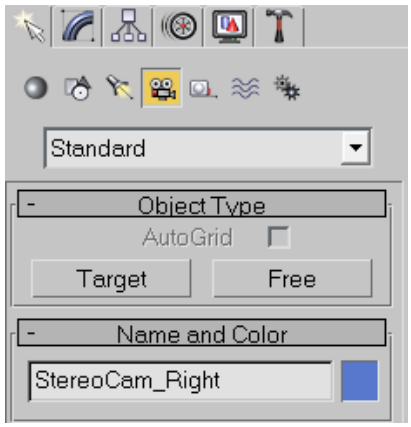
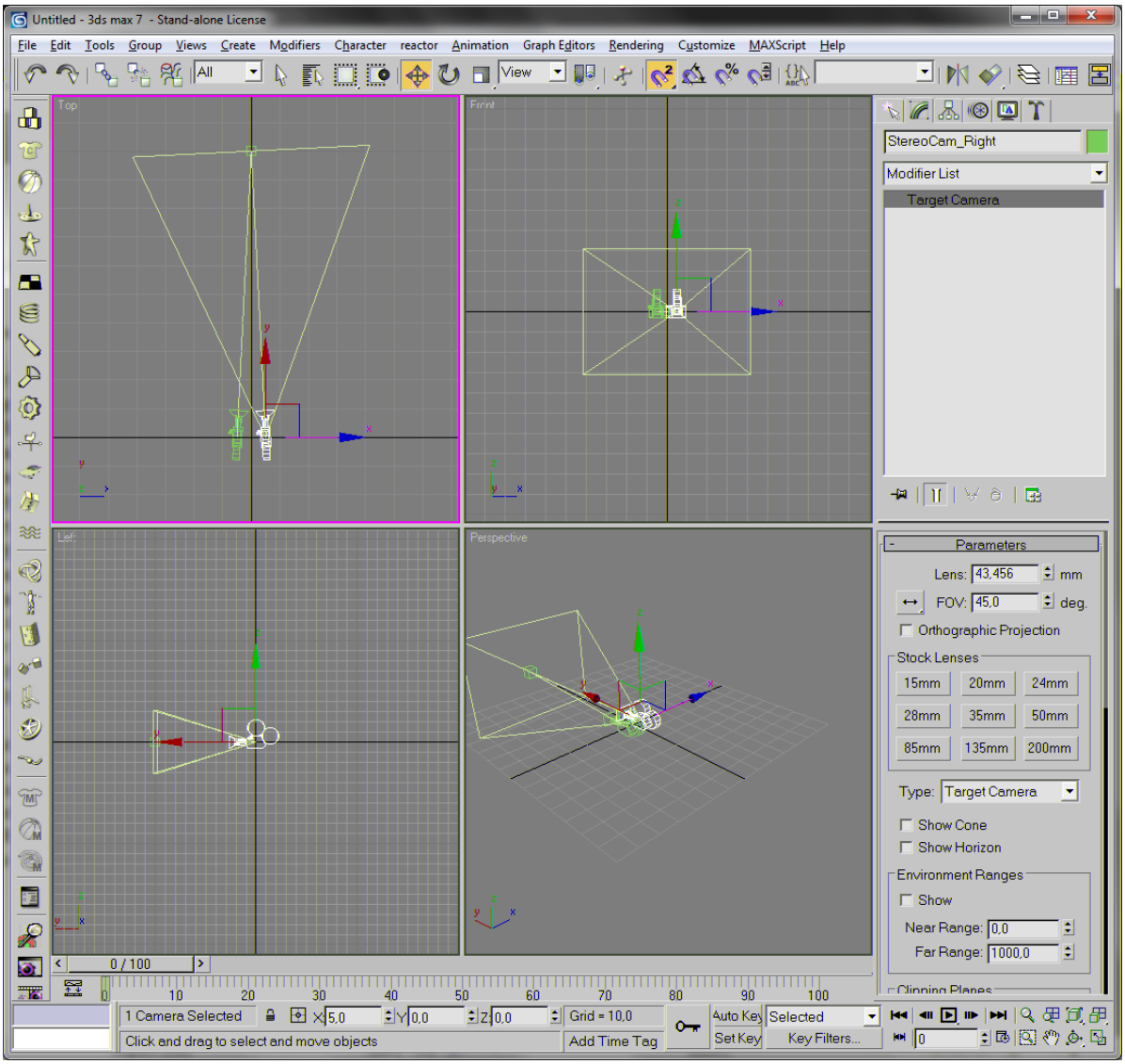
Stereoscopic 3D Visualization

