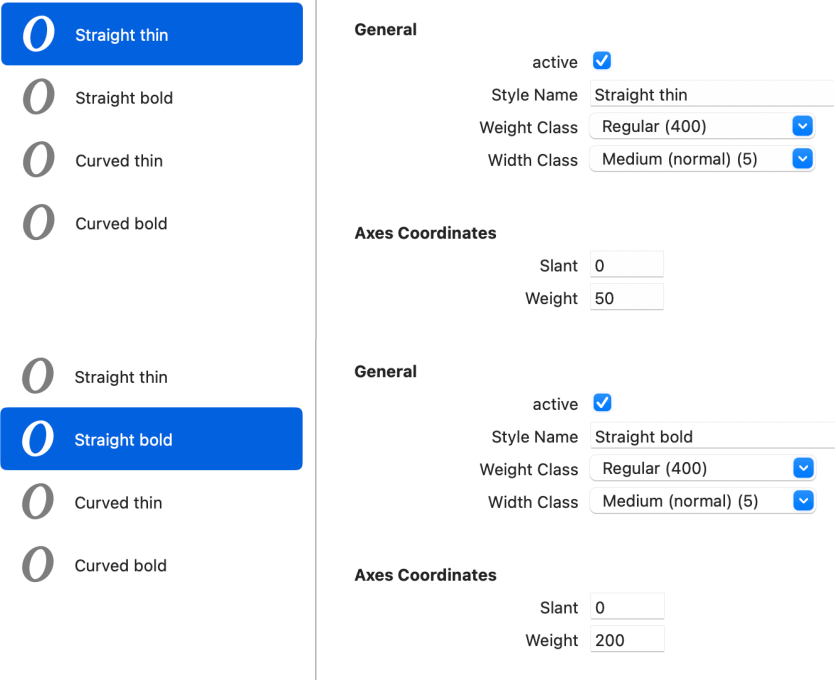


Img 23 : Deformed Intermediates due to wrong placement of interpolation points

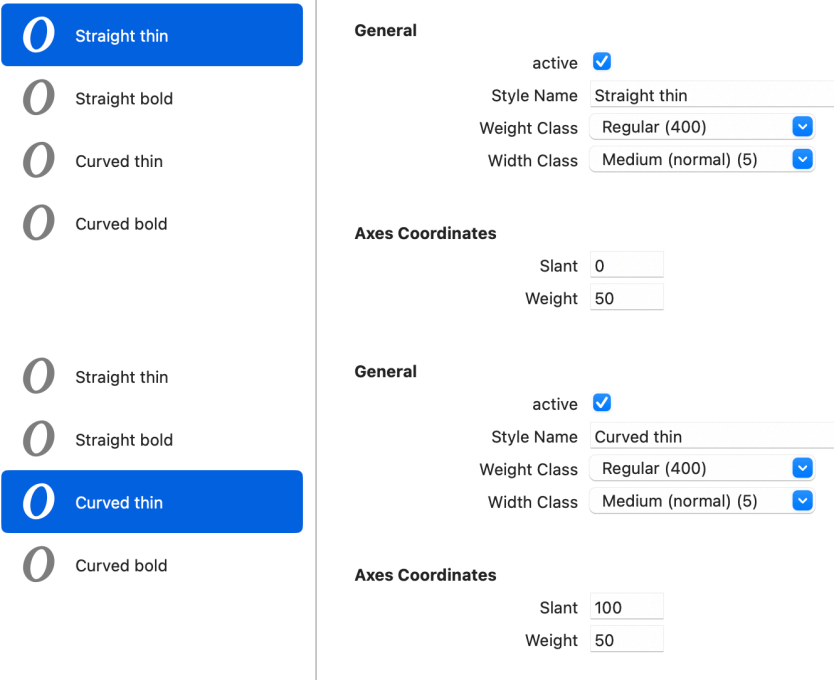


Img 24 : The red circle marks the wrong placement of interpolation points whereas the blue circle show the right placement of the same point

2. The second reason for deformed intermediates is when the axes coordinates are not defined correctly during the export or masters section. This can cause the interpolation process to be inaccurate, resulting in deformed intermediates. It is crucial to double-check the axes coordinates and ensure they are properly defined(the coordinated cannot be similar for two different weights and needs to be similar for two similar weights before exporting or using the masters for interpolation.



Img 25 : The axes coordinated of two different weight



Img 26 : The axes coordinated of two similar weight

Defining the Visual Grammar and Axes

7.1. Creating Mood Board for Visual Grammar

Based on the experimentation with axes and exploration of styles two final visual styles were finalised and mood board for both of them were made.



