

CS 430 Homework 4

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1. **What is the benefit of B-Splines over Bézier Curves?**
Not only are B-splines guaranteed to be C^2 continuous, but their degree is also independent of the number of control points.
2. **What is the benefit of Bézier Curves over uniform B-Splines?**
Bézier curves have endpoint interpolation, while uniform B-splines do not.
3. **How can we force a non-uniform Bézier Curve of degree d to interpolate at a control point?**
By repeating knot values d times, where d is the degree of the curve, the blending function converges to 1 and the curve interpolates the control points.
4. **What is the benefit of NURBS over non-rational B-Splines?**
NURBS are invariant under rotation, scaling, translation and perspective transformations, while non-rational B-Splines are only invariant under affine transformations.
5. **Drawing the setup**
Given the following camera parameters, draw the camera set up as related to the world coordinate system.
 $VRP = (2, 4, 6)$
 $VRN = (1, 0, 1)$
 $VUP = (0, 1, 0)$
 $PRP = (0, 0, 5)$
 $Window = (-4, 4, -4, 4)$

(Note: I made the drawing with Google Drawings.)

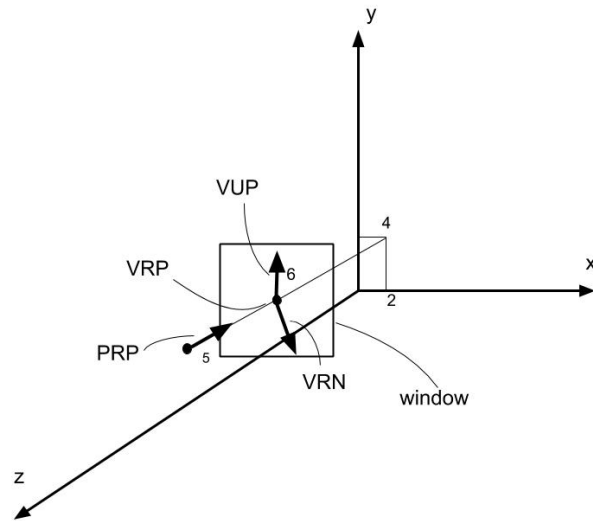


Figure 1: The setup.