

Finding a Technical Solution to a Non-Technical Problem

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My younger sister is deaf and relied on auto-generated captions during the school closures in 2020. The captions were wrong often enough that she missed material in three of her five classes. I had been learning Python for eight months, and I understood enough about natural language processing to recognize that the problem was not technically unsolvable. It was that nobody with the skills to solve it had prioritized her use case.

I spent the following summer building a video captioning tool that used a locally-run speech recognition model rather than a cloud service, so it could run on the older laptop my sister had access to without requiring a subscription. The first version was slow and produced errors on proper nouns, technical vocabulary, and anything spoken quickly. The second version, which I completed in September, was accurate enough that my sister used it for the rest of the academic year. She passed all five classes.

What I learned from that project was not primarily technical, though I did learn a significant amount about audio processing and model optimization. What I learned was that the people who have the ability to solve a problem are not always the people who know the problem exists. My sister had been managing an accessibility gap that I had lived alongside without noticing. The gap existed not because the technology to close it was unavailable but because the people who could deploy that technology were not looking at the same world she was.

I intend to study human-computer interaction because I want to work on systems that are designed with their actual users in mind from the beginning rather than adapted for them afterward. The captioning tool I built for my sister was useful but it was also makeshift, a fix applied at the end rather than an accommodation built into the design. The field I want to enter is the one that asks, before building anything, who is going to use this and what are they actually trying to do.