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Simulation

Simulation can be performed in command line so as to perform several simulations simultaneously in the same (if it's a multi-core machine) or different machines for the sake of testing different nCloth attribute values. This can be done by running Maya in batch mode. The following is an example for Windows platform:

```
mayabatch -proj c:\Projects\maya\default -file testscene.ma -script createCache.mel -command "createCache();"
```

You need to create a script file, createCache.mel, (under your project's mel directory, eg. c:\Projects\maya\default\mel) in which there's a procedure, createCache(). Note that script file name and procedure name must be the same. This procedure looks like the follows:

```
global proc createCache()
{
    select -r pPlane1;
    setAttr "nClothShape1.stretchResistance" 30;
    setAttr "nClothShape1.compressionResistance" 10;
    doCreateNclothCache 4 { "2", "1", "10", "OneFile", "1", "","0","","0", "add", "0", "1", "1","0","1" } ;
}
```

It selects the object to simulate and change some of the attribute values. It then calls the mel procedure doCreateNclothCache which performs simulation and writes the result into cache. The meaning of its arguments are as follows:

```
global proc string[] doCreateNclothCache( int $version, string $args[] )
     //
     // Description:
     // Create cache files on disk for the select ncloth object(s) according
     // to the specified flags described below.
     //
     // $version == 1:
     // $args[0] = time range mode:
     //   time range mode = 0 : use $args[1] and $args[2] as start-end
     //   time range mode = 1 : use render globals
     //   time range mode = 2 : use timeline
     // $args[1] = start frame (if time range mode == 0)
     // $args[2] = end frame (if time range mode == 0)
     //
     // $version == 2:
     // $args[3] = cache file distribution, either "OneFile" or "OneFilePerFrame"
     // $args[4] = 0/1, whether to refresh during caching
     // $args[5] = directory for cache files, if "", then use project data dir
     // $args[6] = 0/1, whether to create a cache per geometry
     // $args[7] = name of cache file. An empty string can be used to specify that an auto-generated name is acceptable.
     // $args[8] = 0/1, whether the specified cache name is to be used as a prefix
     // $version == 3:
     // $args[9] = action to perform: "add", "replace", "merge" or "mergeDelete"
     // $args[10] = force save even if it overwrites existing files
     // $args[11] = simulation rate, the rate at which the cloth simulation is forced to run
     // $args[12] = sample mulitplier, the rate at which samples are written, as a multiple of simulation rate.
     // $version == 4:
     // $args[13] = 0/1, whether modifications should be inherited from the cache about to be replaced.
     // $args[14] = 0/1, whether to store doubles as floats
     //
```

The above is extracted from the mel script file doCreateNclothCache.mel found under the Maya installation directory (eg. c:\Program Files\Autodesk\Maya2008\scripts\other). This is a wrapper for the cacheFile command which can be used directly if you prefer.

To see the simulation result, start Maya, open scene (eg. testscene.ma), select nCache -> Attach Existing Cache File..., and open the resulting xml file from the data directory (eg. c:\Projects\maya\default\data\testscene\nClothShape1.xml). Then press the play button to play back the result.