

	D	G	N	T	g	à	á	â	ā	í	ṛ	ñ	ǎ
nas	-	-	+	-	-	-	-	-	-	+	+	+	-
cons	+	+	+	+	+	-	-	-	-	+	+	+	-
son	-	-	+	-	-	+	+	+	+	+	+	+	+
voi	+	+	+	-	-	+	+	+	+	+	+	+	+
cg	-	+	-	-	+	-	-	-	-	-	-	-	-
H	0	0	0	0	0	-	+	-	-	-	-	+	+
L	0	0	0	0	0	+	-	-	+	-	+	-	-
short	0	0	0	0	0	+	+	-	-	-	-	-	-
fall	0	0	0	0	0	-	-	-	-	-	-	+	+

Table 1: Feature specification table for Shanghai segments

```
./bufia -b False -o succ -k 3 -n 2 -
data/shanghai_data.txt data/shanghai_features.csv
```

```
[] [+voi,-son]
>[] [-cg,-son]
>[] [+cons,-L]
[+voi] [-fall,+H]
[-cg] [+cons,-short]
[+cons] [-son]
[-short] [-nas]
[-fall] [-short]
[-fall] [-fall]
[+nas] [+cons]
[-voi] [+cons]
[-voi] [+L]
[+cg] [-fall,+H]
[+short] [+voi]
[-cg,+cons] [+cons]
[-voi,+cg] []
[] [] [-short]
[] [] [-fall]
[+cg] [-L] []
[+voi,-nas] [-L] []
```

```
bufia ./bufia -b False -o succ -k 3 -n 2 --
keep='["cons","son","cg","H","L","voi"]'
data/shanghai_data.txt data/shanghai_features.csv
```

pos1	pos2
[]	[+voi, -son]
[]	[-cg, -son]
[]	[+cons, -L]
[-cg]	[+cons, -H]
[+cons]	[-son]
[-cons]	[-cons]
[-H]	[-cons]
[-L]	[-cons]
[-voi]	[+cons]
[-voi]	[+L]
[-cg, +cons]	[+cons]
[-H, -L]	[-son]
[-voi, +cg]	[]
[]	[-cons]
[+voi]	[-L, -son]
[+cg]	[-L]
[+voi, -son]	[-L]

```

bufia ./bufia -b False -o succ -k 3 -n 2
--keep='["son","cg","H","L","voi"]'
data/shanghai_data.txt data/shanghai_features.csv

```

[+voi	
[] -son]	/f/ only occur initially
[] [-cg, -son]	obstruent only occur initially
[-H] [-H]	monosyllabic
[-H] [-L]	monosyllabic
[-L] [-H]	monosyllabic
[-L] [-L]	monosyllabic
[-son] [-son]	no obstruent clusters
[-voi] [+L]	voiceless has to start low
[-H, -L] [-son]	closed syllable do not have M tone
[-voi, +cg] []	glottal stop only occur finally
[] [] [-H]	
[] [] [-L]	
[-H] [] []	
[-L] [] []	
[+voi] [-L] [-son]	NV? only starts L
[+cg] [-L] []	*/f/ only starts L in closed syllable
[+voi, -son] [-L] []	voiced obstruent onset cannot start L

```

bufia ./bufia -b False -o succ -k 3 -n 2
--keep='["son","L","voi"]'
data/shanghai_data.txt data/shanghai_features.csv

```

```

[ ] [+voi,-son]
[-L] [-L]
[-L] [+L]
[-son] [-son]
[+L] [-L]
[+L] [+L]
[-voi] [+L]
[] [] [-L]
[] [] [+L]
[] [-son] []
[+voi] [-L] [-son]
[-L] [] []
[+L] [] []
[+voi,-son] [-L] []

```

```

./bufia -b False -o succ -k 3 -n 2 --keep='["son","L","voi","cg"]' \
data/shanghai_data.txt data/shanghai_features.csv

```

```

[] [+voi,-son]
[] [-cg,-son]
[-L] [-L]
[-L] [+L]
[-son] [-son]
[+L] [-L]
[+L] [+L]
[-voi] [+L]
[-voi,+cg] []
[] [] [-L]
[] [] [+L]
[+voi] [-L] [-son]
[-L] [] []
[+L] [] []
[+cg] [-L] []
[+voi,-son] [-L] []

```