Img 27 : First Mood Board Inspired by Industrial Tools



Img 28 : Second Mood Board Inspired by Digital Lettering Styles

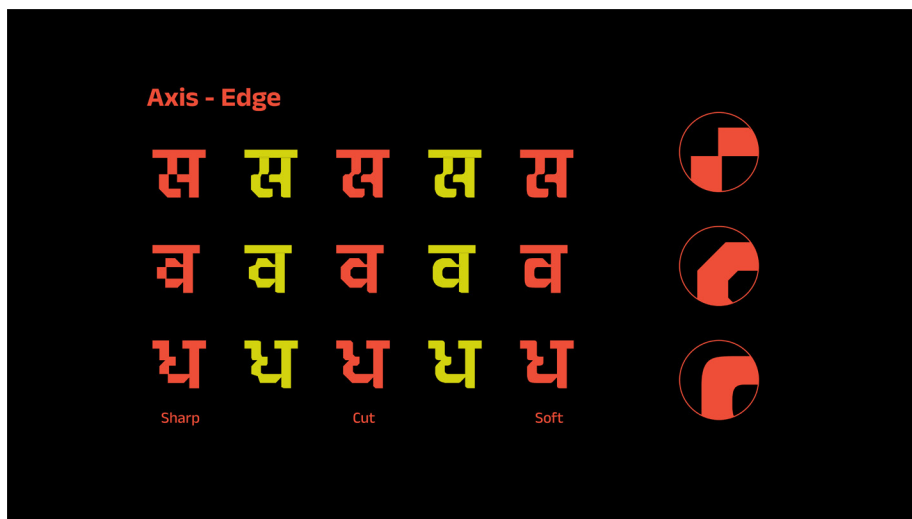
7.2. Creating the masters

After examining the two mood boards I had created, I designed two distinct typefaces, each with their own unique axes. (To learn, how to create a variable font in Glyphs App refer to - glyphsapp.com)

The first typeface draws inspiration from industrial tools, resulting in a bold, heavy, and sharp-edged design. By incorporating specific axes named as the edge axes, I was able to manipulate the angular cut edges and transform them from a sharp, jagged appearance to a smoother, more refined look (Img 29-31).



Img 29 : Font Inspired from industrial tools(Red one being the masters)



Img 30 : Edge axes(Red one being the masters)

This particular font is designed to adhere to a grid system, which allows it to adapt its shape within the grid. The visual transformation it undergoes enables its versatile use in a wide range of environments, depending on

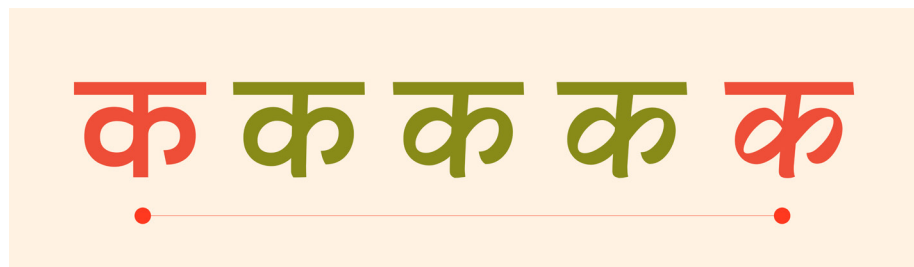
the intended purpose. Furthermore, the use of this font ensures consistency in the design layout, making it an ideal choice for projects that require precise alignment and spacing. The adaptability of this font also allows it to convey different moods and tones, from sharp, rigid and bold to playful and bold.



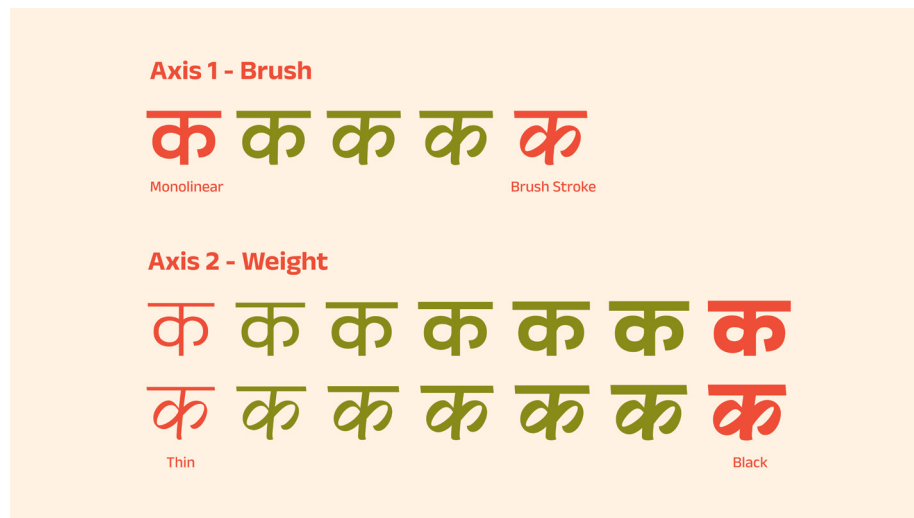
Img 31 : Font Inspired from industrial tools

