Hindi Signature data set

1. The signatures consist of all the phonemes in Hindi script,
2. 250 users each user has signed 5 variations as session variability
3. A total of 1250 genuine signatures are enrolled
4. In order to generate forge signatures, we have pairing
5. Eg we have user 1 and user 2, user 1 will sign user 2 and vice versa
6. In case gorge signature generation user 2 has practiced user 1 sign such that it should be skilled forgery
7. Genuine and forge signature on macro scale it has structural similarity
8. But on micro scale there are strokes variation as script is in Hindi script there is stokes variation especially in curvatures.
9. scribble art variations and the Scribble feature on an iPad has taken into consideration while generation of signatures.
10. **Geometric features:** Shape, angle, and size of strokes.
11. **Dynamic features:** Speed, pressure, and acceleration during the signing process.
12. **Temporal features:** The timing between strokes or signature sections.
13. **We have considered elapsed time between original and forge signatures.**
14. As we observed that elapsed time is more for forge signature than genuine signature.
15. **Flowing cursive lines**.
16. Use apps or websites like **Calligraphry**, **SignWell**, or **online signature generators** to create a digital version in Devanagari script.
17. Convert your name into Hindi using tools like Google Input Tools or Lexilogos.
18. Use software like Adobe Illustrator, Canva, or Photoshop to stylize and refine your Hindi signature.
19. Use smooth strokes to ensure the Hindi script flows seamlessly.
20. It’s easily reproducible by you and consistent

The sentence mentions "scribble art variations" and the "Scribble feature" on an iPad in the context of generating signatures. Here’s an elaboration:

The concept of **scribble art variations** refers to diverse, creative, and freehand drawing styles that mimic spontaneous sketches or artistic scribbles. These variations are often used to add a personal or artistic touch to digital designs, including signatures. Incorporating these variations ensures that the generated signatures feel unique, personalized, and aesthetically pleasing.

The **Scribble feature** on an iPad is a functionality that allows users to write with an Apple Pencil or stylus and have their handwriting converted into text or used in creative contexts. This feature recognizes handwritten inputs and adapts them for different purposes, such as note-taking, drawing, or signature generation. By leveraging the Scribble feature, users can draw or write freely, and the system can process their input to create custom signatures that reflect their style.

When generating signatures, combining scribble art variations and the Scribble feature ensures that:

1. **User Creativity is Captured**: The ability to freely sketch or write provides room for individuality.
2. **Natural Handwriting Recognition**: The Scribble feature processes handwriting accurately, making it possible to reproduce the user's style in the generated signature.
3. **Customization**: The variations allow for multiple outputs, enabling users to choose a signature that best represents them.
4. **Efficiency**: The iPad's Scribble feature offers an intuitive and seamless experience, simplifying the process of creating signatures.

This combination enhances the aesthetic and functional aspects of signature generation, bridging artistic creativity and practical handwriting recognition.

**1. Shape**

* **Curves vs. Straight Lines**: The shape of strokes in a signature can either be curvilinear (rounded) or angular (sharp). Curves may suggest fluidity, flexibility, or creativity, while straight lines can be associated with precision, order, and control.
* **Loops**: A signature might have loops, especially in letters like 'l', 'e', or 'y'. Large, elaborate loops could indicate someone who is open, expressive, or perhaps ambitious. Small, tight loops might reflect a more reserved or cautious personality.
* **Sharp Angles**: When signatures feature sharp, angular strokes, they could suggest a personality that is direct, assertive, or structured.

**2. Angle**

* **Upward Angles**: Strokes that slant upward (rightwards) often indicate optimism, ambition, or a forward-thinking attitude. They may show that the person is goal-oriented or strives for progress.
* **Downward Angles**: If a signature's strokes lean downward (leftwards), it may be interpreted as a sign of introversion, pessimism, or a reserved personality. It could also suggest a person who prefers stability over risk-taking.
* **Vertical Lines**: A straight, upright stroke can represent a balanced, stable, and disciplined individual. It’s often associated with a strong sense of structure or professionalism.

**3. Size**

* **Large Signatures**: A signature that is particularly large might suggest a person with a bold personality, someone who likes to be noticed, or perhaps someone with a lot of self-confidence. It may also indicate extroversion, a desire for recognition, or high self-esteem.
* **Small Signatures**: A smaller, more compact signature can be indicative of a humble, reserved, or private person. It may also reflect someone who values efficiency and modesty.
* **Proportions**: A disproportionate signature where one part (like the first or last name) is much larger than the rest could signify a strong emphasis on one aspect of the person’s identity (e.g., their public persona). A more balanced signature might indicate a person who values harmony and equilibrium in their life.

