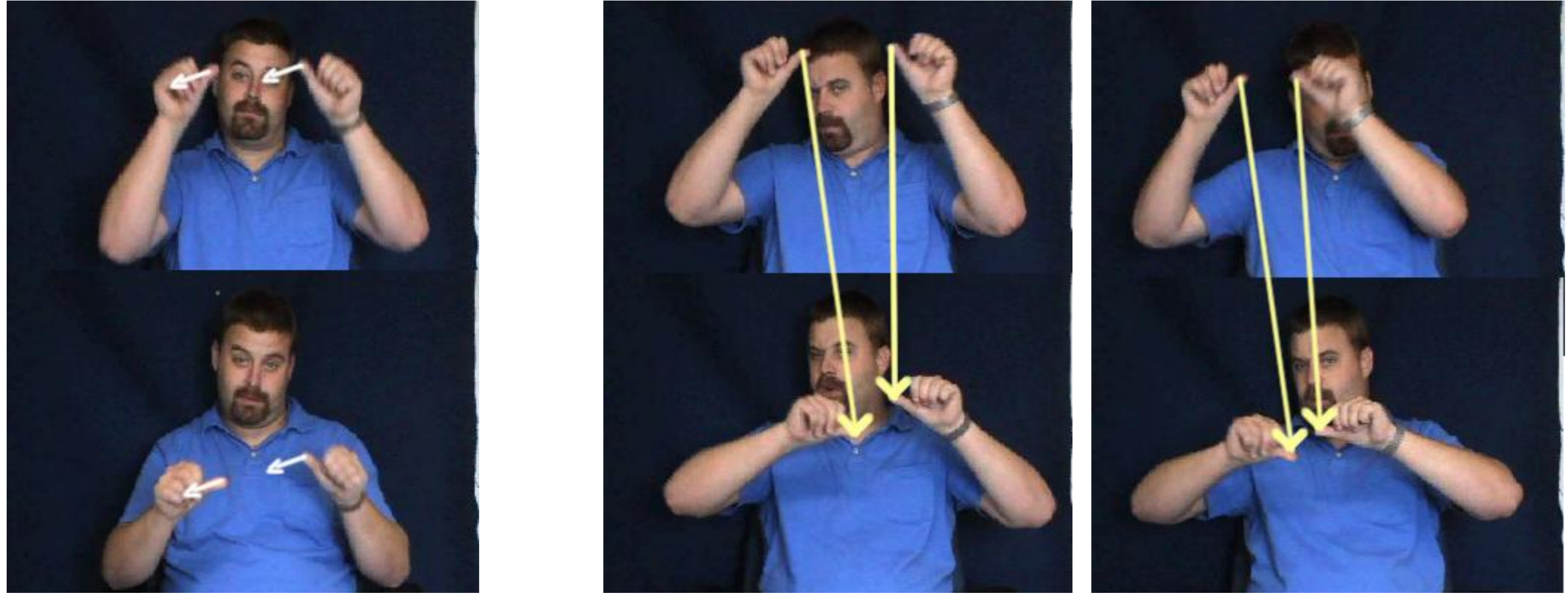


Zoya Gavrilov, Stan Sclaroff*, Carol Neidle*, Sven Dickinson

MOTIVATION



Neidle (2007)

