RETROBJECTS

by Gabriel Eduardo Honoré

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emulation - simulation - retro - hardware - chips - computer - commodore - nintendo - videogame - homecomputer - fun - smalltalk - objects - framework - reusability

Short bio:

My name is Gabriel Eduardo Honoré, I live in Buenos Aires, Argentina, and I'm a Computer Science student at the University of Buenos Aires.

At the university, I became interested in the objects paradigm, along with Smalltalk. I've always loved old home computers too, so I decided to join these two things, and created **Retrobjects**.

Overview

Retrobjects is a framework for the creation of object-oriented virtual simulations of old **home computers** and **video game systems**. The main goal of this framework is to simplify the process of creating emulators, by providing developers with a comfortable environment, useful tools and a library of common objects ready to be used.

There are currently two systems that are modeled using Retrobjects: a Commodore 64 system, and a Nintendo Entertainment System.

The Commodore 64 system

It includes its main unit, a datassette, and a pair of joysticks. Here is a list of some of its features:

- Cycle-exact CPU emulation, almost cycle-exact CIA timing, and raster-line emulation of the VIC-II chip.
- Support for single-file programs stored in PRG & T64 file formats, and tapes stored in TAP files.
- Sound generation through a native implementation, ReSID (one of the best 6581 chip implementations), a HardSID, and a real Commodore 64 through a PC64 cable.
- Video filters: normal, with scanlines, and with scanlines & horizontal blurring.
- User interfaces and inspectors that allows you to control every object in the system.

- Support for joysticks (only one, though).

In general, it has a great level of compatibility. It can run the majority of the games that it can load. The emulation speed is slow compared to other emulators, but it's pretty acceptable, on modern computers it will do fine.

The NES system

It includes its main unit and two joysticks. Here is a list of some of its features:

- Cycle-exact CPU emulation (it uses the same core than the CPU of the C64), and raster-line PPU emulation.
- Support for iNES file format (.NES extension).
- Support for memory mappers 0, 2, 3 & 4 (partially).
- Video filters: normal, scanlines, and an excellent TV filter: Blargg's NTSC (check http://www.fly.net/~ant/)

This system is still in a very early stage of development. It is buggy, only few games work well, and it's slow. But with some games, it works great.

The application

The application is a live demonstration of what can be done with Retrobjects. It allows you to use the two systems mentioned, and to interact with all their objects through different user interfaces and inspectors. It also provides you with some games and applications for both systems so you can test them.

The framework

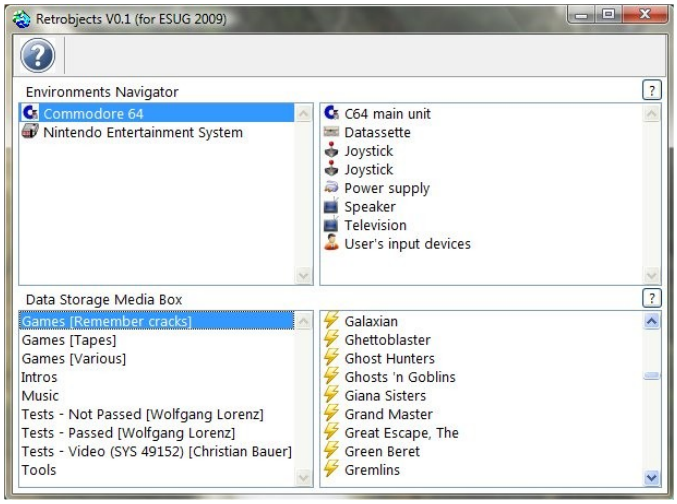
In comparison with other emulators / frameworks, Retrobject's main strengths are:

- It's being developed entirely in the objects paradigm;
- Design decisions are driven by what's good, not what performs better;
- The objects in the library are completely reusable and have simple protocols, allowing easy development of new virtual systems;
- It's developed in Smalltalk. So it inherits all its benefits!

