Confusion matrix — Ground truth (rows) vs Predicted labels (columns), values in percent.

| Ground truth \ Predicted | /sil/ | /a/ | /Ê/ | /Û/ | /Ô/ | /u/ | /y/ | /i/ | /ã/ | /ɔ̃/ | /µ/ | /w/ | /ɥ/ | /j/ | /l/ | /ʁ/ | /n/ | /m/ | /ɲ/ | /p/ | /t/ | /k/ | /b/ | /d/ | /g/ | /f/ | /s/ | /ʃ/ | /v/ | /z/ | /ʒ/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /sil/ | 62.9 | 1.0 | 2.8 | 3.2 | 0.5 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 2.7 | 0.1 | 0.1 | 0.1 | 1.6 | 3.2 | 0.5 | 0.4 | 0.1 | 2.1 | 3.1 | 2.1 | 0.7 | 0.7 | 0.2 | 1.5 | 3.1 | 0.9 | 0.3 | 4.2 | 0.5 |
| /a/ | 0.5 | 55.1 | 2.4 | 4.5 | 2.0 | 0.1 | 0.1 | 0.0 | 1.3 | 0.2 | 20.1 | 1.0 | 0.1 | 0.2 | 2.3 | 2.5 | 0.9 | 0.7 | 0.4 | 0.7 | 0.5 | 0.3 | 0.7 | 0.2 | 0.3 | 0.2 | 0.4 | 0.2 | 0.7 | 0.8 | 0.7 |
| /Ê/ | 0.8 | 3.5 | 57.5 | 9.8 | 0.4 | 0.1 | 1.4 | 2.3 | 0.1 | 0.5 | 4.5 | 0.2 | 0.3 | 1.7 | 5.0 | 1.2 | 2.0 | 0.6 | 0.8 | 0.4 | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 0.2 | 0.4 | 0.3 | 0.5 | 2.1 | 0.7 |
| /Û/ | 1.3 | 3.1 | 5.9 | 49.9 | 4.6 | 0.6 | 1.7 | 0.4 | 0.5 | 0.7 | 8.2 | 0.5 | 0.3 | 0.6 | 6.0 | 1.7 | 3.1 | 1.8 | 0.6 | 0.6 | 0.4 | 0.3 | 0.5 | 0.6 | 0.5 | 0.3 | 0.6 | 0.4 | 1.0 | 2.5 | 0.8 |
| /Ô/ | 0.8 | 2.9 | 0.9 | 13.7 | 43.1 | 3.2 | 0.6 | 0.2 | 6.8 | 3.6 | 7.6 | 2.0 | 0.1 | 0.2 | 1.6 | 3.8 | 1.1 | 1.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.9 | 1.3 | 0.3 |
| /u/ | 0.3 | 0.3 | 0.4 | 11.5 | 15.8 | 36.9 | 1.3 | 0.5 | 2.1 | 4.3 | 2.2 | 3.5 | 0.3 | 0.2 | 1.9 | 2.1 | 3.2 | 3.0 | 0.4 | 0.7 | 0.3 | 0.3 | 1.0 | 0.3 | 0.5 | 0.4 | 0.4 | 0.3 | 2.8 | 1.9 | 1.1 |
| /y/ | 0.3 | 0.4 | 6.7 | 12.4 | 0.8 | 0.5 | 43.2 | 5.0 | 0.1 | 0.3 | 0.9 | 0.3 | 2.7 | 3.5 | 6.7 | 0.7 | 2.9 | 1.8 | 0.8 | 0.4 | 0.7 | 0.7 | 0.2 | 0.6 | 0.4 | 0.4 | 1.1 | 0.6 | 1.3 | 2.2 | 1.4 |
| /i/ | 0.5 | 0.2 | 15.0 | 4.5 | 0.2 | 0.2 | 5.2 | 38.0 | 0.0 | 0.3 | 0.6 | 0.1 | 1.5 | 4.4 | 8.3 | 0.5 | 3.9 | 1.4 | 2.6 | 0.2 | 0.7 | 0.6 | 0.2 | 0.7 | 0.6 | 0.2 | 1.3 | 0.5 | 0.8 | 5.5 | 1.3 |
| /ã/ | 0.3 | 14.7 | 0.6 | 4.5 | 4.6 | 0.4 | 0.2 | 0.1 | 27.3 | 2.3 | 26.8 | 1.0 | 0.0 | 0.1 | 1.9 | 2.4 | 3.5 | 3.3 | 0.5 | 0.3 | 0.4 | 0.2 | 0.8 | 0.6 | 0.5 | 0.2 | 0.3 | 0.2 | 0.6 | 0.8 | 0.6 |