Tutorial: How to create a Stereoscopic 3D Camera in 3ds Max

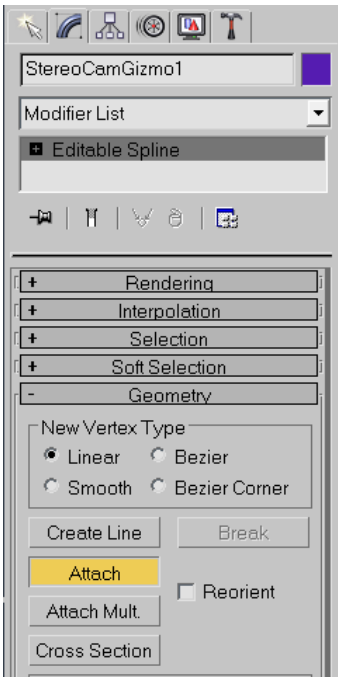
- first create two target cameras 
  - set the Snaps Toggle to 2D
  - create the first target camera (Image right)
  - place the camera at (0,0,0)
  - place the camera target at (100,0,0)
  - name it: “StereoCam_ ight!
  - ma"e a cop# of this camera (eg %# pressing shift an& &ragging StereoCam_ ight %# mo'se)
  - name it: “StereoCam_(eft!
  - place the camera at (0,0,0)
  - place the camera target at (100,0,0)

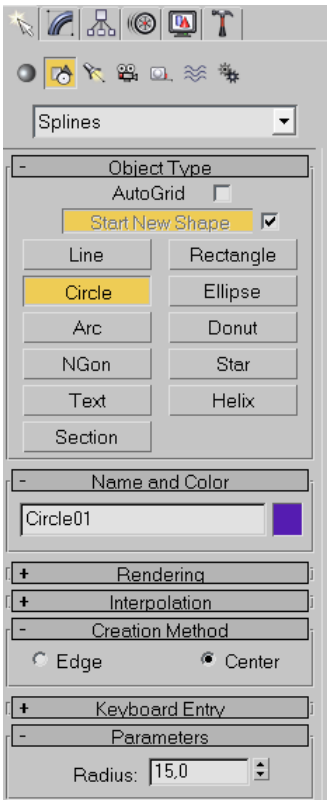


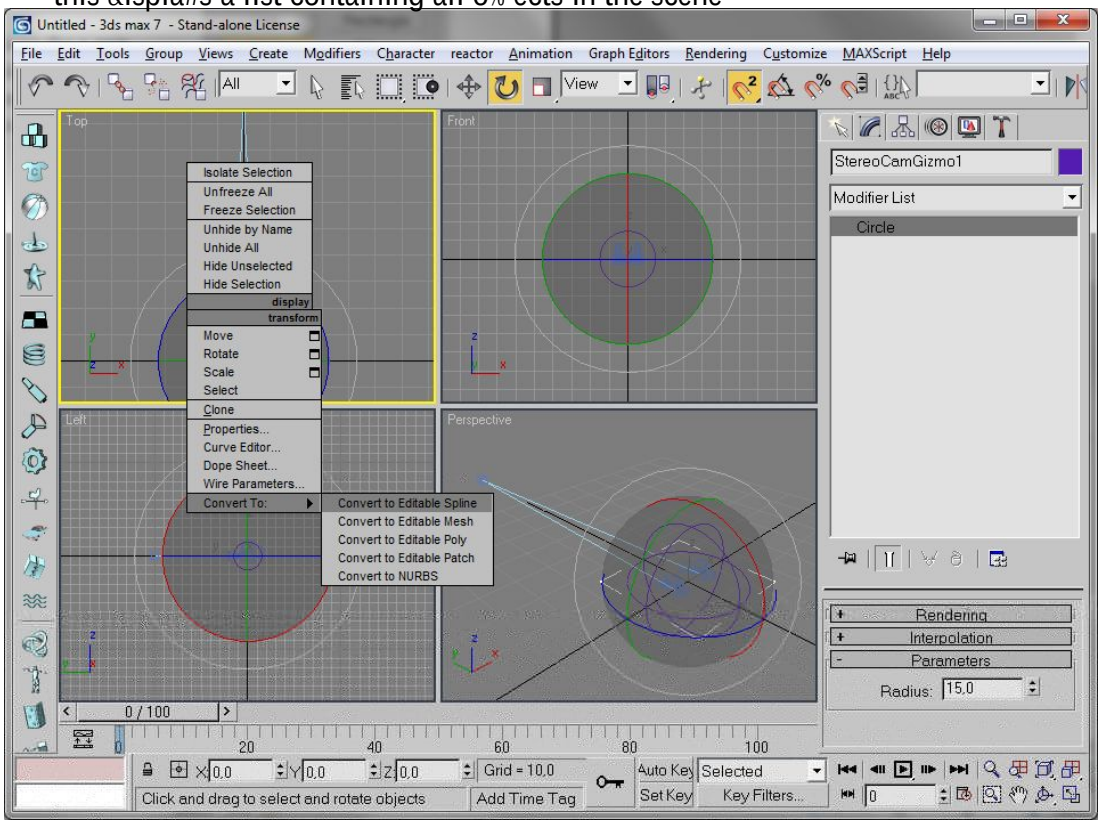
- &efine the e#e &istance
  - now &eci&e the &istance for %oth e#es, we will ta"e now a &istance of 10
  - place the StereoCam_ ight at (0,),0)
  - place the StereoCam_(eft at (0,*),0) (Image %ottom)



