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Toward a typeface for the transcription of facial actions in sign languages

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typannot,

Toward a typeface for the transcription of facial actions in sign languages

Typannot is an interdisciplinary project led by linguists, designers, and developers, which aims to set up a complete transcription system for SL that includes every SL parameter: handshape, localisation, movement, facial actions.

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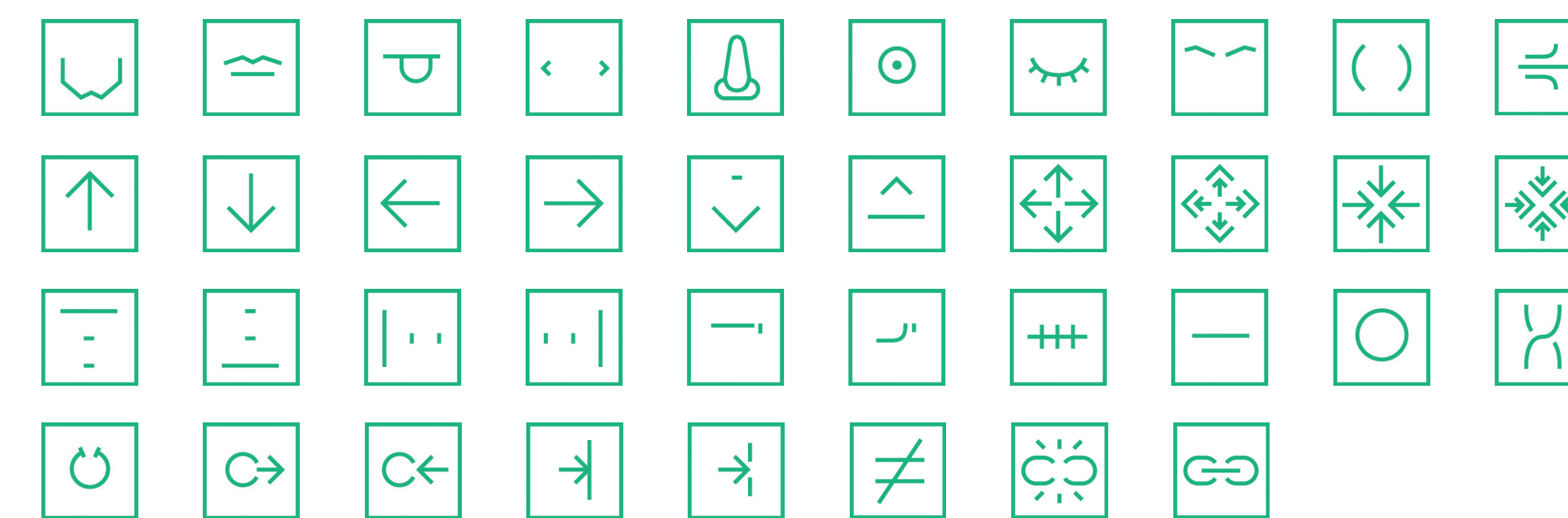
Parts

All facial actions can be transcribed using only six active facial parts. Indeed some facial parts like the lips and nose are physically linked so that positions of the former induce positions of the latter.

Formula

Typannot graphematic formula is based on a 3 dimensional grid. Indeed all the different configurations of facial actions can be described by its X, Y, Z axis positions. As a result, all facial actions be described and encoded using a restricted list of 39 qualifiers. This methodical decomposition of all facial components enables a precise and accurate transcription of a complex facial.

1. Jaw A. vertical vergence B. horizontal position C. depth	2. Lips A. vertical vergence B. link C. horizontal selection D. vertical selection E. vertical position F. depth	3. Corners A. horizontal vergence B. link C. horizontal selection D. vertical position E. horizontal position F. depth	4. Tongue A. depth B. horizontal position C. vertical position D. shape F. contact
5. Eyelid A. horizontal selection B. vertical vergence	6. Eyeball A. horizontal position B. vertical position	7. Eyebrow A. horizontal selection B. horizontal vergence C. vertical position	8. Air A. channel B. stream



Generic glyphs

Each qualifier from the graphematic formula has its own symbolic "generic" glyph. These glyphs enable the transcription of any facial action using only a few glyphs which greatly reduces the amount of time needed to transcribe facial actions corpora.

First mouth actions transcriptions

Lips converge Corner diverge left 	Lips fore up Corner converge 	Lips down Corner down 	Lips diverge Corner left up

Examples of facial action variations

Jaw diverge Lips diverge Corner diverge Eyeball right 	Jaw back Lips converge up Corner diverge Eyelid converge Eyebrow converge down 	Jaw diverge back Lips converge Corner converge Eyebrow down 	Jaw diverge Lips diverge Corner diverge Eyebrow up



Corpus transcription

An 18m 20s long facial action corpus of two deaf signers has been recorded using two different cameras. The first one, RGB HQ, is used to capture a high quality image and the second, infrared Kinect, is used to capture the depth. The latter was linked with Brekel Proface 2 (Leong et al. 2015), a 3D animation software that enables automatic recognition of facial actions. This corpus has been fully annotated using Typannot's generic glyphs. These annotations were then compared to the automatic recognition results given by Brekel Proface 2.

Preliminary results

