

Executable Structures

A Live 1-Bit Sound Installation

Artist: Andy Jenkinson (UK)



Project Overview

Executable Structures presents the 1982 Sinclair ZX Spectrum as a live computational sound instrument. All audio is generated in real time through custom Z80 assembly code running on original hardware. There are no samples, no playback files and no emulation. Sound emerges directly from processor timing loops that toggle a single 1-bit voltage state, producing rhythm and pitch through binary switching alone. Visitors interact with the system using a joystick interface and listen through headphones. The installation offers navigable executable compositions that exist only while the machine is running. Each interaction alters timing relationships and structural behaviour, allowing audiences to hear computation unfolding as rhythm, texture and form.

Concept & Context

The work foregrounds constraint as compositional method. The ZX Spectrum's extreme technical limitations - 1-bit audio, minimal memory and strict processor timing - become the defining aesthetic language. Musical structure is not layered production but the direct consequence of clock cycles and logical flow. By making processor timing perceptible as sound, the installation situates early personal computing within current conversations around creative coding, digital materiality and computational authorship.