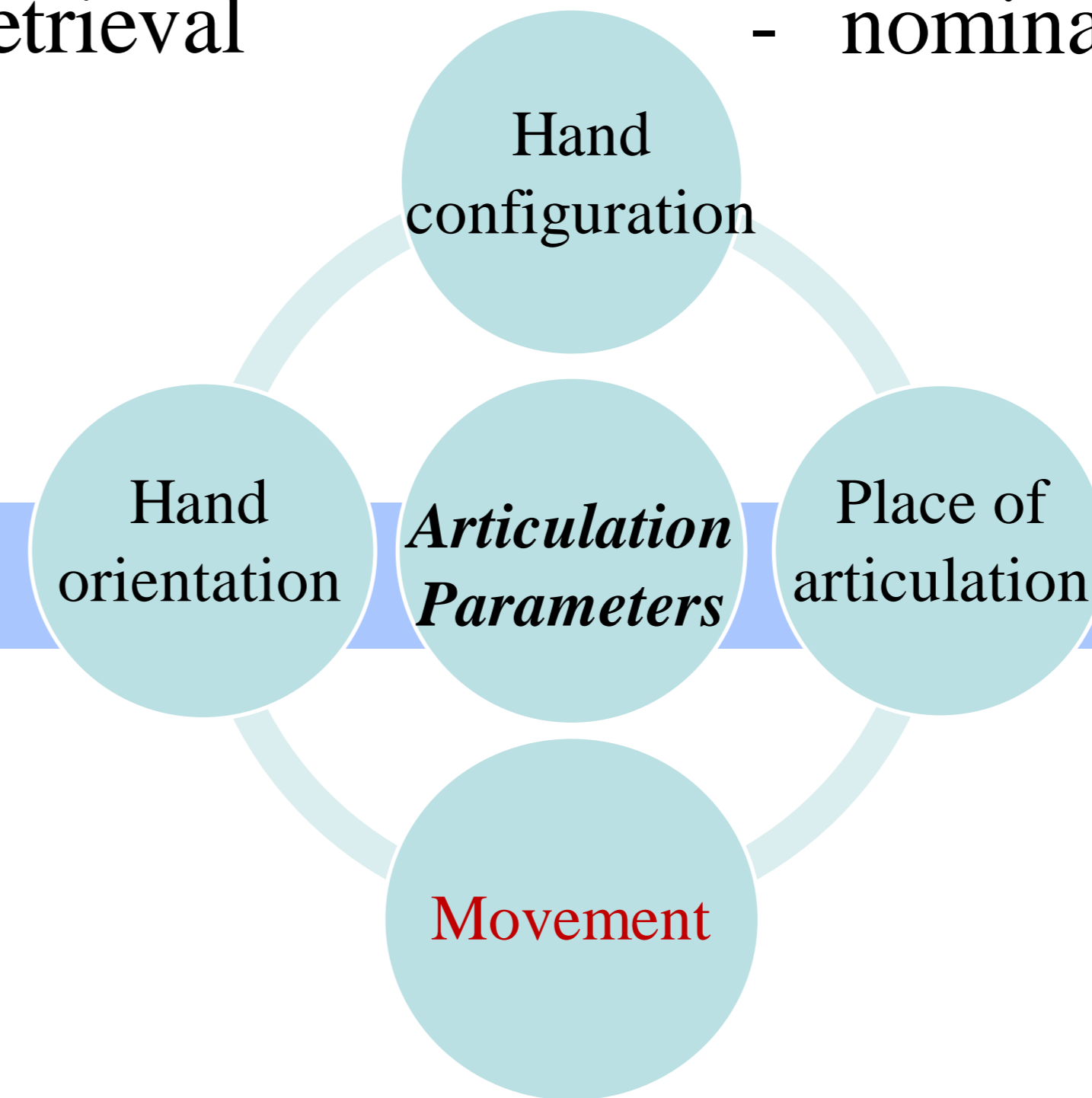
Reduplication

computational significance

- automated ASL recognition
- sign segmentation
- storage and retrieval

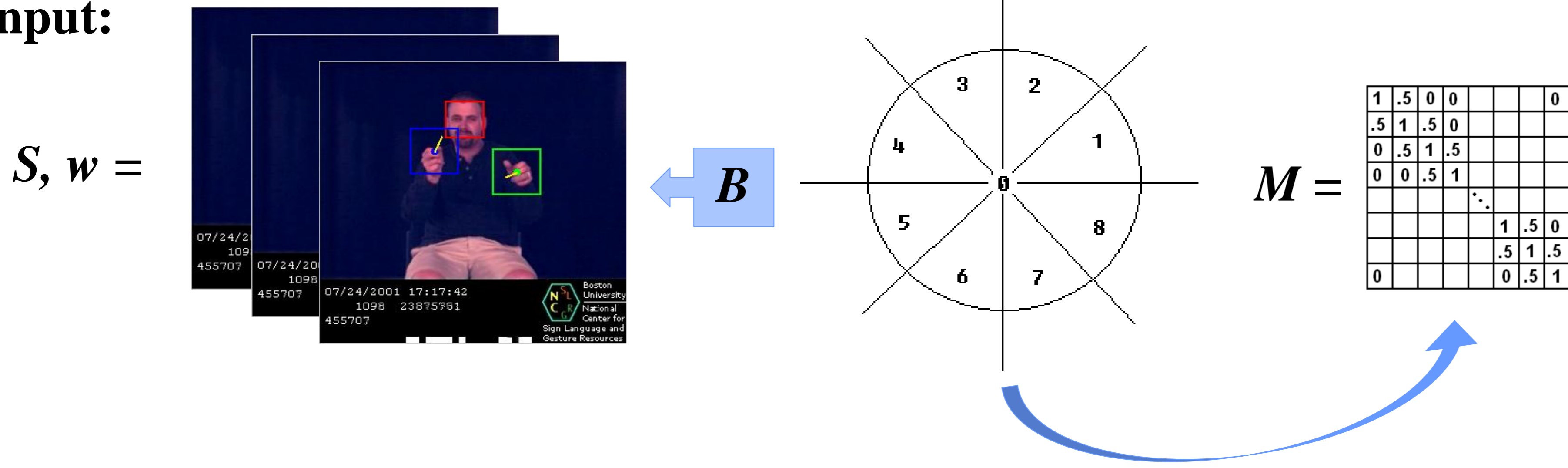
linguistic significance

- overt marking of plurality on nouns
- aspectual inflection on verbs
- nominalization of verbal forms