The second typeface is inspired by digital lettering styles from various artists, including mine. It features two axes: the weight axis and the style axis. The style axis is unique to this typeface and transforms a humanist-style font into a brush-pen calligraphic font (Images 32-34). This axis will allow designers to easily switch styles within a single font,

providing greater flexibility and creativity. This typeface will help designers looking for a versatile and customizable.



Img 32 : Font Inspired from brush pen calligraphy(Red one being the masters)



Img 33 : Weight and Style(Brush) Axes(Red one being the masters)



Img 34 : Inspired from brush pen lettering

This font is well-suited for books and magazines that require different visual styles while maintaining a consistent total height and weight. It offers multiple techniques to create visually appealing content, including a monolinear type for serious headlines and a brush style for playful material. The monolinear style is clean, sharp, and straightforward, conveying a sense of professionalism ideal for technical or complex information. The brush style, on the other hand, adds a touch of fun and excitement to any publication and is excellent for younger audiences. It's versatile and useful for designers and publishers who need to create professional-looking publications with a touch of creativity and style. Regardless of the magazine, this font can adapt to any need while maintaining consistency in its weight and height.

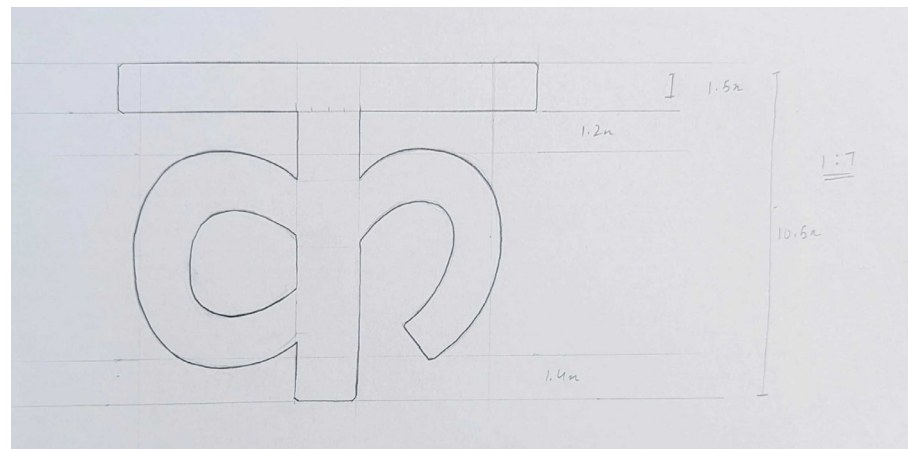
Designing the Typeface

8.1. Finalising the Vertical Spacing

The first task was to establish the appropriate vertical spacing to start the design process of the Devanagari typeface. This required a thorough comprehension of the proportions and dimensions of each letter and ensuring that they maintained consistency throughout the typeface. The spacing was determined through a combination of referencing various sources and experimentation. Ultimately, the vertical spacing was established by stacking six horizontal brush pen strokes on top of each other. The vertical spacing of both the styles - the mono-linear and the brush style share the same vertical spacing(Img 35-36).