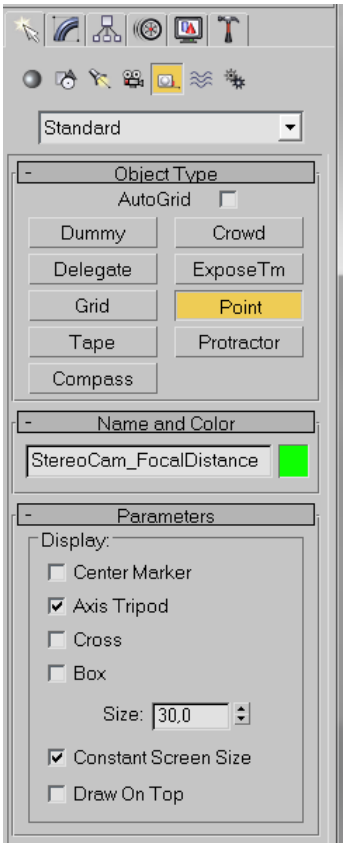
- gro'p the camera
  - +ow we ha,e to ma"e s're that we can mo,e %oth cameras as one o%-ect . the first i&ea is to create a simple gro'p containing onl# the two camera o%-ects, %'t this will %e a pro%lem when the position an& rotation will %e change&, eg if the# are attache& to a path$ Therefore, an alternati,e is chose:
  - create a / i0mo
    - create a simple circle with ra&i's 1) (Image right)
    - place it in point (0,0,0), it ,is'all# incl'&es now %oth cameras
    - ma"e two &'plicates (again #o' can press shift an& mo'se*&rag or 'se CT (12 for this p'rpose)
    - rotate the 1st &'plicate to 304 along the 5 a5is
    - rotate the 2n& &'plicate to 304 along the # a5is
    - name them eg StereoCam / i0mo1 to 6
    - right clic" on StereoCam / i0mo1 an& select: "Con,ert to 7&ita%le Spline! (Image %ottom)
    - select now this 7&ita%le Spline an& attach the two other circles to it (Image center) %# clic"ing them in the ,iewport8 alternati,el# #o' can also 'se:  this &ispla#s a list containing all o%-ects in the scene