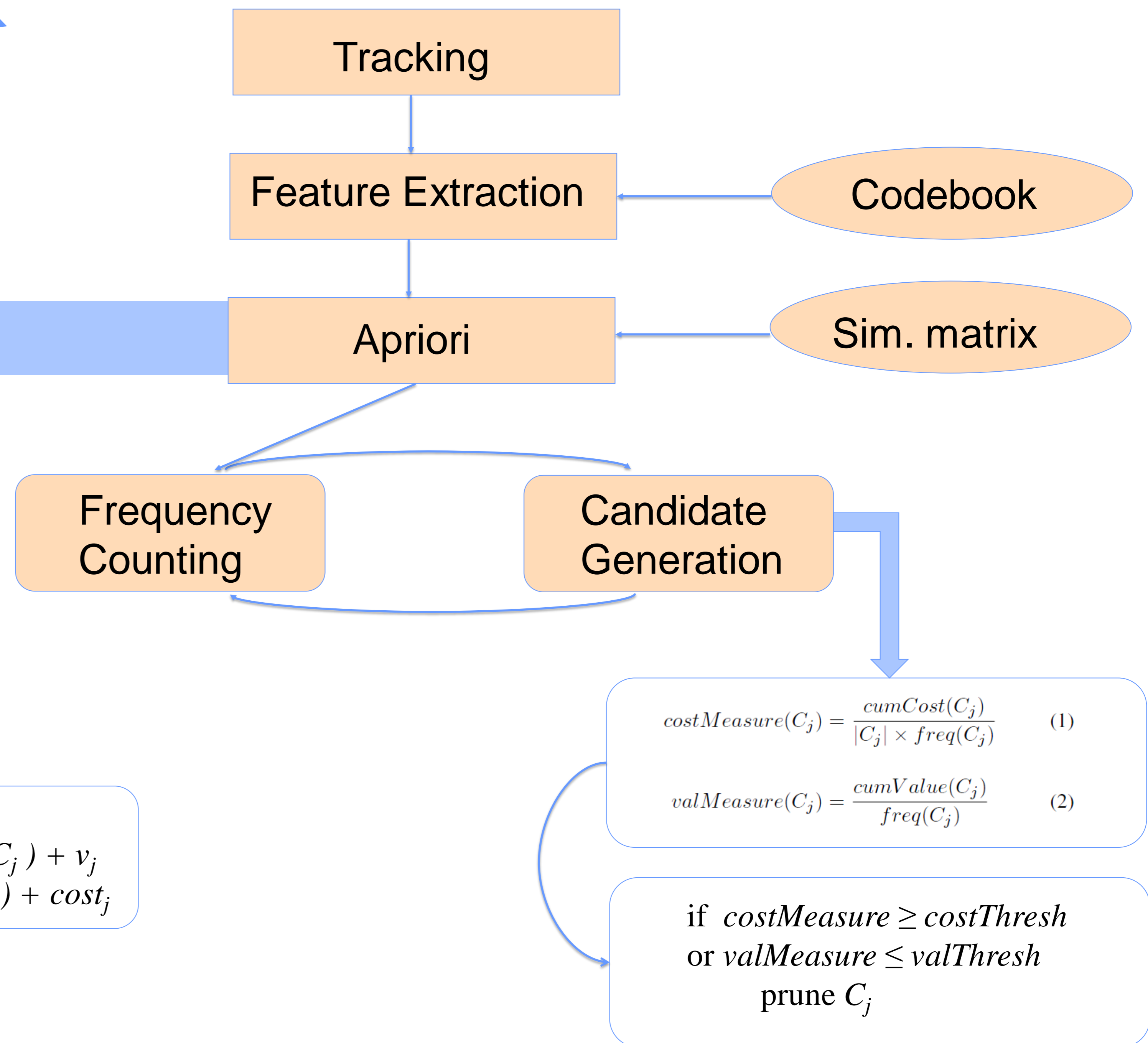