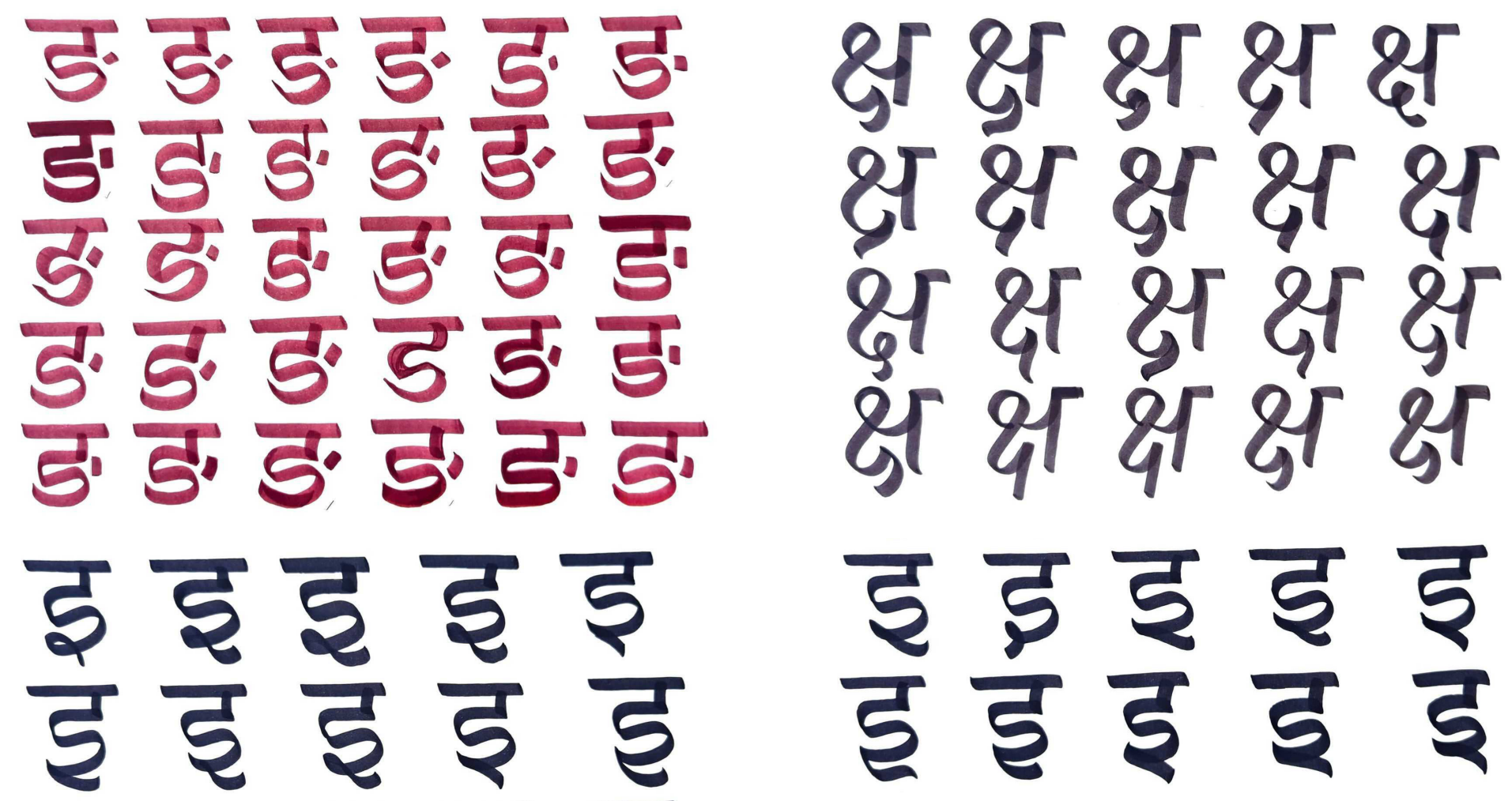
Img 35 : Vertical Spacing based on six horizontal brush pen strokes



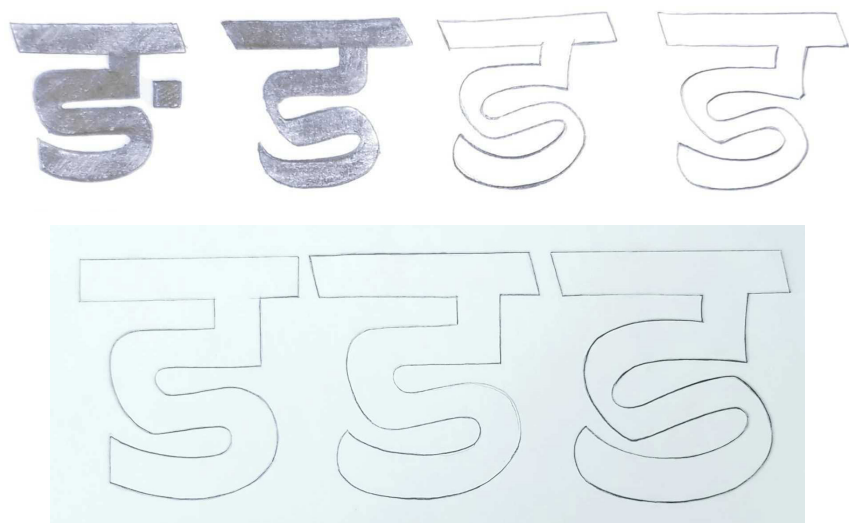
Img 36 : Distribution of Vertical Spacing

8.2. Developing the Skeleton

After finalizing the vertical spacing, the next stage in the Devanagari typeface design process was constructing each character's skeleton. This entailed establishing the fundamental structure and deciding upon the overall shape and style of the typeface. The initial step involved sketching out each character using a brush pen(Img 37), and pencil(Img38) and transforming them into digital form utilizing Glyphs App. Variations of every letter were made using brush pen and one out of the many was chosen based on the preferred visual grammar.



