



OpenNICTA Open Source Software Information and Video Transcript

Software name: **Articulate**

Software description: Articulate – an add-on to the Lilypond software - converts Lilypond input so that MIDI output is closer to what a human player would produce. Taking the textual mark up, it modifies the length of the notes 'articulating' the output as realistically as possible.

Project description: Articulate is a result of the 2008 ARTEMIS Orchestra competition, which challenges contestants to build devices that play real musical instruments to demonstrate the creative potential of embedded systems.

Link to Software: <http://nicta.com.au/people/chubbp/articulate>

Video Transcript

Interview with Peter Chubb

Tell us about yourself and the research you are currently working on

Peter: Hi, I'm Peter Chubb. I'm a Senior Research Engineer at NICTA in the Embedded Systems Group. My role here is to do with anything that's to do with Linux in embedded systems, or in large systems, or any other systems for that matter.

Tell us about your open source software

Peter: Last year, NICTA went in for the ARTEMIS orchestra competition. This is a competition to take an unmodified musical instrument and to play it by a robot, by an embedded system. We chose the clarinet, but part of the competition rules was we had to use Lilypond as the input format for the music that was going to be used. Lilypond is an open source software project started by a couple of guys over in Europe that takes a language that describes music and converts it into beautiful typeset music. As such, it's not designed to be played by a robot, and if you just take the music that comes out of it and play it by a robot, it sounds pretty appalling, like a beginner clarinettist might sound who hasn't learnt to obey all the marks on the page. My software was a little add-on to Lilypond that interprets more of the expressive marks in the music.

[plays sample of music without the Articulate add-on]

Peter: So, as you can see the music that was being played there wasn't actually obeying most of the expressive sounds – you didn't have any staccato, you didn't have the trills, you didn't have the turn, but with my software it sounds more like this.

[plays sample of music with the Articulate add-on]

Peter: So, you can see what the software did was it shortened the staccato notes; it obeys the timing indications where the rallentando was; it interpreted the trills so it actually went up and down

instead of a straight note and it inserted the phrasing you can see in the melody. This was one of the factors, although not the main one, that led to NICTA winning the ARTEMIS orchestra competition last year.

Why open source?

Peter: Lilypond is an open source project. It's produced by a large number of people all over the world. So it makes sense if you are doing an add-on to an open source project, it also is open source. That also means we can release the code, it becomes part of Lilypond, so next year when we enter the competition – or rather this year – we won't have to do it all again and rework it so it fits the new version of Lilypond, what ever it is.