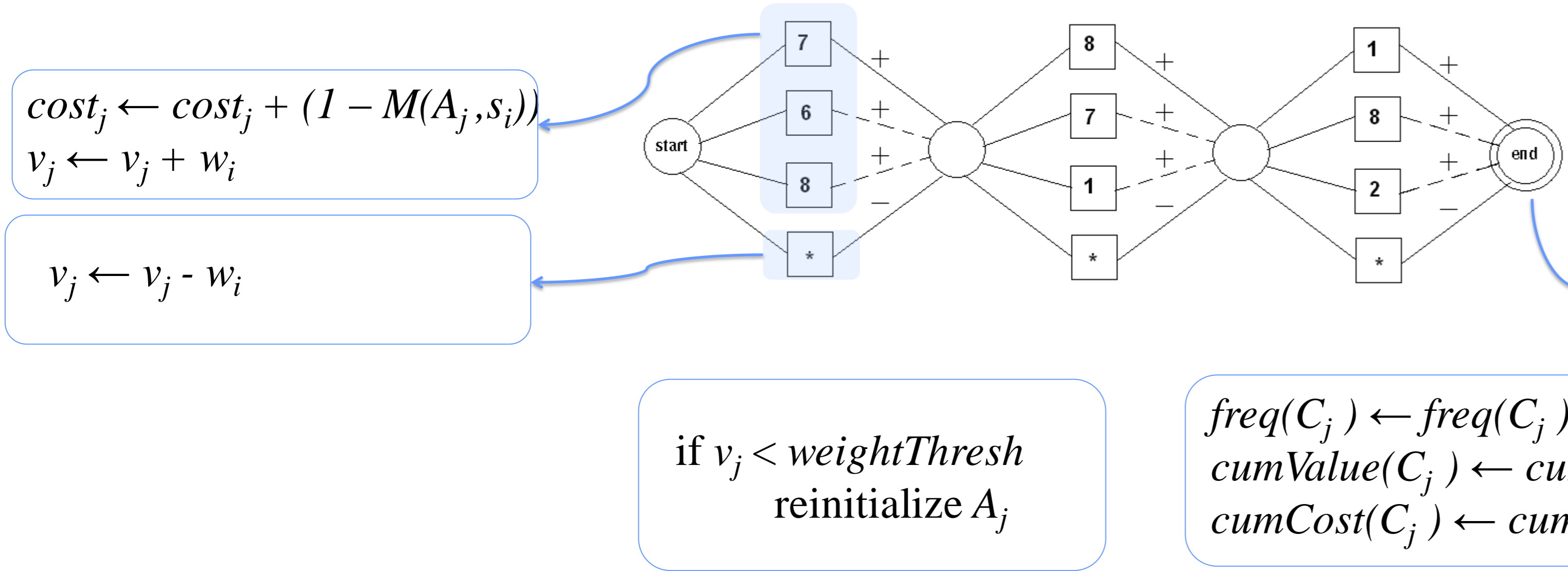
APPROACH

