Pocketsphinx vs Snowboy

Snowboy is a very powerful and efficient wake word engine, but they have very limited tools to upgrade the wake word. We don't have that many resources, so we had to think about something else. Pocketsphinx seemed like the next best thing, so we started researching it.

Pocketsphinx is good as a wake word engine, but is has some flaws in detection and installation. The detection can be done in 2 ways. Giving it huge amounts of voice data, to teach it to recognize the word 'Libby'. This would require hundreds of voice samples and man hours, to feed all the data into the program. After that we would need a good way to save the created hotword. Another way is to create a dialect library from a free tool called Sphinx Knowledge Base Tool. There we can get 2 important files that we can use to teach pocketsphinx the word "libby". This is very fast and simple, so that's why we used it.

(The language model and dialect generator tool http://www.speech.cs.cmu.edu/tools/lmtool-new.html)

The other problem is that pocketsphinx is quite hard to install correctly. Using the python version requires some tinkering, because the library imports don't always work correctly. Using the binary version should also work, but requires some extra configuration for the correct bash commands. It's not yet known which version is better, but we have managed to get amazon lex working correctly with the python version.

In performance and accuracy, snowboy is the clear winner. But it can only detect

one person's voice at a time since we can’t improve the hotword easily. Pocketsphinx detects "libby" most of the time, but can sometimes miss it completely. In the end pocketsphinx wins snowboy, because it can detect every person's voice. Not just one. Even though its performance and accuracy is not as great as snowboys.

One thing we have left, is to create a working implementation that is compatible with docker, so we can have easy installations on the raspberry Pi's. Also testing the performance on the raspberry pi is not yet fully tested, but it shouldn't be a problem since pocketsphinx is very lightweight itself.