

Figure 1: Jointly estimating the information  $n_i$  present in each multi-text intent i and the difficulty  $d_j$  of each language j. At left, gray text indicates translations of the original (white) sentence in the same row. At right, darker cells indicate higher surprisal/difficulty. Empty cells indicate missing translations. English (en) is missing a hard sentence and Bulgarian (bg) is missing an easy sentence, but this does not mislead our method into estimating English as easier than Bulgarian.