

SignCollect: A 'Touchless' Pipeline for Constructing Large-scale Sign Language Repositories



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INTRODUCTION

The signCollect platform is developed to support the "Signbank project" (Klomp et al. 2024), which makes significant extensions to the lexical dataset of Sign Language of the Netherlands in Global Signbank (Crasborn et al. 2018). SignCollect automates data collection through a touchless interface. Signers can record between 60-120 signs per hour using gesture recognition, significantly enhancing efficiency without the need for additional staff.

TOUCHLESS RECORDING PIPELINE

- 1. View Lexical Entry:
 - The signer views the Annotation ID gloss and a quick recording.
 - A thumbs-up gesture starts the recording process.
- 2. Ready to Record:

KEY FEATURES SIGNCOLLECT PLATFORM

- **Touchless Interface:** Allows control via simple gestures (e.g., thumbs up/down) recognized by computer vision.
- Automated Workflow: Records signs, validates them, and adds metadata in real-time.
- **High Efficiency:** Enables the recording of 60-120 signs per hour.

PLATFORM COMPONENTS

- **signCollect Studio:** For recording signs.
- **signCollect Dashboard:** Supports collaborative work.
- **SignCollect Hub:** Connects Studio and Dashboard to other ecosystem components.

- The system checks camera settings and displays a "Ready to Record" signal.
- The display turns red to signal the signer to focus on the front camera.
- 3. Start Capture:
 - When the signer lowers their hands, the system sends a START CAPTURE signal to the cameras.
 - The cameras confirm recording and the system displays a "Recording" message.
- 4. Sign Production:
 - The signer produces the sign while the cameras record.
 - A high-pitch sound is used for synchronizing video recordings.
- 5. Approve or Reject:
 - After recording, the signer reviews the videos.
 - A thumbs-up gesture approves the recording, saving the videos in the database.
 - A thumbs-down gesture rejects the recording, prompting a re-capture.
- 6. Data Collection:
 - Upon completing all signs, the system downloads videos from the cameras and uploads them to the signCollect database.

WORKFLOW DIAGRAM



HARDWARE AND SOFTWARE

• The videos are immediately accessible to team members for validation and metadata addition.



- Hardware: Three Sony FX-30 cameras, Tentacle Sync E for synchronization, optional iPhone with Live Link Face app.
- **Software:** Google Mediapipe for gesture recognition, Sony Camera Remote SDK, signCollect API for ecosystem integration.

RECORDING PROCES

- **1. Setup:** Connect and configure cameras and lights.
- **2. Recording:** Gesture-controlled recording of signs with instant validation.
- **3. Post-Processing:** Automated video processing and metadata addition.
- 4. Publication: Validated signs uploaded to Global Signbank.

ISSUES SOLVED

- Consistent quality and variables (camera settings), correct annotation, phonological information check on display
- Collaboration through fixed procedure to avoid data fragmentation and pollution

FUTURE WORK

- Gloss Clustering for discovering new glosses in Corpus NGT (Crasborn et al. 2020) and other datasets
- Implementation of semi-automatic phonological description

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