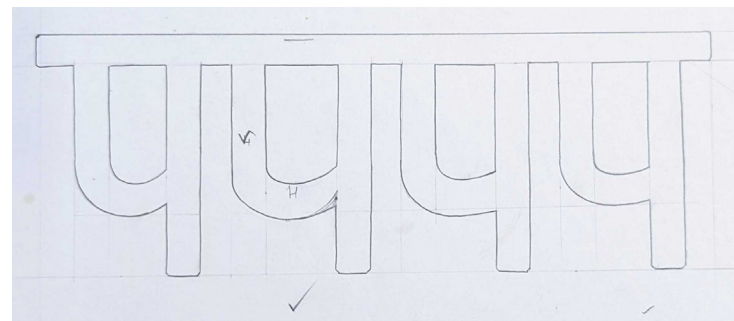
Img 37 : Variations of alphabets drawn using brush pen



Img 38 : Variations of alphabets drawn using pencil

8.3 Development of the Glyphs

Once the skeleton was finalized, the subsequent stage was to create the glyphs. This step required further refinement of the design of each character, with a particular focus on maintaining consistency with the overall style of the typeface. The design process began with the consonant "प", and other letters were constructed based on their width and visual grammar (Img 39). During this phase, various design elements were experimented with, such as the kana and shirorekha ratio, the bowl curve, the types of joineries, the terminals, and the knots. Ultimately, the aim was to create a cohesive and aesthetically pleasing typeface.



Img 39 : Variations of consonant 'प'

8.3.1 Kana and Shirorekha Ratio

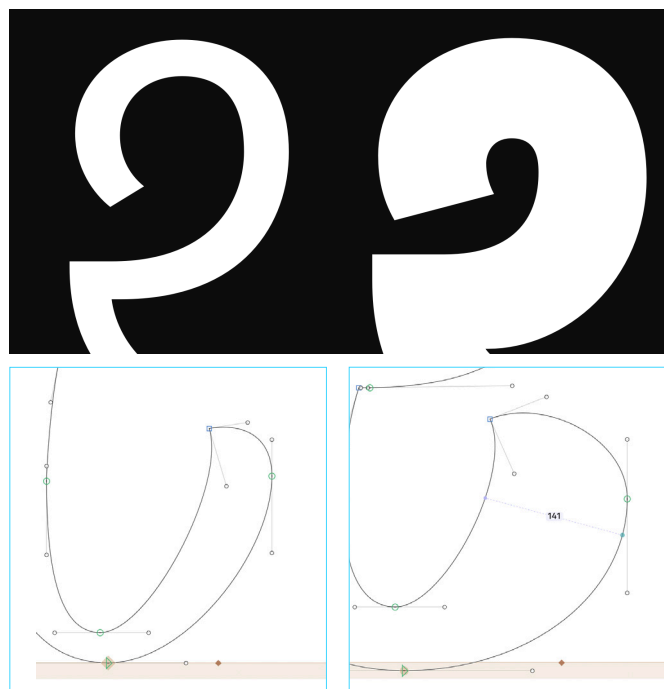
To ensure legibility of the letters, the kana and shirorekha ratio was adjusted for all four master designed, considering the weight of the two styles. The appropriate ratio for each master was determined based on these factors. For instance, the light mono-linear master had a ratio of 5:6, while the bold mono-linear master had a ratio of 7:8. Similarly, for the light brush master, the ratio was 3:4, and for the bold brush master, it was 7:8.



Img 39 : The four Masters with different kana and shirorekha ratio

8.3.2 Curves and Joineries

Throughout the process, the type of curves and joineries used by all the masters has undergone changes in order to adhere to a common aesthetic (Img 40) and maintain a consistent visual identity, despite their individual differences. This was mandatory for all of them to ensure a cohesive and harmonious appearance.



Img 40.1 : Terminals with similar curves



Img 40.2 : Joineries with similar curves within different masters

8.3.3 Creating Variations

Individual variations of complex letters were created and then compared to one another. After careful consideration, they were placed together in a paragraph to ensure cohesiveness and readability(Img 41-42). I used adhesiontext.com/devanagari to create words and paragraphs(Img 42) through out the project to compare characters.