Input:



ALGORITHM

$S = 07881877618788125$
 $w = [0, 0.06, 0.07, 0.07, 0.03, 0.11, 0.07, 0.11, 0.06, 0.03, 0.02, 0.07, 0.05, 0.04, 0.08, 0.18, 0]$

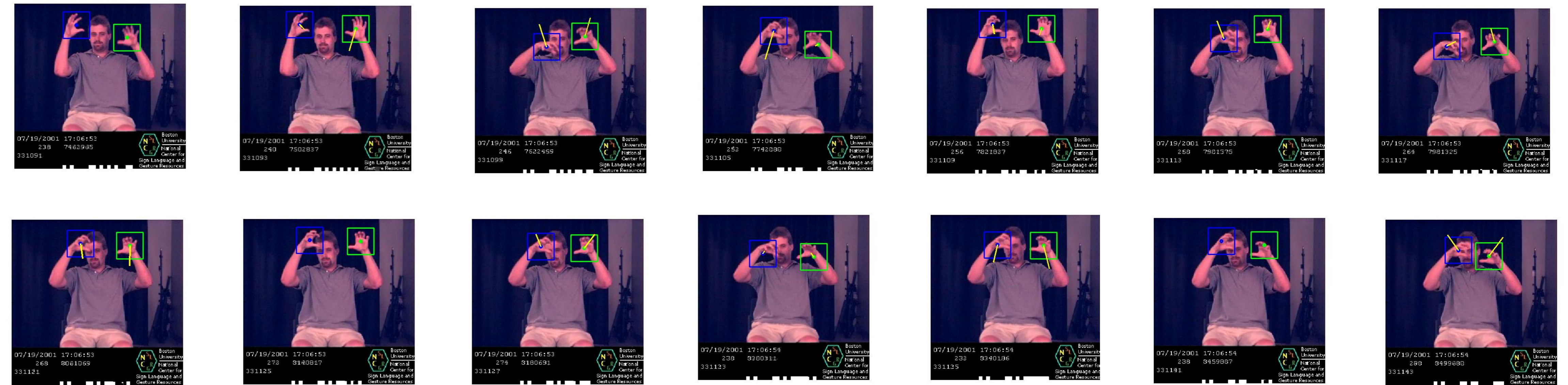
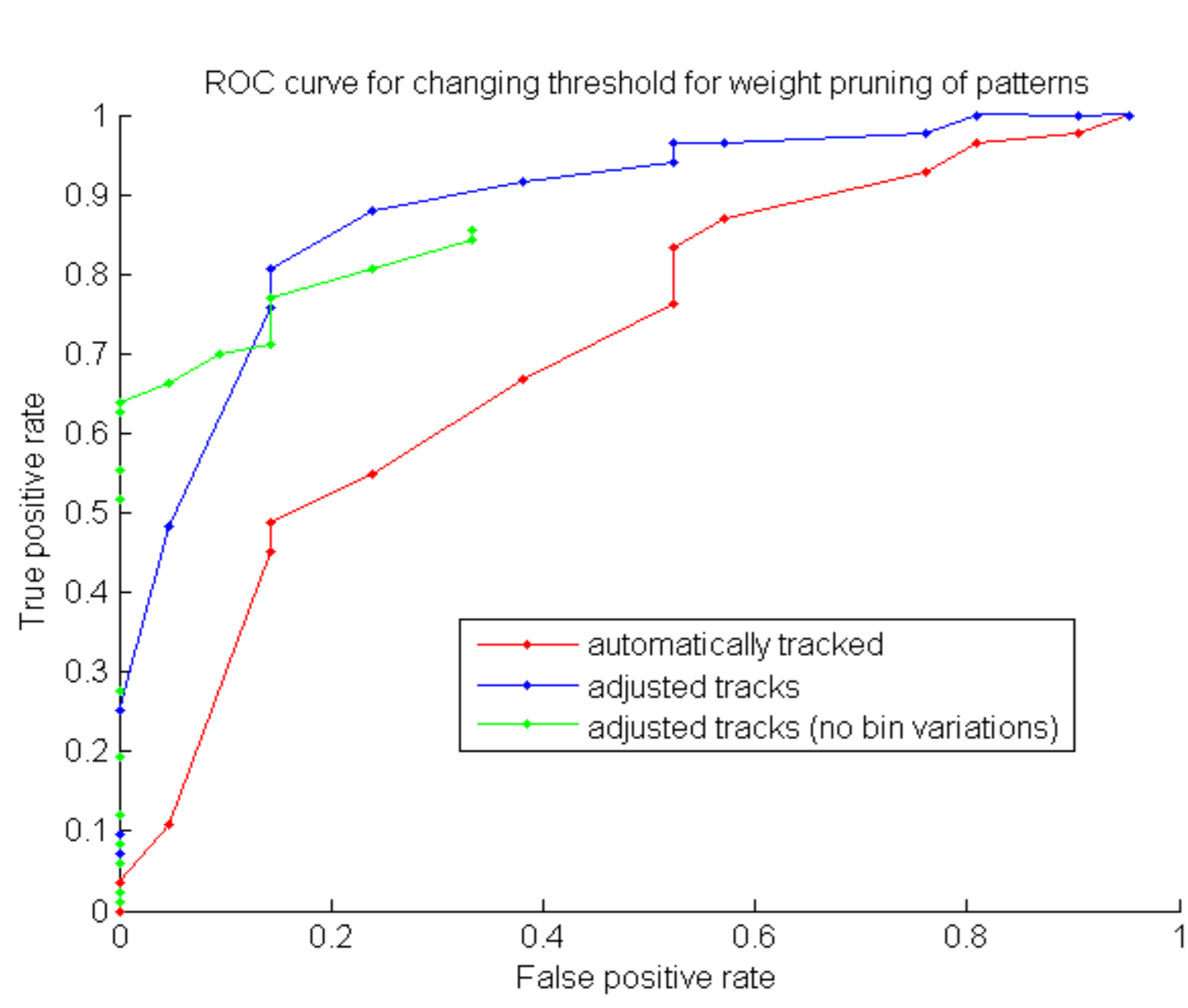


Apriori algorithm: efficiently finding repeated patterns in data streams (Agrawal et al., 1993)

Apriori property: frequency of a pattern is bounded above by the frequencies of its subpatterns

[78, 81] → 781

EVALUATION



Sample results:

Input: 0536556636823663723583188
 0627777788665544332332178788888
 033333345787778133333777868111
 088834434581885544433188888255
 Detected patterns: '3632' '3638' '6323' '6383'
 '278'
 '3781'
 '4185' '4385' '8438'

Corpus:

- National Center for Sign Language and Gesture Resources (NCLGR) Corpus*
- 105 lexical signs: 84 with reduplication, 21 without
- 2 native signers, 11-separately recorded videos (RGB, grayscale)

* a collection of ASL videos collected at Boston University from native signers and linguistically annotated using SignStream™ (Neidle, 2002)

<http://www.bu.edu/asllrp>

EXTENSIONS

- more complete hand representations (add articulation parameters)
- better localization of hands in space (e.g. kinect for depth)

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