Appendices

A Example of Learner Guesses vs. Model Predictions

To give a sense of the problem difficulty, we have hand-picked and presented two training samples (see Figure 7) with our basic model’s predictions. In Figure 7a a large portion of the sentence has been revealed to the user in English (blue text) only 2 words are in German. The text in bold font is the user’s guess. Our model expected both words to be guessed; the predictions are listed below the German words Verschiedene and Regierungen. The reference translation for the 2 words are Various and governments. In figure 7b we see a much harder context where only one word is shown in English, furthermore the revealed word is not particularly helpful as a contextual anchor.

User’s guess: BLANK countries

Macaronic: Verschiedene groups are fighting against the regierungen of Afghanistan and Pakistan. Sentence
different -3.2990 countries -3.9482
together -3.391 border -4.2053
decided -6.0850 regions -6.2433
considered -6.2010 legitimate -6.3764
parliament -6.3400 region -6.4340

(a)

User’s guess: party BLANK BLANK eight and day.

Macaronic: Therefore paar durften nur neen ein Kind. Sentence
farther -3.9912 giving -4.6726 now -2.2187 not -4.6029 ein -2.8907 kind -3.1862
are -4.5289 often -5.0798 nor -4.5556 tough -4.8329 in -4.8559 find -3.6685
for -4.9643 driven -5.7995 near -4.7914 much -4.7993 line -4.7991 kind -3.7972
cau -3.1519 european -5.8936 tour -4.3584 much -4.5152 line -3.6728 kind -3.9128
bar -5.1550 garden -6.0132 sure -4.9544 watch -6.6948 on -5.0852 find -4.6913

(b)

Figure 7: Two examples of the system’s predictions of what the user will guess on a single submission, contrasted with the user’s actual guess. (The user’s previous submissions on the same task instance are not shown.) In 7a, the model correctly expects that the substantial context will inform the user’s guess. In 7b, the model predicts that the user will fall back on string similarity. The numbers shown are log-probabilities. Both examples show the sentences in a macaronic state (after some reordering or translation has occurred). For example, the original text of the German sentence in 7b reads “Deshalb durften die Paare nur noch ein Kind bekommen.” The macaronic version has undergone some reordering, and has also erroneously dropped the verb due to an incorrect alignment.