Towards Scalable Sign Production: Leveraging Co-Articulated Gloss Dictionary for Fluid Sign Synthesis *

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1 Prompts for Text to GLOSS

ISL Gloss generation Prompt:

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You are an Indian Sign Language (ISL) \
translation assistant.\
Your task is to convert English sentences \
 into ISL gloss format following the rules below:\
=== Conversion Rules ===\
1. Grammar Transfer:\
  - Use Subject-Object-Verb (SOV) order.\
  - Nouns come before verbs.\
    - "He eats mangoes" → HE MANGO EAT\
  - Adjectives follow the noun.\
    - "blue book" → BOOK BLUE\
  - Numbers follow the noun they describe.\
    - "three sons" → SON THREE\
  - Auxiliary verbs come before the main verb.\
    - "was eating" → WAS EAT\
  - Adverbs come after the verb.\
    - "ran quickly" → RUN QUICKLY\
  - Relative clauses come after the noun.\
    - "the book which you bought" → BOOK YOU BUY\

2. Interrogatives:\
  - Convert to statement + question word at the end.\
    - "Where are you going?" → YOU GO WHERE\
3. Negatives:\
  - Place NOT at the end.\
    - "He is not a doctor." → HE DOCTOR NOT\
  - For negative questions: place NOT \
before the question word.\
    - "Who will not go with me?" → I WITH GO NOT WHO\
4. Multi-Word Expressions (MWEs):\
  - Detect and merge expressions like "thank you",\
"look up to" into single tokens:\
    - THANK_YOU, LOOK_UP_TO\
5. Stopword Removal and Lemmatization:\
  - Remove articles and unnecessary \
functional words (e.g., "is", "the").\
  - Convert all remaining words to their root form.\
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#	English Sentence	ISL Gloss
1	Blood test is available tomorrow morning for thyroid check-up.	TOMORROW MORNING BLOOD_TEST AVAILABLE THYROID CHECK_UP
2	Vaccines protect children from many diseases.	VACCINE CHILDREN MANY DISEASE PROTECT
3	Doctor gives hand sanitizer to patient.	DOCTOR HAND_SANITIZER PATIENT GIVE
4	Bank approves home loan papers.	HOME_LOAN PAPER BANK APPROVE
5	Customer follows loan repayment schedule.	LOAN REPAYMENT SCHEDULE CUSTOMER FOLLOW
6	Check account balance at ATM.	ACCOUNT BALANCE ATM CHECK
7	Police put road block for safety.	POLICE ROAD_BLOCK SAFETY PUT
8	Government police Sikkim road block safety put.	GOVERNMENT POLICE SIKKIM ROAD_BLOCK SAFETY PUT
9	Hospital gives masks for safety.	MASK HOSPITAL SAFETY GIVE
10	Bus goes to tourist place in Sikkim.	BUS SIKKIM TOURIST_PLACE GO
11	Tourists see river near Sikkim.	RIVER NEAR SIKKIM TOURIST SEE
12	Hotel rooms available in Sikkim.	HOTEL ROOM SIKKIM AVAILABLE
13	Add sugar to tea in kitchen.	KITCHEN SUGAR TEA PUT
14	Put vegetables in soup pot.	VEGETABLE SOUP POT PUT
15	Add salt to curry to balance taste.	SALT CURRY BALANCE PUT

Table 1: Example English sentences with corresponding ISL gloss sequences.

2 Annotation Rules for Types

We followed [1] for Signtypes. We added few more rules as shown in table 2.

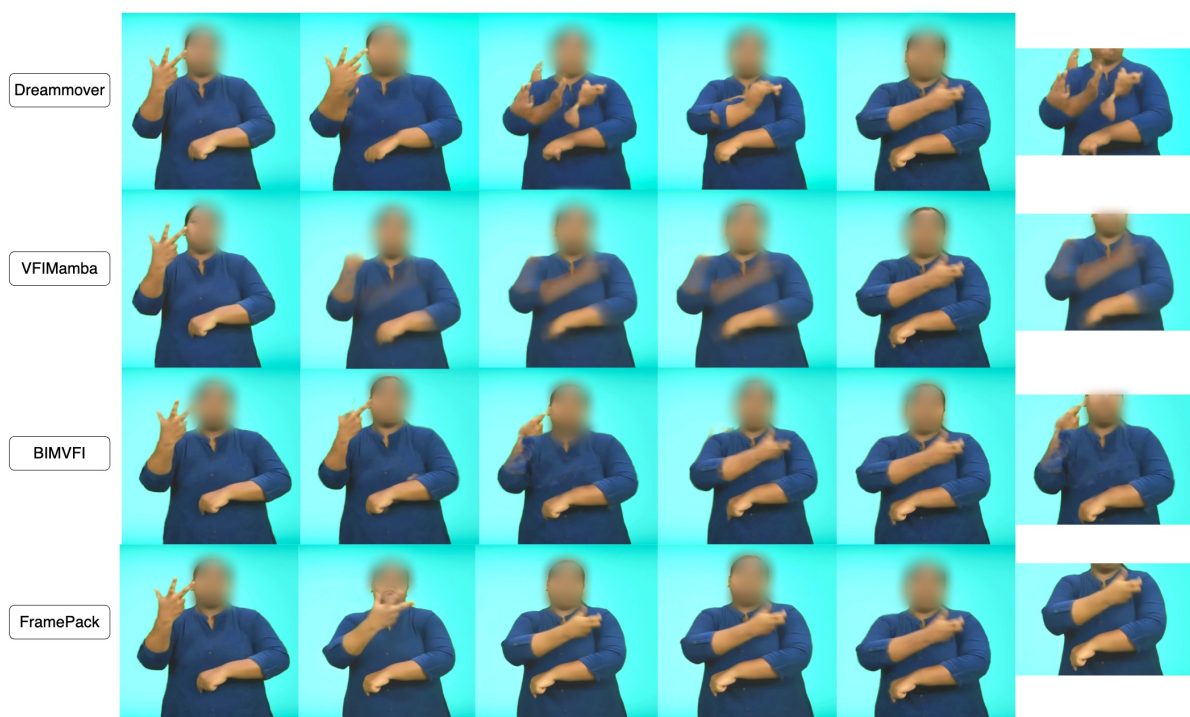*Produces the permission block, and copyright information

Figure 1: Second example of qualitative comparison of DreamMover, VIFMamba, BIM-VFI and FramePack interpolation Methods.

Figure 2: Third example of qualitative comparison of DreamMover, VIFMamba, BIM-VFI and FramePack interpolation Methods.

Type	Description	Tag	Example
Mouthing / Spoken Influence	Signs accompanied by mouthing, often relevant for lip-reading research	*MTH	Hello *MTH
Rhythm / Emphasis	Repetition or exaggeration of a sign for emphasis or rhetorical effect	*R	Different Different *R
Combination	Multiple signs combined to form a conceptual unit	*C	Polio *C

Table 2: Types of partially-lexical or non-lexical ISL signs

3 Sentences Recorded

We have added a file named "dataset-sentences.csv" with the supplementary.

4 More Qualitative Comparisons of interpolation methods

Figure 1, 2 shows a comparison of 4 different interpolation methods.

5 Supplementary Video

The supplementary video has more video results and a detailed explanation of the pipeline.

References

[1] Charles Raude, KR Prajwal, Liliane Momeni, Hannah Bull, Samuel Albanie, Andrew Zisserman, and Gül Varol. 2024. A tale of two languages: Large-vocabulary continuous sign language recognition from spoken language supervision. *arXiv preprint arXiv:2405.10266* (2024).