

Exploring Rhythms of the Brain through the Sonification of Neural Data

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Abstract submitted for Undergraduate Research Symposium & Research Fair

I am designing a system that presents a unique sonic experience informed by neural data. My interdisciplinary research stems from a special phenomenon of synchrony in our brains. The seemingly chaotic mass firings from our neurons have recently been discovered to, when grouped together, possess a characteristic of non-periodic synchrony. How can this interesting data be presented sonically through electronic music?

The creative research I am conducting integrates aspects of science and technology in art; specifically sound art, to discover the hidden rhythms of the brain. Neural pattern data will be generated using an algorithm in MATLAB that represents one human neuron. In order to aurally perceive non-periodic synchrony, several unique outputted neural patterns will be grouped together and processed sonically through Cycling 74's Max/MSP. Specifically, I am focusing on generating sound that will contain a distinct melody, rhythm and structure. Thorough examination of how sound and neural data have been incorporated in the past will provide a better sense of how to create an original and effective system.

Not only am I interested with the idea of constructing a listening experience that uses a realistic computer model to shape sound, I am concentrating on presenting the rhythmic nature of our brains and the fascinating synchrony that emerges from chaos.