| /ɔ̃/ | 0.3 | 1.7 | 0.3 | 7.7 | 15.5 | 1.9 | 0.5 | 0.1 | 18.3 | 19.7 | 12.5 | 1.4 | 0.1 | 0.1 | 1.6 | 2.5 | 4.1 | 4.4 | 0.4 | 0.6 | 0.3 | 0.4 | 1.5 | 0.8 | 1.0 | 0.2 | 0.3 | 0.1 | 0.7 | 1.0 | 0.1 |
| /µ/ | 1.1 | 9.8 | 14.2 | 9.4 | 1.4 | 0.2 | 1.1 | 0.3 | 0.9 | 0.7 | 38.4 | 0.3 | 0.2 | 0.5 | 2.9 | 1.5 | 6.5 | 3.6 | 1.0 | 0.3 | 0.3 | 0.5 | 0.5 | 0.6 | 1.2 | 0.1 | 0.4 | 0.1 | 0.5 | 1.5 | 0.3 |
| /w/ | 0.5 | 5.1 | 0.4 | 4.0 | 5.7 | 2.2 | 0.4 | 0.0 | 2.4 | 2.2 | 4.6 | 59.7 | 1.0 | 0.1 | 1.5 | 2.3 | 1.1 | 2.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.6 | 0.1 | 0.1 | 0.3 | 0.4 | 0.1 | 1.5 | 0.7 | 0.1 |
| /ɥ/ | 0.2 | 0.3 | 4.2 | 4.2 | 0.3 | 0.3 | 15.3 | 4.7 | 0.0 | 0.1 | 0.2 | 1.4 | 45.6 | 1.0 | 7.0 | 1.8 | 3.1 | 2.3 | 0.6 | 0.6 | 0.6 | 1.0 | 0.1 | 0.2 | 0.1 | 0.7 | 0.6 | 0.2 | 1.2 | 1.0 | 1.0 |
| /j/ | 0.3 | 0.8 | 11.3 | 4.3 | 0.6 | 0.2 | 2.8 | 7.2 | 0.1 | 0.2 | 1.9 | 0.2 | 1.1 | 47.2 | 6.0 | 0.3 | 2.0 | 1.0 | 3.0 | 0.1 | 0.2 | 0.2 | 0.6 | 0.7 | 0.2 | 0.8 | 0.9 | 1.2 | 3.6 | 1.1 | 0.2 |
| /l/ | 1.0 | 2.1 | 7.3 | 8.7 | 1.0 | 0.3 | 2.8 | 1.7 | 0.3 | 0.4 | 2.6 | 0.5 | 0.7 | 2.2 | 49.5 | 0.9 | 4.6 | 2.5 | 1.2 | 0.4 | 0.4 | 0.2 | 0.7 | 2.1 | 0.7 | 0.2 | 0.4 | 0.2 | 1.0 | 2.4 | 1.1 |
| /ʁ/ | 2.0 | 5.5 | 2.2 | 6.8 | 3.6 | 1.0 | 0.5 | 0.3 | 2.9 | 1.1 | 7.2 | 1.7 | 0.2 | 0.3 | 1.9 | 50.1 | 1.2 | 1.0 | 0.2 | 0.7 | 0.8 | 0.7 | 0.4 | 0.6 | 0.5 | 0.8 | 1.2 | 0.5 | 1.4 | 2.2 | 0.5 |
| /n/ | 0.2 | 1.5 | 1.9 | 7.1 | 0.7 | 0.5 | 1.6 | 1.0 | 0.5 | 0.6 | 4.3 | 0.6 | 0.5 | 1.0 | 11.2 | 0.6 | 43.5 | 7.0 | 9.6 | 0.1 | 0.1 | 0.1 | 0.7 | 1.5 | 1.1 | 0.1 | 0.1 | 0.0 | 0.5 | 1.5 | 0.2 |
| /m/ | 0.2 | 1.1 | 1.2 | 3.2 | 0.9 | 0.7 | 1.1 | 0.6 | 0.5 | 0.5 | 1.4 | 1.0 | 0.8 | 0.2 | 3.1 | 0.5 | 10.6 | 67.3 | 1.0 | 0.1 | 0.1 | 0.1 | 1.7 | 0.6 | 0.3 | 0.0 | 0.1 | 0.0 | 0.7 | 0.5 | 0.1 |
| /ɲ/ | 0.1 | 1.3 | 2.4 | 3.5 | 0.6 | 0.2 | 2.2 | 1.4 | 0.4 | 0.6 | 2.5 | 0.4 | 0.3 | 4.8 | 6.2 | 0.3 | 15.7 | 4.0 | 50.3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.8 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.2 |
| /p/ | 4.0 | 1.3 | 1.2 | 1.4 | 0.8 | 0.7 | 0.3 | 0.3 | 0.5 | 0.3 | 1.6 | 0.7 | 0.6 | 0.1 | 1.2 | 1.2 | 0.7 | 1.6 | 0.1 | 58.0 | 6.6 | 1.7 | 4.2 | 1.2 | 0.4 | 2.4 | 1.2 | 0.1 | 3.0 | 2.6 | 0.2 |
