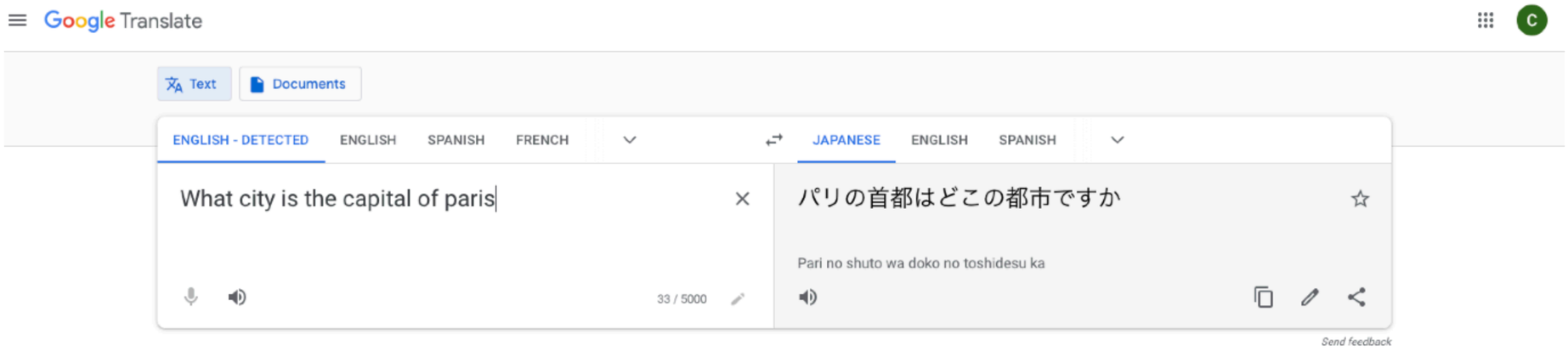
Successes

- Information retrieval and web search
- Semantic search with images
- Machine translation
- Recommender systems
- Various classification tasks (e.g., spam filtering)
- Speech recognition (aka ASR aka STT)
- Speech synthesis (aka TTS)
- Conversational assistants



Challenges

- AI assistants fall far short of human level interaction. At the highest level, this might/probably suggest(s) that learning textual representations alone is not sufficient to achieve this goal. In some ways this seems obvious. The problems of reference resolution and broad domain knowledge seem to be primary culprits, though this is a small slice of the problems that exist. **This means NLP is an exciting field to be in!**

- AIs built on logical representations of text are naturally equipped to perform logic & arithmetic, e2e AIs built on DNNs are not.

- Learning from voice/text, not surprisingly, means learning biases in those data; building systems around those biases propagates those biases. Technology should be for the benefit of society, thus fair and inclusive. Making systems fair and inclusive is an important area of R&D.