**4. Strokes and Pressure**

* **Firm vs. Light Strokes**: The pressure exerted during writing can also reveal a lot about a person’s emotional state or temperament. Heavy pressure might suggest a person with strong emotions, determination, or intensity, while lighter pressure could indicate sensitivity, delicacy, or a more passive nature.

**5. Flow**

* **Connected vs. Disconnected**: A signature with smooth, flowing strokes might represent someone who is easygoing, adaptable, or spontaneous. Conversely, a disjointed or choppy signature could indicate a more cautious, methodical, or deliberate approach to life.
* **Consistency in Style**: The consistency in a person's signature (whether the strokes are uniform or vary slightly) could suggest whether they are someone who values routine and predictability or someone who embraces change and unpredictability.

Hindi Genuine data set: We have considered 250 users, each users has been recorded five sessions as we have labelled genuine users as u001\_O01 here (u) is user and (O) stands for original dataset and it is recorded as O01, O01,.. O05 has five session variability. Here only first name of the person is been considered middle and last name has been dropped. We consider the $x$ and $y$ coordinates, time of recording and Pressure (p). When we sign on digital epad the $x$ and $y$ coordinates are tracked and recorded. As soon as the pen tip is up the pressure is considered as zero.

Each user has been practised in normal A4 paper before we sign on digital epad, such that there is no overlapping or missing the strokes. The signature is recorded in free hand writing such that pen tip pressure has smoot flow in transistion.

We have considered all the syllables starting from /Aa/ to /gnya/. We have also considered Swaras Yanganas and Yogavakhs.

Apart from that we have considered short and long signatures. In short signatures cuvee stokes are considered.

Hindi Forge dataset: In order to enrol the forge dataset we have consider the following

We consider 125 pairs of people for we consider U01, … U250 subjects Ui and Uj are considered as pairs such that Ui will sign Uj and vice-versa. The signature Uj will signs Ui should be structurally same as Uj which near equal to genuine of Uj.

The design of forge dataset as follows. We define U001\_F1\_01 here F1 is forge dataset F1\_01, .. F1\_05 each forge signature is enrolled five time as session variability. So we consider F1, F2, F3,..F5 as five different signatures forge by the particular user. So each user is enrolled with 25 forged signatures with each signatures has five sessions.

So we have 1250 forge signatures, but again we consider long and short signatures to be forged so that as we observe the structure similarity between genuine and forge signature pair on macro scale. But when we observe the finer observations some of the stokes were missing, and some part of overwritten and time elapsed is more as genuine signatures.

**Lexilogos** is a well-known online resource that provides tools and information for linguistics, translation, and writing systems. It is particularly useful for those working with different languages, scripts, and alphabets. The website offers a variety of virtual keyboards, dictionaries, and other linguistic tools to help users type, translate, and understand text in multiple languages.

If you're asking about **digital signature generation using ECDSA (Elliptic Curve Digital Signature Algorithm)** in the context of Lexilogos, it seems you might be interested in how cryptographic techniques like ECDSA could be applied in linguistic or multilingual environments. Below, I’ll elaborate on this connection and how Lexilogos could potentially intersect with cryptographic concepts like ECDSA.

Creating a Hindi signature based on flowing cursive lines involves blending artistic flair with legibility. Here’s a step-by-step guide to designing one:

**1. Choose Your Name or Initials**

* Decide whether you want to use your full name, first name, or initials in Hindi. For example, if your name is "राहुल" (Rahul), you can use "रा" or "राहुल" as the base.

**2. Understand the Flow of Hindi Script**

* Hindi letters have a natural flow, especially in cursive. Focus on connecting letters smoothly. For example, in "राहुल," the letters रा-हु-ल can be joined seamlessly.

**3. Simplify the Letters**

* Simplify complex letters to make them flow better. For instance, the letter "र" can be written with a single, sweeping curve.

**4. Add Swirls and Loops**

* Incorporate decorative swirls or loops at the beginning or end of the signature. For example, extend the last stroke of "ल" into a stylish loop.

**5. Experiment with Slant**

* A slight slant to the right or left can make the signature look more dynamic. Try slanting the entire signature or specific letters.

**6. Practice Consistency**

* A signature should be consistent every time you write it. Practice repeatedly until you can write it effortlessly.

**7. Add Personal Touches**

* Add unique elements, like underlining the signature, adding a dot, or elongating certain strokes.

**Example:**

If your name is "राहुल," your cursive signature could look like this:

* Start with a flowing "रा," connecting it to "हु" with a smooth curve.
* End with a stylish "ल" that extends into a loop or swirl.

**Tips:**

* Use a fine-tip pen for better control.
* Experiment with different styles until you find one that feels natural and unique to you.