Automatic Transcription in Colonial Contexts

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The *Primeros Libros* project is an effort to digitize all books printed in the Americas before 1601. These books represent early efforts to codify colonial ideology and to produce writing systems for indigenous languages using Latin alphabets and grammatical systems (Mignolo).

Ocular:

Historical Character Recognition System

Gante (1555)
Anunciación (1565)
Sahagún (1583)
Rincón (1595)
Bautista (1600)

Variation in font, inking, and alignment in the *Primeros Libros* collection

Ocular, designed by Taylor Berg-Kirkpatrick et al. (ACL 2013), is the state-of-the-art tool for the automatic transcription of books printed during the hand-press period

Ocular's **font model** takes into account overinking and uneven alignment.

Its **language model** provides context for unclear characters.

Ocular uses a six-gram language model to analyze context
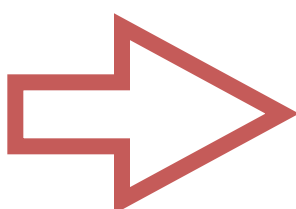
Extension:

Multilingual Documents Orthographic Variation

ligature   diacritic

non-standard spelling   character elision   obsolete character

Examples of common orthographic variations from the *Primeros Libros*.

Our extension allows the tool to **switch languages** between spaces, and provides an interface for the incorporation of **orthographic variation.**

mentira	mẽtira
mentira	merita
mentira	mẽtira

Ocular's language model depends on an external corpus which often "corrects" historical orthographies.

Implications:

Deformation Codification

quimomanililique iniuhqui texucutliui tzo corona:inic maculpa,iquac in oqui mocococoionilique inimatzi:inic chiqua-ceppa , iquac in quimocococoionililique inijcxitzi:inic chicoppa,iquac in quimi-xililique yiomotlantzinco.

glutmom an ill liquefiniti liquift executlini exorcoronawinic magnilpa, square in equi-me cocotom liquefinimatzionic gluqua-ge PPa., square in quimoco co fourth lique, in flexitz is interchicop Pa., square in quirmi-xist liquefy somedants inco-

Sample "deformed" output using the *Wall Street Journal* corpus.

Transcription errors alert us to the "deformations" of Nahuatl when written using a Latin writing system

We argue that the simplicity of our statistical model obscures its engagement with colonial processes through its relationship to deformation and codification.

The statistical codification of textual variation validates past orthographies. This rationalization of the historical record reduces the shock of contingency and colonization.

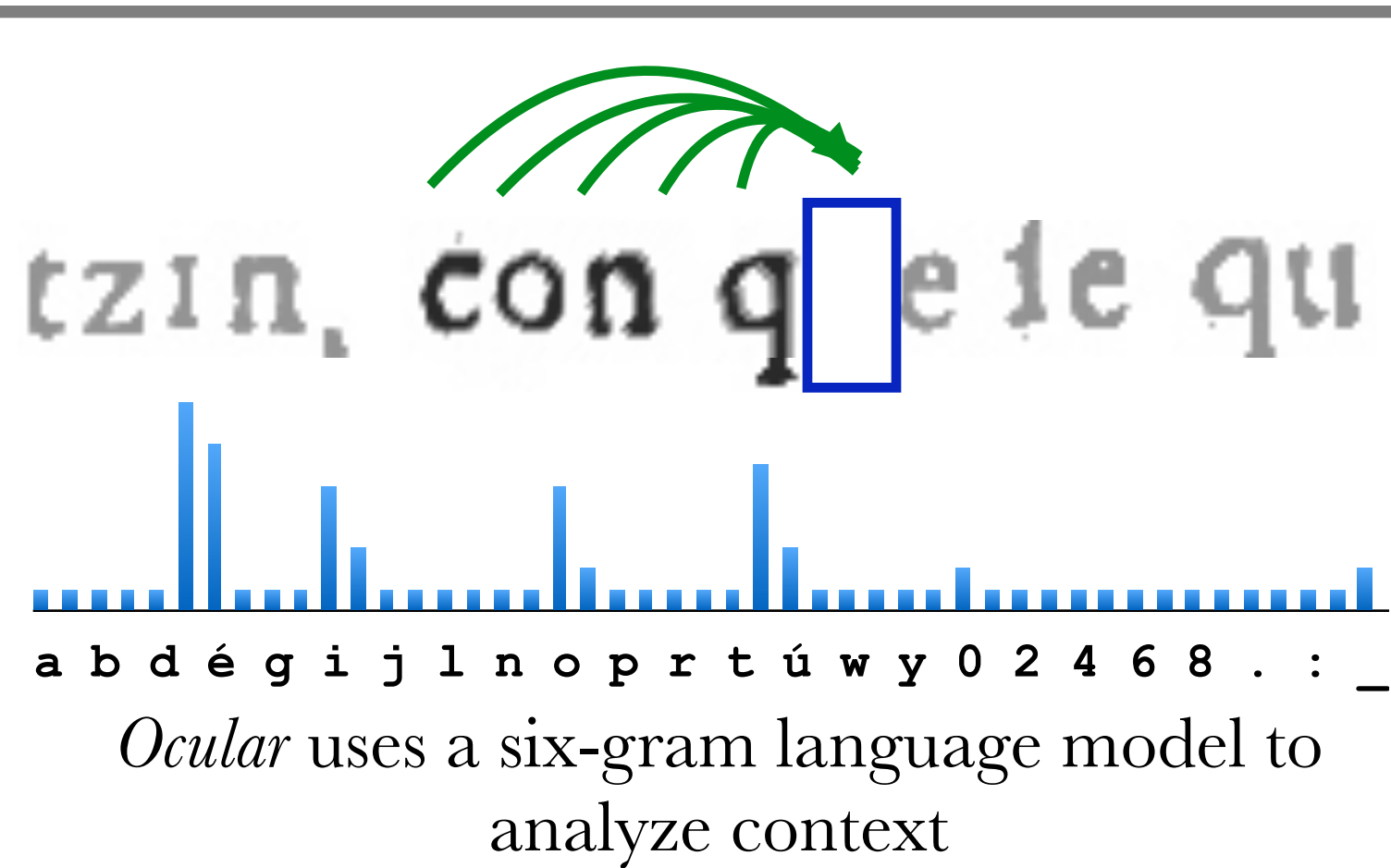## Results:

"Faithful" automatic transcription

A y proprio vocablo de logró, que es . tetech - tlaixtlapanaliztli, tetechtla miec caquixtiliztli, y para decir de|te a logro? Cuix tetech otitlaix-tlapan, cuix tech otitlani teccaquixti?

Sample output from our system, including language switching.

Experimental Results

	Character Error Rate	Word Error Rate
Ocular	12.3	43.6
+ code switch	11.3	41.5
+ orth. var.	10.5	38.2

Lower is better.