

**AI Phantasy** (2020) electroacoustic sound composition for stereo or multichannel speaker array. Duration 11:12 minutes. Composed by Panayiotis Kokoras.

AI Phantasy was composed at the GRIS multichannel studio, the University of Montreal in Quebec, Canada; the sound dome MEIT theater at the Center for Experimental Music and Intermedia, University of North Texas, and my home studio.

One of the main sound-producing mechanisms in the piece is a vacuum cleaner. The airflow travels from the motor through the suction hose and telescopic tube to the end nozzle. The excitation signal is produced by various membranes and other probs vibrating at the end of the suction tube. Sound from there is then modulated following the Fab Synthesis paradigm, a sound synthesis practice I used throughout the piece. The idea of generating sound by air suction posed several challenges but also gave me the kind of sounds I imagined for this piece. In addition, I developed a series of circular pan flute kind of sound generators which could rotate electromechanically in variable speeds. In this case, the airflow generator was an air pump compressor. I used a modified airbrush attachment to control airflow and direction. The result sounded as a hyper-pan flute with unique sound possibilities.

In AI Phantasy, among various sound treatments, I used extensively commercial software utilizing machine learning features such as Accusonus Regroover, Izotope RX, Orchidea, Sononym, among others.

In *Sononym*, I analyzed a folder with more than 500K sound files; the analysis included information about the tempo, pitch, amount of noise, harmonic content, etc. from each file and stored in a database. Also, the software uses machine learning to categorize the content in groups of sounds such as 'nature' or 'explosion'. Then I performed several similarity searches, which enabled me to find similar-sounding samples in my sound collection and to explore how these sounds are related to one another.

*Orcidea* creative assisted orchestration explores the potential of machine learning models for predicting audio features of a mixture of sounds that composers are unable to observe, focusing on the task of target-based assisted orchestration. Target-based assisted orchestration can be thought of as the process of searching for optimal combinations of sounds to match a target sound, given a database of samples, a similarity metric, and a set of constraints.

The word Phantasy refers to a phantasy with “Ph” as a state of mind of an infant child during the early stages of development. Phantasies are constructed from internal and external reality, modified by feelings and emotions, and then projected into both real and imaginary

objects. On the other hand, Fantasy (with “F”) is a reverie, a daydream, an imagined unreality that anyone can create. We fantasize consciously about future possibilities and fulfillment of our basic needs and wishes. Fantasies may well include elements of the deeper unconscious phantasies.

In AI Phantasy, sonic realities, soundscapes, ambiences, studio-recorded sounds of found objects, instrumental sounds, voice or synthesized sounds, processed or not, are all mixed. In a way, they are largely unconscious in that they differentiate little, if at all, between reality and imagination, from conscious reality.