

Demonstration: Using SynthBuilder for the Creation of Physical Models

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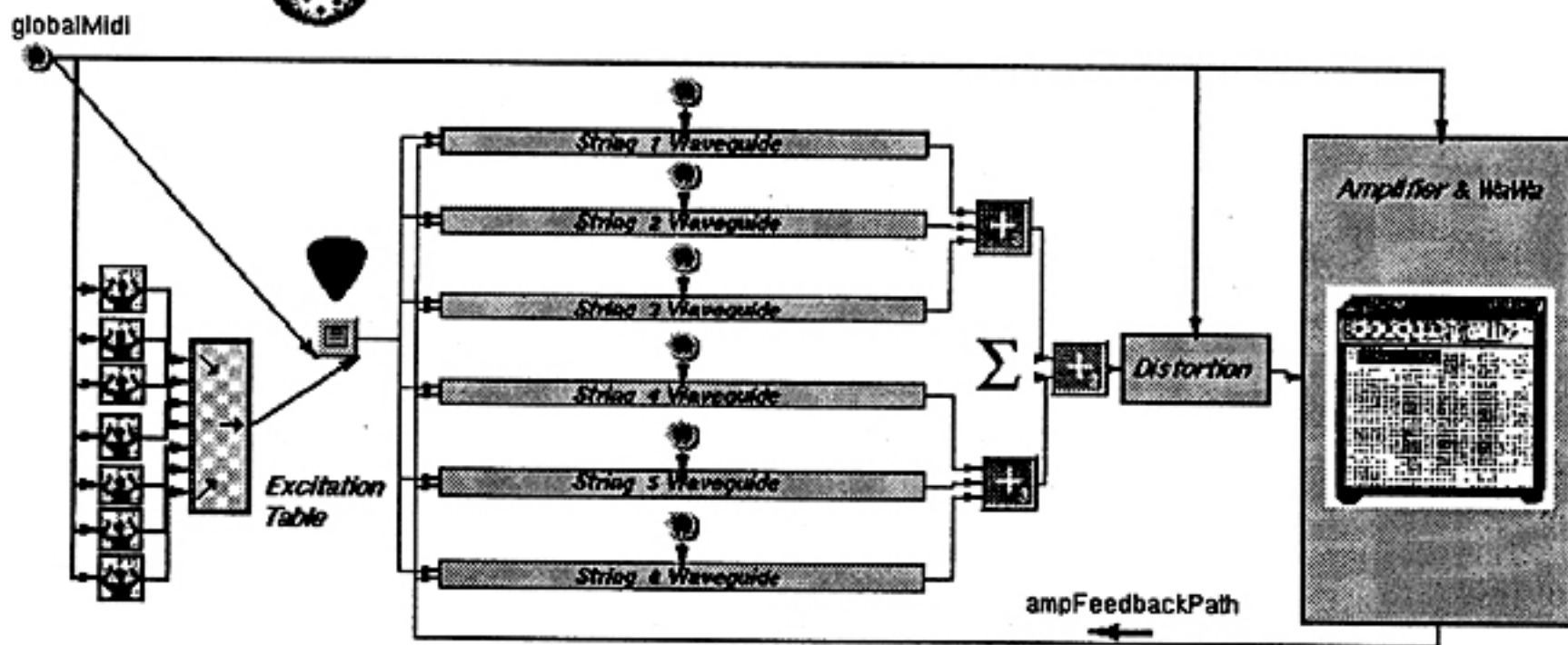
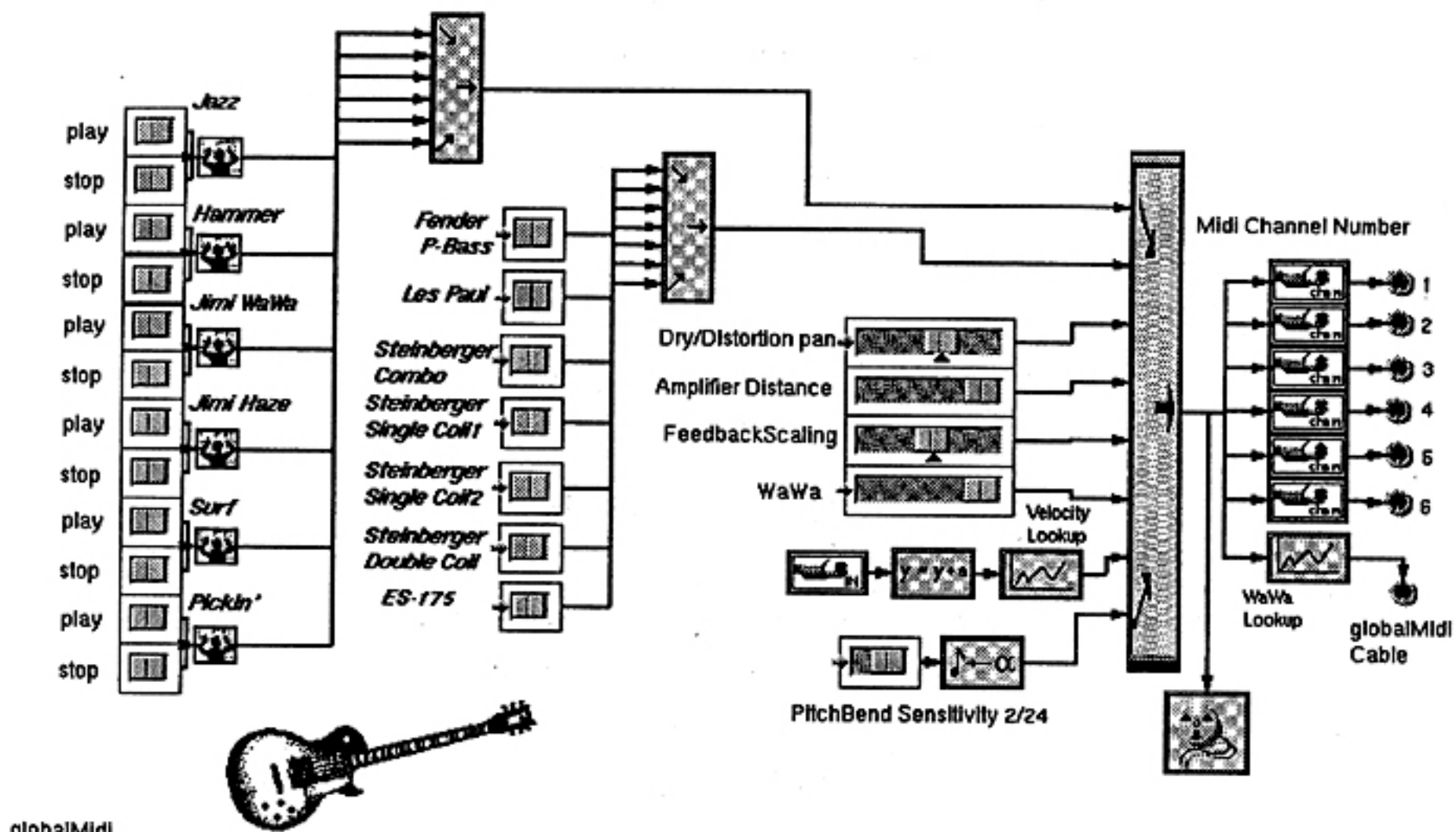
SynthBuilder is a user-extensible, object-oriented, Nextstep Music Kit application for interactive real-time design and performance of synthesizer patches, especially physical models. Patches are represented by networks consisting of digital signal processing elements called unit generators and MIDI event elements called note filters and note generators.

In this demonstration we will present an overview of SynthBuilder, and an example of how to develop an electric guitar physical model. We will also show recently-developed SynthBuilder patches, including bowed strings, piano, guitars, harpsichords, and others.

We are porting our patches to other platforms. Toward this goal, we have developed an interchange format called SynthScript, and defined a portable server, SynthServer, which will enable execution of SynthBuilder patches on other computers. Part of the demonstration will illustrate the importing and exporting of a SynthScript patch.

Recently, SynthBuilder has been significantly optimized and extended. DSP allocation speed, memory usage and drawing performance have been greatly improved. Many new features have been added, including: sound file writing support for various Intel-based DSP cards, an improved driver for the Frankenstein box, new unit generators and note filters, mouse tracking, drop-in subpatches, subpatch variations, inspector improvements, a new trace window, and more robust help/tutorial. These features along with numerous bug fixes and paradigm refinements have enabled rapid development of complex patches.

In the near future, we plan to continue to build more patches and improve SynthBuilder. Among these improvements: tighter SynthScript integration and a mechanism for General MIDI program change.



A six string electric guitar model with distortion, feedback and wawa, implemented in SynthBuilder. This model runs on on a single 72Mhz Motorola 56002 DSP.