# Assignment 6

Sunday, April 22, 2018 4:55 PM

1. Hermite P1 and P4 are the same as Bezier P1 and P4.

R1 hermite is equal to $3(P2 - P1)$, where P2 and P1 are bezier constants.

R4 hermite is the same, but with $3(P4 - P3)$.

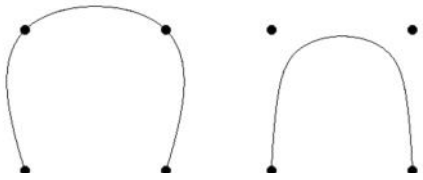
So:

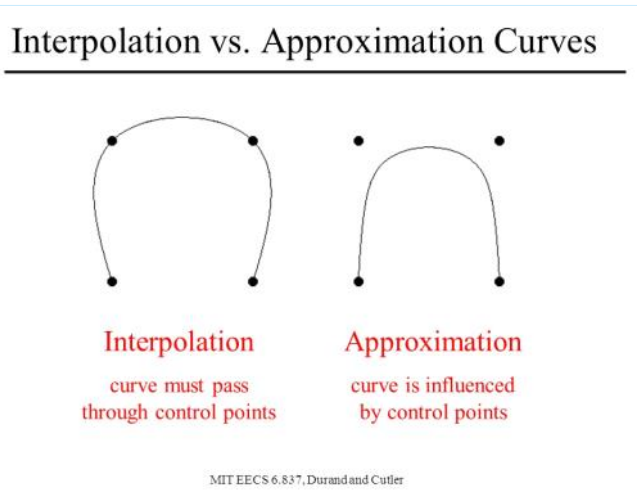
$$P_1 = P_{1h}$$
$$P_4 = P_{4h}$$
$$P_2 = \frac{R_{1h}}{3} + P_1$$
$$P_3 = \frac{R_{4h}}{3} + P_4$$

2. A $C^1$ continuous curve has a continuous derivative, but the second derivative is not continuous. A smooth curve has an 'infinite C-order'; that is, no matter the degree of a derivative, it will be continuous.

3. Interpolation takes surrounding data points and tries to fill the gaps by using existing points to generate new data. Approximation attempts to define the data function and uses it to fill in missing data.

Interpolation vs. Approximation Curves






4. Explicit integration finds the state of a system by using the current state as an input for a derived function. Implicit integration defines an equation that uses both the current and future states as inputs, and solves it.

5. One method is to draw out rays for movement and then verify to see if said ray will collide with any object. If so, calculate up until Δt of the collision and manage it from there. However this method is time intensive, and often detection occurs too late.