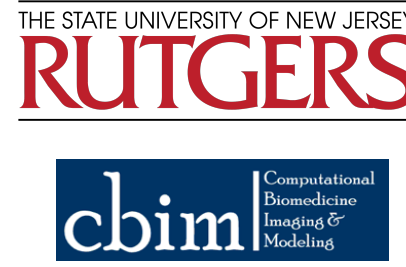


# Resources for Computer-Based Sign Recognition from Video, and the Criticality of Consistency of Gloss Labeling across Multiple Large ASL Video Corpora\*

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## Datasets for sign recognition research on ASL

### (1) ASLLRP Available video resources

- Recently expanded, linguistically annotated
- Consistent gloss labeling of signs
- Citation-form signs & continuous signing
- Includes online Sign Bank
- New download options

<https://dai.cs.rutgers.edu/dai/s/dai>

<https://dai.cs.rutgers.edu/dai/s/signbank>

#### Citation-form signs, available for download

- Boston University American Sign Language Lexicon Video Dataset (ASLLVD): **9,748** sign tokens; **6** signers
- Rochester Institute of Technology (RIT) Dataset: **11,801** sign tokens; **12** signers
- DawnSignPress (DSP) Dataset: **1,903** sign tokens; **15** signers

#### Online Sign Bank

Data Collection	Sign Details	Version #	Videos
Boston University: American Sign Language Lexicon Video Dataset (ASLLVD)	<a href="#">asllvd_signs.csv</a>	1	Click for ASLLVD Videos
Rochester Institute of Technology (RIT)	<a href="#">rit_signs.csv</a>	1	Click for RIT Videos
DawnSignPress (DSP)	<a href="#">dsp_signs.csv</a>	1	Click for DSP Videos

ASLLRP Sign Bank Data Terms of Use: <http://www.bu.edu/asllrp/signbank-terms.pdf>  
By downloading data from this page, you are agreeing to these conditions.

Information about the ASLLRP Sign Bank Video Files and Annotations  
<http://www.bu.edu/asllrp/rpt20/asllrp20.pdf>

### (2) WLASL

- Valuable collection of videos!
- Many publicly shared video collections, with > 100 signers
- Widely used for sign recognition research
- BUT** serious problem for machine learning: no 1-1 correspondence between text-based gloss labels and signs

<https://dxli94.github.io/WLASL/>

"We select videos whose titles clearly describe the gloss of the sign."