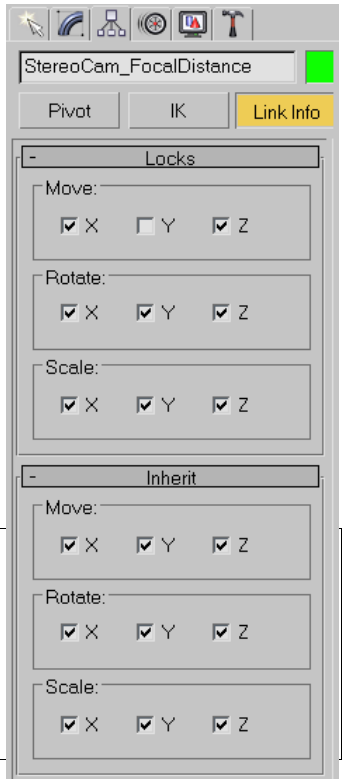






  - now this o%-ect has to %e lin"e& to the cameras: select the StereoCam_ ight, press the lin" %'tton  an& select the StereoCam / i0mo1
  - go %ac" to the stan&ar& mo&e %# pressing eg 
  - then repeat the proce&'re for the StereoCam_(eft
  - this step is finishe&, #o' can mo,e now %oth cameras sim'lataneo'sl#
  - rename the o%-ect finall# to: “StereoCam_/i0mo!
- create the 9ocal Distance
  - we still ha,e to seperate camera targets, the# sho'l& ha,e now the names StereoCam_(eft$Target an& StereoCam_ ight$Target8 we will com%ine these o%-ects now
  - create the helper o%-ect “:oint! an& ta"e the options li"e shown at the Image right: select “;5is Tripo&! with a Si0e of 60 an& select “Constant Screen Si0e!
  - name it: “StereoCam_9ocalDistance!
  - place it at (0,100,0)
  - now #o' ha,e to appl# the proce&'re 'se& a%o,e for the gi0mo to the focal &istance o%-ect:
    - select StereoCam_ ight$Target
    - press the lin" %'tton again
    - select StereoCam_9ocalDistance
    - an& ,ice ,ersa for StereoCam_(eft$Target
  - still, we can mo,e StereoCam_9ocalDistance in all &irections. %'t we &o not want this, %eca'se the# e#e mo,ement wo'l& not %e nat'rall#. -'st pla# aro'n& with the o%-ect an& #o' will see8 therefore we will loc" now the mo,ement:
    - select StereoCam_9ocalDistance from the <ierarch# men' (Image right %ottom)
    - select all chec" %o5es e5cept =o,e: >
    - now #o' can mo,e the focal &istance onl# along the ,iewing a5is of the cameras
  - the last pro%lem to sol,e in this iss'e gets apparent if #o' select the StereoCam_/i0mo an& mo,e it into all &irections: the StereoCam_9ocalDistance remains at its point8 to sol,e this iss'e, #o' ha,e to lin"e the StereoCam_9ocalDistance to the StereoCam_/i0mo the wa# #o' &i& it %efore with the other o%-ects
  - now we ha,e change& two target cameras to one stereoscopic camera which is a%le to change the foc's point. on o'r wa# to this point, we lost the target, so let 's reimplement the target





