ScPy – A SuperCollider extension for performing numerical computation via embedded Python

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Abstract

SuperCollider, a language for sound synthesis and algorithmic composition of audio, supports a wide range of synthesis, effect and analysis algorithms. However, available operations are limited to those implemented explicitly as Unit Generators (UGens). Since UGens are written in C/C++ and loaded as plugins during the SuperCollider server boot process, it is impossible to live code UGens, which limits the user to creating sound as a composition of existing UGens during a performance. Many of the vector operations required for efficiently creating complex audio effects are notably missing or tedious to use. To overcome this, we present ScPy, a UGen which embeds Python within SuperCollider to enable the use of the optimized vector operations provided by the NumPy and SciPy libraries.