Img 41.1: Variations of Alphabets



Img 41.2: Variations of Alphabets

Earlier
Version

पल कटारा टरका पगा कटा
लगाववाला कारापाल टकराव ला
गलावट कटाव वारपार कलरव
डाका लटपट रावरा कालाप ट
पाकागार पाकागार ललकार पटा

Img 42.1 : First Variation of Letters

Corrected Version

पल क कटारा टरका पगा कटा
लगाववाला कारापाल टकराव ला
गलावट कटाव वारपार कलरव
डाका लटपट रावरा कालाप ट
पाकागार पाकागार ललकार पटा

Img 42.2 : Second Variation of Letters

पल कटारा टरका पगा कटा
लगाववाला कारापाल टकराव ला
गलावट कटाव वारपार कलरव
डाका लटपट रावरा कालाप ट
पाकागार पाकागार ललकार पटा

Img 42.3: Third Variation of Letters

डगार
डगार

Img 42.4: First Version(green) vs Latest Version(Red)

8.4 Creating the masters

When creating font masters, it's crucial to recognize that bold fonts aren't just light fonts with added weight. Rather, it's important to visually balance the weight of the font to create a harmonious design. Below are examples of the incorrect and correct approaches to designing font weights:



Img 43: Incorrect approach: Simply adding weight to the light font to create a bold font.

This approach can lead to inconsistencies between different weights of the same font and lacks visual coherence. A balanced design considers each glyph individually and makes necessary adjustments to ensure a visually consistent design across all font weights.

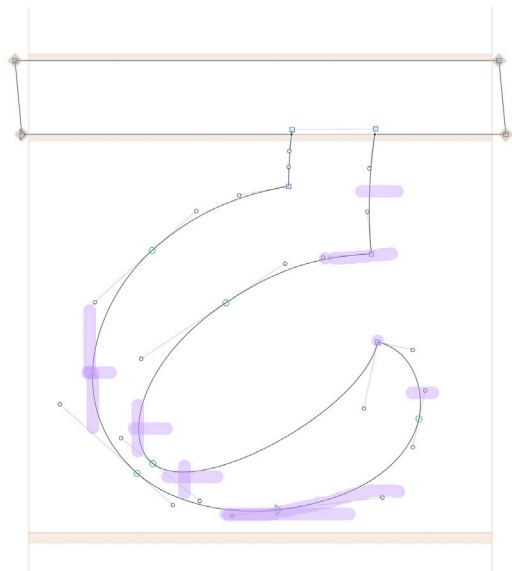


Img 44: Correct approach: Adjusting the design of each glyph to create a balanced and visually consistent bold font that complements the light font.

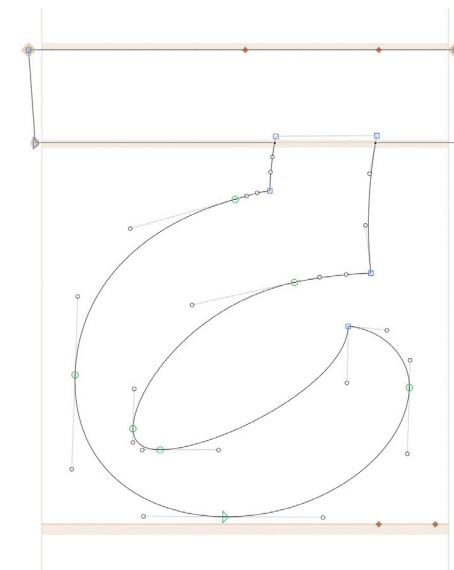
The correct approach involves considering the individual design elements of each glyph and making necessary adjustments to create a balanced and visually consistent design. This approach ensures that each glyph is well-proportioned and visually harmonious; for a script like Devanagari which is vertically heavy, it is mandatory to look at the proportions of each glyph separately. Additionally, this approach ensures that all weights of the font family have consistent contrast and visual coherence, creating a cohesive design across the entire font family. The result is a high-quality font family that can be used confidently in various contexts.

8.5 Correcting the Handles

Initially, the handles in the Glyphs app were traced along with the drawings and were not necessarily placed in a parallel or perpendicular manner (Img 45). However, with the guidance of my guides, I learned that there is a more effective way to place the handles that can result in smoother curves and make it easier for the software to interpolate the points (Img 46) (Learn to draw perfect curves in Glyphs app - glyphsapp.com). By following these guidelines, the handles can be positioned to align with the curve's direction, ensuring that the control points are set at a 90-degree angle to the curve's tangent.