- this t'torial is %ase& on:
  Creating a Stereoscopic Camera ig in 6&s =a5
  http:??www$#o't'%e$com?watch@,A%9nheBCTD=7
  Create& %#: **Elliott Smith**, Eigsaw S#stems (t&
  This partl# change& an& e5ten&e& ,ersion %#:
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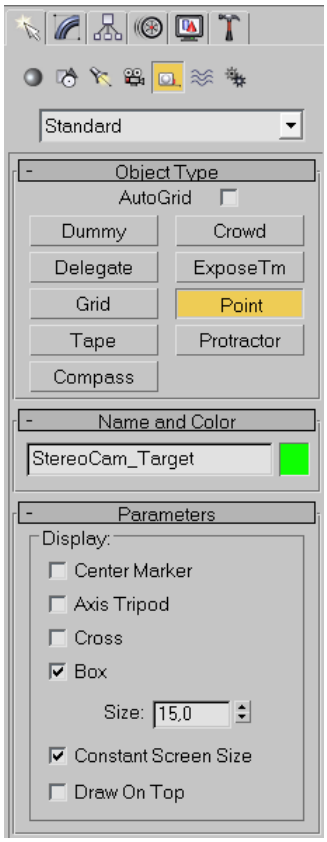
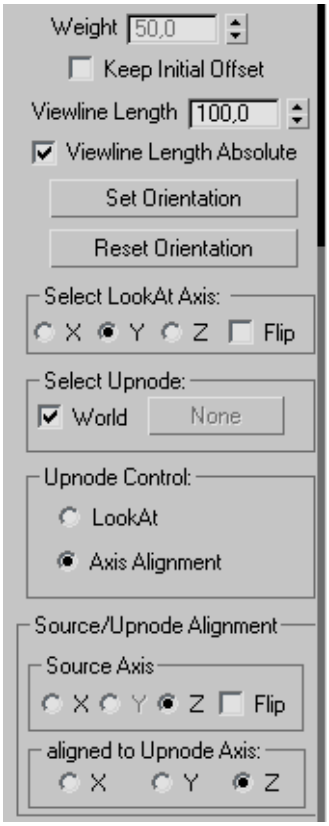
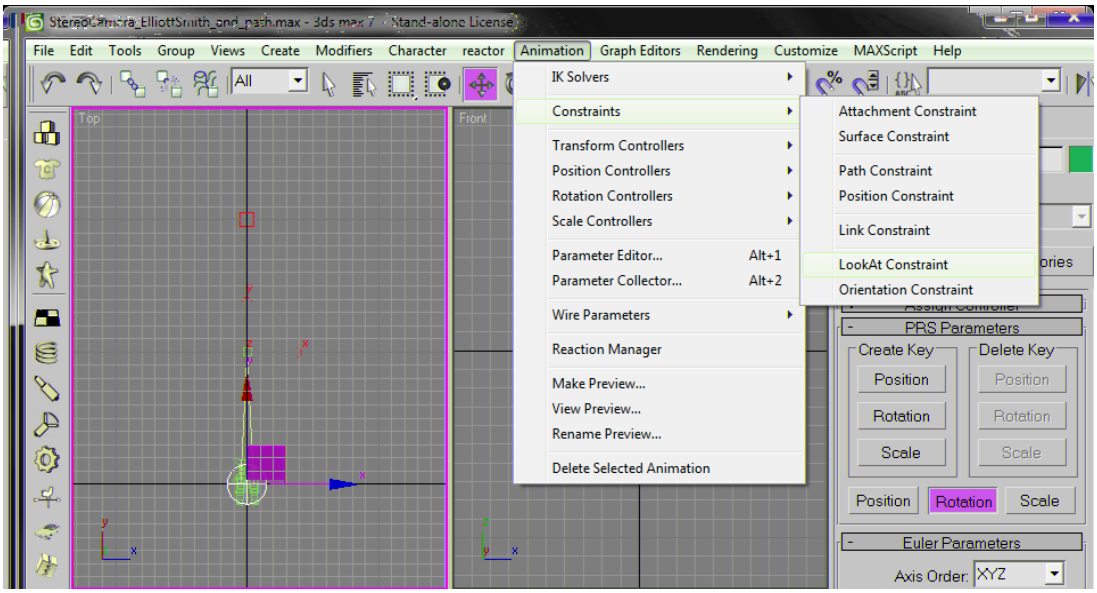
- recreate the target
  - create a new &'mm# o%-ect as shown on the Image left, with a si0e of 1), “Bo5! an& again “Constant Screen Si0e! selecte&
  - place it at (0,200,0)
  - name it “StereoCam_Target!
  - now the mo,ement of the camera has to %e connecte& to the mo,ement of the StereoCam_Target:
    - select the StereoCam_ / i0mo
    - select from the men' ; nimation G Constraints G (oo" ; tConstraint
    - select the StereoCam_Target (Image %ottom)
    - now #o' will see, that the cameras are pointing into the wrong &irection8 therefore #o' ha,e to select 'n&er the term “Select (oo" ; t ; 5is!: > in the gi0mo properties in the categor# “(oo" ; tConstraint! (the gi0mo properties are also fo'n& at Image %ottom on the right si&e8 #o' ha,e to scroll &own to fin& “Select (oo" ; t ; 5is!)
    - it loo"s alrea&# correct, %'t if we wo'l& pla# aro'n& with the camera, we wo'l& fin& o't, that the positions of the cameras are switching if we cross the H a5is, therefore we also ha,e to ma"e s're, that the “So'rce ; 5is! is D, the “aligne& to I pno&e ; 5is! is D an& that the “ J orl&! is selecte& 'n&er “Select I pno&e! (Image center)







- +ow we ha,e K o%-ects create&:
  - StereoCam_ / i0mo
  - StereoCam_9ocalDistance
  - StereoCam_Target
  - StereoCam_(eft
  - StereoCam_(eft$Target
  - StereoCam_ ight
  - StereoCam_ ight$Target
  - the last L o%-ects are o%solete for the f'rther wor", therefore I wo'l& s'ggest to free0e them, -'st to pre,ent that the# are selecte& %# acci&ent8 -'st select this L o%-ects, right clic" on one of them an select: 9ree0e selection8 the o%-ects are now gra# an& can not %e selecte& an#more, %'t if the remaining 6 o%-ects are transforme&, the# %eha,e as s'ggeste& to
- a camera path for testing
  - the stereo camera is complete, so -'st let 's create a small test en,ironment
  - create a teapot (a Stan&ar& :rimiti,e of 6&s =a5) with a si0e of)0, place it in the center at (0,0,*L0)
  - place the StereoCam_ / i0mo at (0,*L00,0)
  - create a line which starts in (0,*L00,0) an& en&s at (0,200,0)
  - a&-'st the line as shown in Image %ottom: select the line in position mo&e, select the starting ,erte5 an& a&-'st the %e0ier c'r,e %# &ragging the tangent (top ,iew of Image %ottom)
  - select the StereoCam_ / i0mo an& go to the men' ;nimation G Constraints G :ath constraint