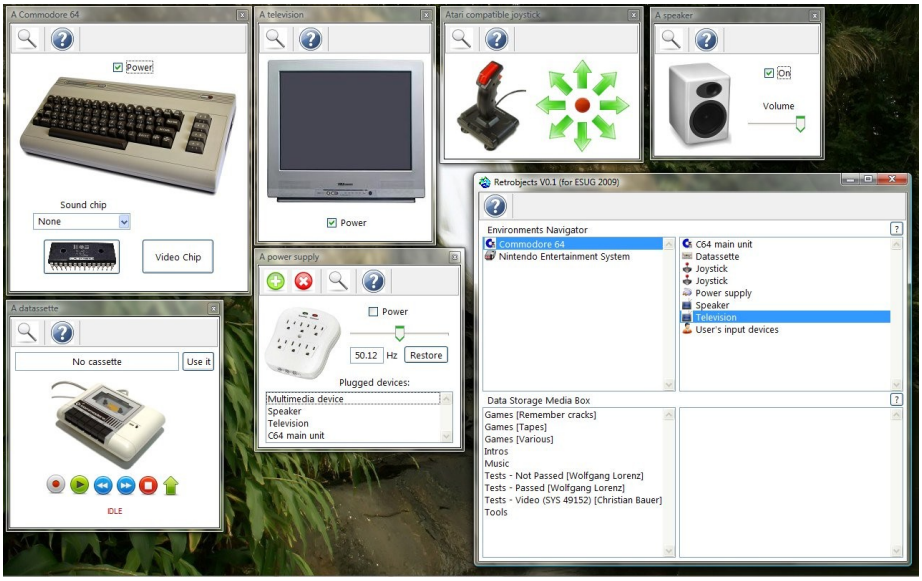
Some of the objects that are available in the library are:

- Power supplies
- Displays
- Speakers
- Buttons
- Switches
- Pins and connections
- Memories
- Chip abstractions
- Address decoders
- Programmable Sound Generators
- Sound samplers
- Frame buffers
- Video filters

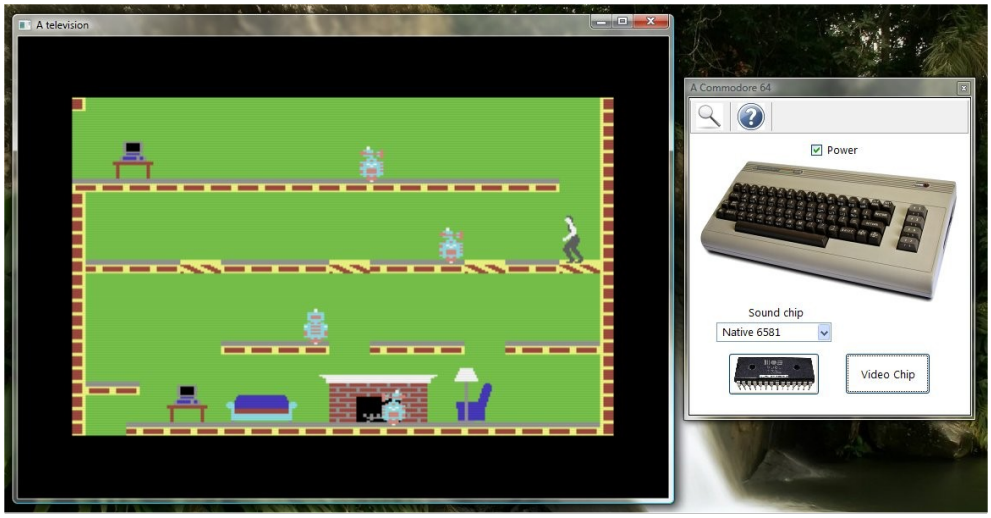
Screenshots



The Environments Navigator



The whole C64 environment



Playing a C64 game (Impossible Mission)

Playing a NES game (Smurfs)

For more information and downloads, please go to: http://www.zeek-it.com.ar/retrobjects