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|  |  | **ady** | **bul** | **cym**  **(wel)** | **ell**  **(gew)** | **eng** | **fra**  **(fre)** | **hbs** | **hin** | **hun** | **hye**  **(arm)** | **ice** | **ita** | **jpn** | **kat**  **(geo)** | **khm** | **kor** | **lav** | **lit** | **mlt** | **nld**  **(dut)** | **rum** | **slv** | **vie** |
| **BS20** | pair  n-gram | 32.00 | 41.33 |  | 21.78 |  | 13.56 |  | 12.67 | 6.67 | 18.00 | 17.56 |  | 9.56 | 37.78 |  | 52.22 |  | 23.11 |  | 23.78 | 11.56 |  | 8.44 |
| *7.56* | *9.05* |  | *4.05* |  | *3.12* |  | *4.05* | *1.51* | *3.90* | *3.62* |  | *2.07* | *6.48* |  | *15.88* |  | *4.43* |  | *3.97* | *3.55* |  | *1.79* |
| transfor-mer | 28.44 | 34.00 |  | 18.89 |  | 6.89 |  | 9.56 | 5.33 | 14.22 | 10.22 |  | 7.33 | 28.00 |  | 43.78 |  | 20.67 |  | 15.78 | 12.00 |  | 7.56 |
| *6.49* | *7.89* |  | *3.06* |  | *1.72* |  | *2.40* | *1.28* | *3.29* | *2.21* |  | *1.86* | *5.43* |  | *17.50* |  | *3.65* |  | *2.89* | *3.62* |  | *2.27* |
| LSTM | 28.00 | 31.11 |  | 18.89 |  | **6.22** |  | 6.67 | 5.33 | 14.67 | 10.00 |  | 7.56 | 26.44 |  | 46.89 |  | **19.11** |  | 16.44 | 10.67 |  | 4.67 |
| *6.53* | *5.94* |  | *3.30* |  | *1.32* |  | *1.47* | *1.18* | *3.49* | *2.36* |  | *1.79* | *5.14* |  | *16.78* |  | *3.55* |  | *2.94* | *2.53* |  | *1.52* |
| **DS** |  | 24.67 | - |  | - |  | 5.11 |  | - | - | - | - |  | **4.89** | - |  | 24.00 |  | - |  | - | **9.78** |  | **0.89** |
| **IMS** |  | 25.00 | 22.22 |  | **18.67** |  | 6.89 |  | **5.11** | 5.11 | 12.67 | **9.33** |  | 5.33 | 24.89 |  | 26.22 |  | 20.00 |  | **13.56** | 10.22 |  | 1.56 |
| *5.79* | *4.85* |  | *2.97* |  | *1.60* |  | *1.20* | *1.12* | *2.94* | *2.04* |  | *1.26* | *4.57* |  | *4.38* |  | *3.63* |  | *2.36* | *2.23* |  | *0.48* |
| **BS21** |  | **22.00** | **18.30** | **10.00** | 21.00 | 41.94 | 8.50 | **32.10** |  | 1.80 | 7.00 | 12.00 | **19.00** | 5.20 | **0.00** | 34.00 | 16.30 | 55.00 |  | 19.00 | 14.70 | 10.00 | 49.00 | 2.50 |
| **CL21** |  | **22.00** | 18.80 | **10.00** | 20.00 |  | 7.50 | 35.30 |  | **1.00** | **6.40** | 10.00 | 31.00 | 5.00 | **0.00** | 32.00 | **16.20** | **49.00** |  | 12.00 | 14.70 | 12.00 | 50.00 | 2.00 |
| **UBC**  **21** | UBC-1 | 25.00 |  | 13.00 | 22.00 |  |  |  |  |  |  | 13.00 | 20.00 |  |  | 31.00 |  | 58.00 |  | 19.00 |  | 14.00 | 56.00 |  |
| UBC-2 | **22.00** |  | 12.00 | 22.00 |  |  |  |  |  |  | 11.00 | 22.00 |  |  | **28.00** |  | **49.00** |  | **18.00** |  | 10.00 | **47.00** |  |
| **DP21** |  |  |  |  |  | **37.43** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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The rows marked in orange and in italics are PER scores, all the others are WER scores.

**BS20:** [The SIGMORPHON 2020 Shared Task on Multilingual Grapheme-to-Phoneme Conversion - ACL Anthology](https://aclanthology.org/2020.sigmorphon-1.2/)

**DeepSPIN (DS):** Transformer- or LSTM-based enc-dec seq2seq models with sparse attention. Add language embedding to enc and dec states instead of language token. They did not report any results on the languages separately. Neither are the PER scores available.

[One-Size-Fits-All Multilingual Models - ACL Anthology](https://aclanthology.org/2020.sigmorphon-1.4/)

**IMS**: Self training ensemble of one n-gram-based FST and 3 seq2seq (vanilla with attention, hard monotonic attention with pointer, hybrid of hard monotonic attention and tagging model)

[Ensemble Self-Training for Low-Resource Languages: Grapheme-to-Phoneme Conversion and Morphological Inflection - ACL Anthology](https://aclanthology.org/2020.sigmorphon-1.5/)

**BS21**: similar to CL21

[Results of the Second SIGMORPHON Shared Task on Multilingual Grapheme-to-Phoneme Conversion - ACL Anthology](https://aclanthology.org/2021.sigmorphon-1.13/)

**CL21**: LSTM-based neural transducer with pointer network-like monotonic hard attention trained with imitation learning. 7 different, but still very similar ensembles of one model. I did not report results separately.

[CLUZH at SIGMORPHON 2021 Shared Task on Multilingual Grapheme-to-Phoneme Conversion: Variations on a Baseline - ACL Anthology](https://aclanthology.org/2021.sigmorphon-1.17/)

**UBC21**: UBC-2 baseline variant with vowel error punishment. UBC-1 baseline variant with syllable prediction.

[Linguistic Knowledge in Multilingual Grapheme-to-Phoneme Conversion - ACL Anthology](https://aclanthology.org/2021.sigmorphon-1.15/)

**DP21**: Majority-vote ensemble consisting of 7 different models

[Avengers, Ensemble! Benefits of ensembling in grapheme-to-phoneme prediction - ACL Anthology](https://aclanthology.org/2021.sigmorphon-1.16/)