How to typeset mathematics in \LaTeX{}, using your voice

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1 Introduction

First, some background. About halfway through my first semester in graduate school, I developed tendinitis in my right wrist (I am right-handed). I went to the doctor and they gave me a brace to wear, which helped a little but did not solve the problem. I resolved to learn to write with my left hand, and even turned in a problem set written left-handed. It was not long, however, before I strained a nerve in my left arm—a result of neck tension.

This was very stressful! I had just moved across the country to start a new chapter of my life in a town where I knew no one, and now I basically could not do anything with either of my hands. There wasn’t anything I could do but rest, and thankfully I recovered enough to be able to take qualifying exams at the end of the semester, albeit wearing a brace and enduring some discomfort. Some months later, the problem has not been completely resolved. Since it is not feasible for me to avoid writing and typing, I have had to look for ways to get around my temporary disability.

I, a lowly Mac user with Luddite tendencies, am dictating (!) this brief note to share my experience using dictation software to typeset mathematics using \LaTeX{}, since I could not find anything on the internet treating this specific problem. Hopefully it helps you to take action and leave behind whatever discomfort you are experiencing.

2 Hardware/software

Based on asking around and doing some internet research, the only reasonable dictation software currently available is Dragon NaturallySpeaking. If you are a Mac user like me, this is a problem because NaturallySpeaking is only available for Windows. However, newer Macs have a feature called Boot Camp that allows you to split your hard drive into 2 parts and run both Windows and OS X.

Here is all the stuff I use for dictation:

(a) 2012 MacBook Pro, 13"
(b) Dragon NaturallySpeaking Premium 12
(c) Windows 7 (Boot Camp)
(d) Microphone headset (included with NaturallySpeaking)

The Dragon software currently costs 200 dollars and includes a headset (which is necessary—the microphone built into your computer is not good enough to guarantee consistent results with dictation software), and I paid 100 dollars for a Windows 7 disk. So if you already have a computer, you can start dictating in \LaTeX{} for at most 300 dollars. It’s nothing to sneeze at, but if you need to be able to type, and you probably wouldn’t be reading this you didn’t, it is probably worth the lighter wallet.
3 Remarks on other options for Mac OS X

I should mention a couple of things. First, the latest versions of OS X have dictation software built into them. However, the software is rudimentary and while it is serviceable for dictating emails and other such tasks, it does not allow you to define new commands, add new words to the vocabulary, edit the document using only your voice, and the software does not adapt over time to recognize your voice, as Dragon does. Second, there is Dragon software available for Macs, but I have tried it (Dragon Dictate 4) and it is simply not as good as NaturallySpeaking. My main complaint with it is that editing by voice was more difficult. It is quite likely that eventually the Mac version will catch up to NaturallySpeaking, but for now I would suggest avoiding it.

4 Typesetting math

The main obstruction to dictating mathematics successfully in $\LaTeX$ is getting the computer to write something like

$\alpha$

when you say something like “alpha.” Unfortunately, Dragon does not allow you to add a string of characters with a backslash to its vocabulary, but one can get around this by defining a “command.” The software distinguishes commands from words by their aural surroundings: a command is preceded and followed by a short pause in your speech, while a word is part of the flow of a sentence. I have defined many commands over time that cover everything I need to do in $\LaTeX$. It is weird at first to move back and forth between herky-jerky and normal speech, but one adapts.

Editing the document using your voice and adding new words to the computer’s vocabulary are both easy tasks, so it would feel pointless to explain how to do them here. Nevertheless, these are vital features of the Dragon software that make my life a lot easier.

5 Questions?

That is essentially all there is to it. Good luck! Feel free to email me with any questions at michael.landry@yale.edu.