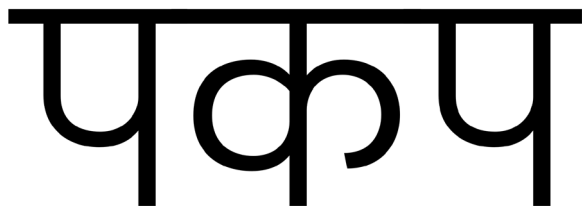
Img 45: Wrong placement of handles, purple marks indicate where the handle should be placed to get smoother curves



Img 46: Right placement of handles, every curve segment should fit nicely in a triangle and should be perpendicular to each other

8.6 Typing Devanagari in MacOS

In the design process, you often place words close to each other to compare the character widths and visual grammar of different glyphs within an application. To facilitate easy typing on MacOS, you can make use of the Devanagari-QWERTY keyboard layout, which is specifically designed to simplify the process of typing in the Devanagari script using a Roman keyboard.



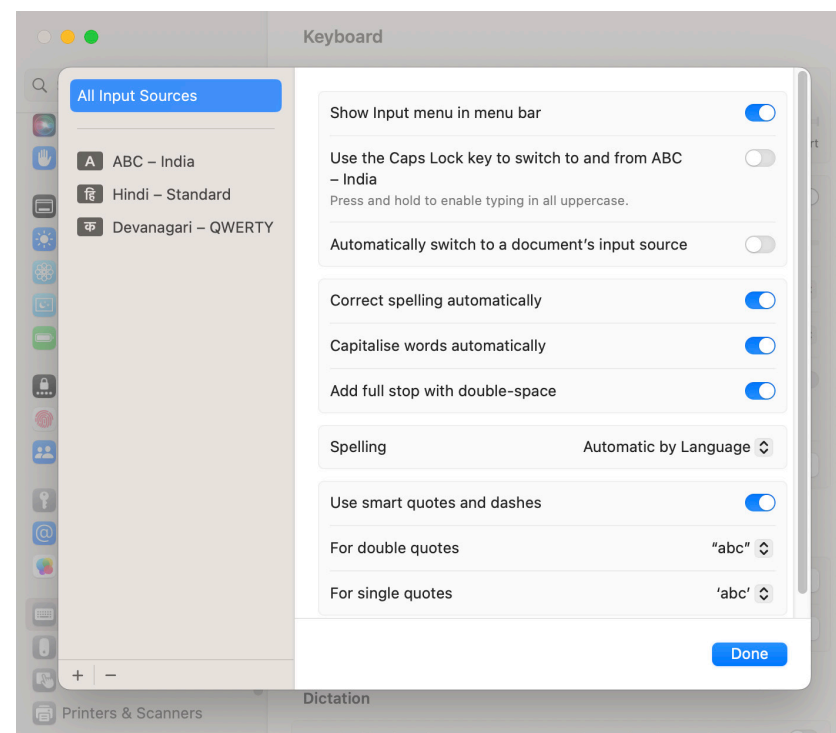
Img 47: Placement of words to compare width and visual grammar

To activate the Devanagari QWERTY keyboard in macOS, follow these steps:

1. Go to System Preferences on your Mac.
2. Click on Keyboard.
3. Click on the Input Sources tab.
4. Click on the + sign at the bottom left to add a new keyboard.
5. In the search bar, type "Devanagari."

6. Select the "Devanagari - QWERTY" keyboard and click Add.

7. Once added, you can switch to the Devanagari QWERTY keyboard by clicking on the input sources icon in the menu bar (it looks like a flag) and selecting the Devanagari QWERTY option.



Img 48: System Preferences to add QWERTY Keyboard

How to use the QWERTY Keyboard -



Img 48: When no modifier keys are pressed



Img 50: With AltGr (Opt on macOS) pressed



Img 49: With Shift pressed



Img 51: With Shift + AltGr (Shift + Opt on macOS) pressed

8.7 Comparing Character Widths

When designing a Devanagari typeface, comparing character width is a vital aspect to consider, as it affects the text's overall visual consistency.

Devanagari script is a complex script with many characters that vary in shape and size. Unlike the Latin script, where characters have a relatively consistent width, Devanagari characters have varying widths based on shape and form. For example, the "ka" character (क) is narrower than the "ta" character (त), which is wider due to its horizontal bar.

To ensure a visually consistent and harmonious typeface, it's essential to compare the widths of characters and adjust them accordingly (Img 52).

