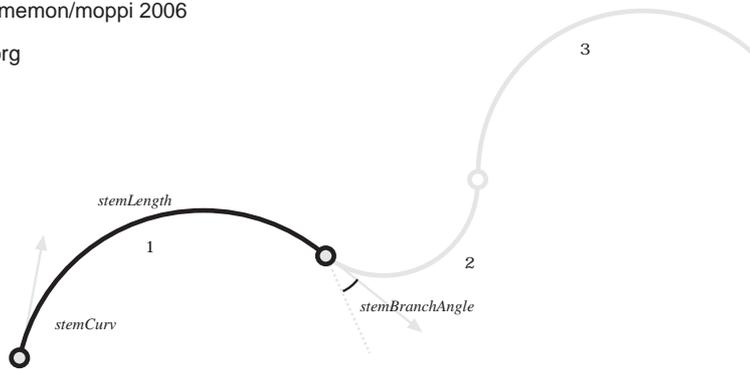


Moppi Flower Effect

Mikko Mononen, memon/moppi 2006

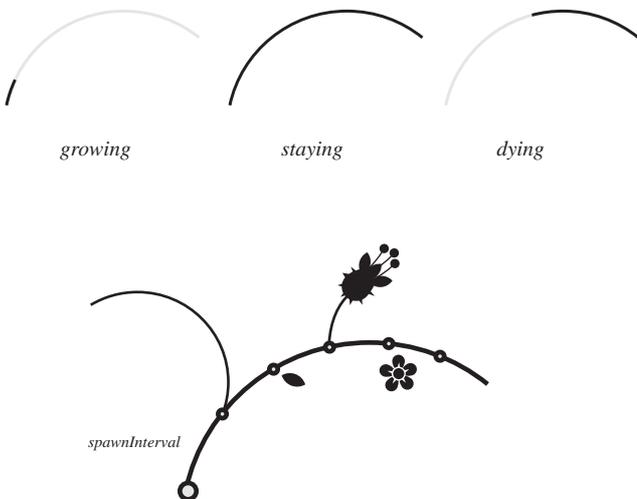
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Main Stem

The main stem is a spline of connected arcs. When a new arc is spawned, three random parameters are used: *stemLength*, *stemCurv* and *stemBranchAngle*. The electric effect is created by specifying zero curvature, and random branch angle within 90 degrees at 45 degree snap.

When the stem is growing a new branch is spawn at set intervals. Depending on the configuration this can be a fixed or random interval.



Branches, Flowers & Petals

When the stem has reached a new spawn point, either a new branch stem, two choices of a flower or a petal is spawned. Each of the four types have a certain propability, which is chaning based on the music.

The branch stems are handled the same way as the main stem. While they grow, they spawn new items.

The flowers and petals use easing function for the growth size which is modified version of an oscillating ease found from some Flash tutorial.

Each of the items (stems, flowers, petals) have a life time. At first it was put there just to manage the polygon count but the effect ended up being artistically interesting too.

Syncing to Music

The music sync can adjust two parameters of each item type: *speed of growth* and *propability of spawning*. For example the white flower is setup in such way that bass of the music affects the growth of the stems, mid tones affect how often new branches are spawned, and high tones affect the speed of growth of the petals.

This creates interesting organic feeling depending on the music, since different parts react to different high points in the music. They grow and die based on the music. The effect is much less exciting when it does not have the effect of the music. The black flower has some of the parameters reversed. The range is selected so that it will grow faster in case of some higher pitch instrument. Snare and flute seem to excite it well.

The syncing itself us made using 16 band pass filters, they are further combined to only four values which fed into the flower different parameters. There is additional logic in the audio analyzer, which tries to adjust to the range of the band pass filters. That way it is possible to have full range of output even on higher frequencies whose amplitude is usually lower than lower frequencies.

The nice side effect of this range finder is that if there is a more calm part in the music the analyser output will become more sensitive usually resulting very pelasing output when the music gains more intensity again.

Random Variables

Each random variable in the Flower effect is selected between two values and then snapped to certain intervals. The code could look something like this:

```
float RandRangeSnap(float vmin, float vmax, float snap)
{
    return vmin + floor(frand() * (vmax - vmin) / snap) * snap;
}
```