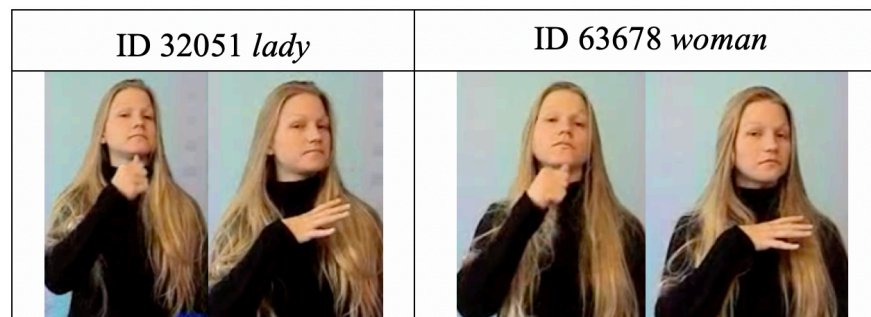


Figure 1. WLASL: same ASL sign, different English glosses



Figure 2. WLASL: same English gloss, different ASL signs

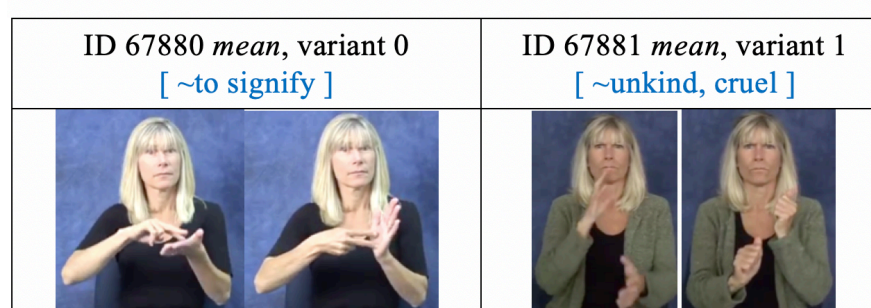


Figure 3. Supposed Dialectal Variants in WLASL

ASLLRP Main   Variant	WLASL cop	WLASL police	WLASL policeman
COP   COP	13244, 13246, 13247, 13249, 13252, 13253, 13259, 13245, 13248, 13250	43528, 43529, 43525, 43527, 43528, 43531, 43534, 43535, 43536, 43538, 43539	43538
COP   COP_2	13245, 13250	43529	43540

Figure 7. Comparison of WLASL and ASLLRP labeling of signs and sign variants. The WLASL labels *cop*, *police*, and *policeman* are used indifferently for these examples; the ASLLRP class label COP is used for all of them, with variant labels COP vs. COP\_2 distinguishing the handshapes.

### (3) Solution to WLASL gloss problem

- Gloss labels for WLASL consistent with annotation conventions for ASLLRP data
- Provides internally consistent gloss labels, enabling reliable use of the valuable WLASL video data
- Makes it possible to combine WLASL and ASLLRP datasets\*\*

<https://dai.cs.rutgers.edu/dai/s/wlasl>

#### WLASL ASLLRP correspondence

	gloss	video_id	CLASS	MAIN ENTRY	[entry/variant]
cop		13244	COP	COP	COP
cop		13246	COP	COP	COP
cop		13247	COP	COP	COP
cop		13249	COP	COP	COP
cop		13252	COP	COP	COP
cop		13253	COP	COP	COP
police		43519	COP	COP	COP
police		43525	COP	COP	COP
police		43527	COP	COP	COP
police		43528	COP	COP	COP
police		43531	COP	COP	COP
police		43534	COP	COP	COP
police		43535	COP	COP	COP
policeman		43536	COP	COP	COP
policeman		43538	COP	COP	COP
policeman		43539	COP	COP	COP
cop		13245	COP	COP	COP_2
cop		13248	COP	COP	COP_2
cop		13250	COP	COP	COP_2
police		43522	COP	COP	COP_2
police		43523	COP	COP	COP_2
police		43526	COP	COP	COP_2
police		43529	COP	COP	COP_2
police		43532	COP	COP	COP_2
police		43533	COP	COP	COP_2
police		66306	COP	COP	COP_2
policeman		43537	COP	COP	COP_2
policeman		43540	COP	COP	COP_2
policeman		43542	COP	COP	COP_2
policeman		67087	COP	COP	COP_2
police		43524	COP	COP	COP_3

Figure 6. Excerpt from spreadsheet establishing correlations between WLASL signs (glossed as in Column 1) and ASLLRP-based gloss labels (with class labels used as the basis for our sign recognition research)

#### Other Citation-form Sign Collections

About this page

Dataset	Sign Information	Version #	Video Files & Metadata
WLASL	<a href="#">wlasl-alt-glosses.csv</a> <a href="#">wlasl-alt-glosses.xls</a>	1	Can be downloaded from: <a href="https://dxli94.github.io/WLASL/">https://dxli94.github.io/WLASL/</a>

Information about the Revised Annotations for the WLASL video files:  
<http://www.bu.edu/asllrp/wlasl-alt-glosses.pdf>

Why are alternative text-based glosses for the WLASL dataset needed?  
<http://www.bu.edu/asllrp/rpt21/asllrp21.pdf>

\*\* For information about our sign recognition research using the combined ASLLVD and WLASL datasets, see Dafnis et al., *Isolated Sign Recognition using ASL Datasets with Consistent Text-based Gloss Labeling and Curriculum Learning*. 7<sup>th</sup> International Workshop on Sign Language Translation and Avatar Technology: The Junction of the Visual and the Textual (SLTAT 2022). Virtual - LREC, Marseille, France, June 2022.

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