| /t/ | 4.9 | 1.0 | 2.0 | 2.2 | 0.7 | 0.3 | 1.6 | 0.8 | 0.5 | 0.2 | 2.0 | 0.4 | 0.4 | 1.0 | 2.7 | 1.2 | 1.6 | 0.6 | 0.3 | 2.2 | 44.1 | 7.4 | 0.3 | 3.8 | 0.5 | 1.1 | 6.9 | 0.7 | 0.9 | 6.6 | 1.0 |
| /k/ | 4.5 | 1.1 | 1.7 | 1.7 | 1.3 | 0.9 | 1.0 | 0.5 | 0.4 | 0.5 | 2.3 | 0.6 | 0.6 | 0.6 | 2.6 | 6.5 | 0.8 | 0.6 | 0.2 | 1.5 | 4.1 | 46.2 | 0.1 | 0.4 | 4.5 | 2.4 | 4.1 | 1.0 | 1.5 | 4.5 | 1.3 |
| /b/ | 0.9 | 1.2 | 1.5 | 2.6 | 0.7 | 0.5 | 0.5 | 0.2 | 0.2 | 0.2 | 0.8 | 1.3 | 0.7 | 0.3 | 2.3 | 0.6 | 3.2 | 12.0 | 0.2 | 0.9 | 0.2 | 0.2 | 58.3 | 4.2 | 1.0 | 0.1 | 0.2 | 0.0 | 3.6 | 1.4 | 0.3 |
| /d/ | 0.8 | 0.9 | 3.6 | 3.4 | 0.7 | 0.5 | 1.0 | 0.7 | 0.6 | 0.3 | 1.3 | 0.4 | 0.3 | 1.9 | 8.8 | 0.9 | 10.0 | 2.9 | 2.1 | 0.2 | 1.1 | 0.3 | 2.1 | 42.9 | 3.8 | 0.1 | 0.3 | 0.0 | 1.5 | 6.0 | 0.8 |
| /g/ | 0.4 | 2.3 | 2.5 | 3.3 | 0.5 | 0.7 | 1.1 | 0.6 | 0.3 | 0.4 | 1.8 | 0.4 | 0.4 | 4.5 | 5.1 | 2.8 | 3.6 | 1.2 | 1.5 | 0.2 | 0.4 | 1.9 | 2.3 | 3.0 | 49.9 | 0.1 | 0.1 | 0.1 | 2.1 | 5.0 | 1.3 |
| /f/ | 4.6 | 0.7 | 2.0 | 1.9 | 0.6 | 0.4 | 0.6 | 0.2 | 0.6 | 0.2 | 2.5 | 0.7 | 0.3 | 0.2 | 0.9 | 1.6 | 0.4 | 0.5 | 0.1 | 0.8 | 1.7 | 0.8 | 0.2 | 0.1 | 0.2 | 41.4 | 23.1 | 0.8 | 5.4 | 6.1 | 0.4 |
| /s/ | 2.8 | 0.5 | 1.0 | 2.0 | 0.6 | 0.4 | 0.7 | 0.7 | 0.3 | 0.2 | 1.3 | 0.4 | 0.2 | 1.2 | 1.2 | 0.7 | 0.4 | 0.2 | 0.1 | 1.4 | 0.8 | 0.1 | 0.2 | 0.1 | 2.0 | 0.2 | 65.1 | 4.5 | 0.5 | 9.2 | 1.0 |
| /ʃ/ | 1.6 | 0.4 | 0.9 | 1.1 | 0.4 | 0.6 | 1.6 | 0.5 | 0.2 | 0.1 | 0.8 | 0.3 | 0.7 | 2.8 | 1.1 | 0.8 | 0.2 | 0.2 | 0.0 | 0.4 | 0.9 | 0.0 | 0.1 | 0.1 | 0.1 | 4.0 | 17.5 | 52.5 | 0.4 | 3.2 | 6.4 |
| /v/ | 0.5 | 1.1 | 2.3 | 4.6 | 1.1 | 0.7 | 1.4 | 0.8 | 0.3 | 0.2 | 1.7 | 2.7 | 1.5 | 1.3 | 4.8 | 1.3 | 2.6 | 3.7 | 0.4 | 0.2 | 0.2 | 2.0 | 2.2 | 0.8 | 0.5 | 0.2 | 0.1 | 0.2 | 47.2 | 12.2 | 1.4 |
| /z/ | 4.1 | 1.4 | 3.1 | 6.8 | 1.1 | 0.3 | 1.1 | 1.2 | 0.5 | 0.5 | 2.9 | 0.3 | 0.2 | 1.5 | 4.0 | 1.5 | 2.6 | 1.4 | 0.6 | 0.1 | 1.5 | 0.9 | 0.5 | 1.2 | 0.7 | 0.8 | 4.6 | 0.9 | 1.7 | 47.9 | 3.4 |
| /ʒ/ | 0.5 | 1.1 | 2.6 | 3.6 | 0.5 | 0.7 | 1.8 | 1.4 | 0.3 | 0.1 | 2.6 | 0.2 | 0.8 | 2.8 | 3.2 | 0.7 | 0.9 | 0.3 | 0.3 | 0.1 | 0.2 | 0.3 | 0.2 | 0.3 | 0.5 | 0.3 | 1.9 | 3.0 | 4.0 | 13.2 | 51.9 |

**Ground truth** (vertical axis) / **Predicted labels** (horizontal axis)