Finger Painting with Planets

Tim Thompson – tjt@nosuch.com

This installation uses gravity as an artistic force to create both graphics and music. Multitouch pads are used to place objects in space, and gravitational attraction between the objects produces graceful movements that are translated into visuals and sound. Knobs and buttons on a custom-built controller are used to adjust parameters . A musical keyboard is used to select notes that will be used in the music.

Buttons

CLEAR	Press once to erase the display, twice (quickly) to remove all planets, and three times (quickly) to reset everything to an initial state.
GRAPHICS	Press to show and cycle through several pages of parameters which affect the graphics. The 8 parameters on each page correspond to the 8 knobs.
MUSIC	Press to show and cycle through several pages of parameters which affect the music. The 8 parameters on each page correspond to the 8 knobs.
SHIFT	Press to show the current value of all the parameters on the current page. While holding it down you can move a knob to change the current parameter attached to the knob – there are many more parameters than are displayed by default on the parameter pages. However, the default parameter pages contain the most useful parameters, so you shouldn't need to do this much. If you get in trouble, just press CLEAR 3 times and all the default parameter pages will be restored.

Presets

The upper-left knob allows you to select from a set of presets, either graphical or musical depending on which page you're on. A preset will change all of the parameters at once.

Musical Details

Musical notes are triggered when planets collide, and collisions are visually indicated by horizontal and vertical emissions from each collision location. Each of the two controllers has its own sound, and planets created with a particular controller will retain its sound for collisions. When two planets of different sounds collide, the larger one wins. Collisions on the left side of the screen produce lower notes, collisions on the right produce higher notes. Holding down a chord on the musical keyboard will cause the the notes of that chord to be used in the music. The musical key is occasionally changed automatically, with adjustable frequency and transpositions.

Hints

- The multitouch pad is sensitive to the area of your finger. You barely need to touch it, and a light touch will give you the most control.
- To make larger planets, put more of your fingertip on the pad, but NOT by pressing harder. Just flatten your finger so that the larger part of your finger touches the pad.
- Hold down more than one note on the keyboard simultaneously in order to establish a set of notes. You can release the notes – the installation remembers the last chord you played.
- If nothing is working, press the CLEAR button 3 times, quickly.

Graphical Parameters

These are the most important graphical parameters:

PadMode	Controls whether the multitouch pad is used to create planets, or to play music directly.
Planets	The maximum number of planets that can be created at once.
Decay	How much of an 'afterimage' is present. A low value leaves long planet trails.
Gravity	The strength of the gravitational pull.
Time	How fast time advances; larger values will make the planets move faster.
CollDist	The distance between two planets that produces a 'collision'; larger values will produce more collisions.
Zoom	Used to zoom the display in and out; usually you'll zoom out to create more complex visuals.
ColorCyc	How fast colors change each time a new planet is created.
ColorCycA	How fast colors of existing planets change as they move; these colors will only be visible if the Decay value is low, so that planets leave trails.
AlphaAll	The 'alpha' value of the graphics. Lower values make the colors more transparent, which is particularly useful when a low Decay value fills the screen.
CollAlpha	The 'alpha' value of the collision trails.
Color	The color of newly-created planets.
Size	The size of planets, although the primary and most convenient way to control the size of the planets is by varying the area of your finger on the multitouch pad.
Shape	Controls whether planets are drawn as outlines or filled.
Centerfor	The strength of an artificial gravitational attraction toward the center of the display, which helps ensure the planets stay in view.
MaxVel	The maximum velocity of the planets.
GravLimit	Limits the amount of gravitational attraction; particularly relevant when planets get very close together.

Musical Parameters

These are the most important musical parameters:

PadMode	Controls whether the multitouch pad is used to create planets, or to play music directly.
Sound	Selects the sound used when playing music directly with the multitouch pad.
CollSnd	Selects the sound used for Collisions.
NoteVol	The volume (loudness) of notes.
Sequence	Selects a transposition sequence.
SeqLeng	The length of time between changes in a transposition sequence.
CollDist	The distance between two planets that produces a 'collision'; larger values will produce more collisions.
NoteDur	The duration (length) of notes.
NoteFreq	The frequency with which notes are played.
DownQnt	The time-quantization of directly-played notes.
RepQnt	The time-quantization of repeated notes.
CollQnt	The time-quantization of notes created by collisions.
CollVel	The volume of notes created by collisions.
Chordize	If 'on', each collision or finger will play a chord rather than a single note.