मट वाक्यात दावतनामा
भयानकतावश मामा प बालवत
पायाब भावगत तलाशना बक
मनभवना लाव मानवनाम दनदन
तलाशना पापनाशन वलयन
लाभदायकता ढप लाभदायकता
नापाक फदकन पलायनवाद
भयानकतावश डयन गदा वाय द
ढनक लाभदायकता थामना
कायापलट दायागतता शामक

मट वाक्यात दावतनामा
भयानकतावश मामा प बालवत
पायाब भावगत तलाशना बक
मनभवना लाव मानवनाम दनदन
तलाशना पापनाशन वलयन
लाभदायकता ढप लाभदायकता
नापाक फदकन पलायनवाद
भयानकतावश डयन गदा वाय द
ढनक लाभदायकता थामना
कायापलट दायागतता शामक

Img 52: Left Side shows the first version and marked characters are the one which need correction and the right side shows the corrected version

8.8 Corrections in Letter Forms

The phase of my learning journey during which I experienced a significant and rapid increase in progress and development can be attributed to the meticulous process of correcting and refining my letter forms. Below is an example with all variations of letter 'kha' are shown (Img53).

ख ख ख ख
ख ख ख ख

Img 53: The top left dark blue coloured letter is the first design and the bottom right dark blue coloured letter is the final design and the in between are the variations.

Conclusion

The main objective of this project was to design an Experimental variable Devanagari typeface with different styles which can be utilised for a variety of purposes. A typeface that boasts two axes, enabling a seamless transition from a body text font to a display font. The task involved navigating the complex terrain of Devanagari letter forms, which are inherently irregular in shape, and devising axes that would serve as the visual grammar for the typeface. As a type designer, this was a challenging yet exhilarating endeavour that required a deep understanding of legibility in Devanagari letter forms and a keen eye for the nuances of typography. The end goal was to create a typeface that not only pushes the boundaries of design but also meets the functional demands of legibility and clarity.

Learnings

One of the key challenges was understanding how legibility works with irregular Devanagari letter forms and developing axes that could change the visual grammar of the letter-forms. Throughout the project, I gained a deeper understanding of negative space's role in creating visually balanced designs, as well as the unique characteristics of the Devanagari script in different weights and styles. One of the most exciting aspects of the project was exploring how to visually balance two completely different types (body text font and display font) within the same typeface, which required a deep understanding of the visual grammar of Devanagari letter

forms. Overall, the project provided me with valuable insights and skills that will continue to inform my work in the field of typeface design.

What's Next?

I have designed 192 glyphs through out the course of four months. The positioning and substitutions of some glyphs are left to be done. The letters need more refinement and the akhand conjuncts needs to be designed. The kerning pairs have to be figured out for all letter-forms. The mono-linear version needs to be tested for readability.

Resources

Books

Designing Type by Karen Cheng, published on 1st Jan 2006 by Yale University Press

Websites

www.type-together.com/devanagari-type-anatomy - 4th Feb 2023

www.snehalpatil.in/nirnaya-sagar-letterpress-revival.html - 9th Feb 2023

glyphsapp.com/learn/creating-a-devanagari-font - 25th Feb 2023

glyphsapp.com/learn/creating-a-variable-font - 27th Feb 2023

glyphsapp.com/learn/drawing-good-paths - 26th Apr 2023

github.com/s3thi/devanagari-qwerty - 3rd May 2023

Glyphs

क ख ग घ ङ च छ ज
झ ञ ट ठ ड ढ ण त थ
द ध न प फ

ब भ म य र ल व श ष

ਸ ਹ ਙ

क ख ग घ ङ च छ
ज झ ञ ट ठ ड ढ
ण त थ द ध न प फ

ब भ म य र ल व श

ष स ह इ

। िीी ु े ै ॆ

क ख ग घ ङ च छ झ
ट ठ ड ढ ण त थ द ध
न प फ

ब भ म य र ल व श ष

स ह इ

ट

क ख ग घ ङ च छ
झ ट ठ ड ढ ण त थ
द न प फ

ब भ म य र ल व ष

स इ

। ो ै ॐ

Type Specimen

कड़क

कब तक
कड़क रहेगा

स्टाइलिश
वाइबेंट
डायनामिक

हाइट सामंतवादी पाठ मेनन बहक
धव रेजिमेंटल खसरा रेवतीभव छद
भेड़िया ठाक षढ कुसुमाथिराज
फलाढय हटक क जनपद सी कूबा
रमल रायता गूहन था ष जायकेदारी
भागिनेया पुरंधरी लोकोपकारिता
हुसैन वनविडाल बैटरीवाला चुन
चुनना हारजीतहीनता बहिरभिमुखता
लाठीबाजी पितामह के छपवाना
यादगारी पित गुसल गतिशीलता





