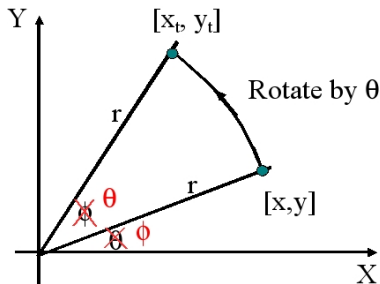


# Interactive Graphics Course Errata 2009

All the errors listed below have been corrected on the web site.

## Lecture 1

On page 5 of the lecture 1 handout the angles  $\theta$  and  $\phi$  were swapped in the figure. The error was corrected in the second printing of the handout (given out during lecture 2).



## Lecture 8

On page 2 Equation 3 should be:  $\mathbf{P}_1 - \mathbf{P}_0 = \mathbf{a}_2/16 + \mathbf{a}_1/4$ .

On page 4 in the equation for the Bernstein blending function the term  $(i - \mu)$  should be  $(1 - \mu)$ .

$$W(N, I, \mu) = \binom{N}{i} \mu^i (1 - \mu)^{N-i}$$

$$\binom{N}{i} = \frac{N!}{(N-i)!i!}$$

At the top of page 5 of the lecture 8 handout the constants, circled below, were omitted from the equations.

we expand the the recursion backwards:

$$\begin{aligned} \mathbf{P}_{3,0} &= \mu \mathbf{P}_{2,1} + (1 - \mu) \mathbf{P}_{2,0} \\ &= \mu[\mu \mathbf{P}_{1,2} + (1 - \mu) \mathbf{P}_{1,1}] + (1 - \mu)[\mu \mathbf{P}_{1,1} + (1 - \mu) \mathbf{P}_{1,0}] \\ &= \mu^2 \mathbf{P}_{1,2} + \mathbf{2}\mu(1 - \mu) \mathbf{P}_{1,1} + (1 - \mu)^2 \mathbf{P}_{1,0} \\ &= \mu^2[\mu \mathbf{P}_{0,3} + (1 - \mu) \mathbf{P}_{0,2}] + \mathbf{2}\mu(1 - \mu)[\mu \mathbf{P}_{0,2} + (1 - \mu) \mathbf{P}_{0,1}] \\ &\quad + (1 - \mu)^2[\mu \mathbf{P}_{0,1} + (1 - \mu) \mathbf{P}_{0,0}] \end{aligned}$$

if we drop the first subscript, which indicated the construction level of the Casteljau algorithm we get:

$$\begin{aligned} \mathbf{P}(\mu) &= \mu^2[\mu \mathbf{P}_3 + (1 - \mu) \mathbf{P}_2] + \mathbf{2}\mu(1 - \mu)[\mu \mathbf{P}_2 + (1 - \mu) \mathbf{P}_1] \\ &\quad + (1 - \mu)^2[\mu \mathbf{P}_1 + (1 - \mu) \mathbf{P}_0] \\ &= \mu^3 \mathbf{P}_3 + \mathbf{3}\mu^2(1 - \mu) \mathbf{P}_2 + \mathbf{3}\mu(1 - \mu)^2 \mathbf{P}_1 + (1 - \mu)^3 \mathbf{P}_0 \end{aligned}$$

which is the same as the blending formulation.

## Lecture 9

On page 3, equation 2 has two places (underlined below) where  $(1 - \mu)$  was incorrectly typed as  $(\mu, 1)$

$$\begin{aligned} \mathbf{P}(\mu, \nu) = & \mathbf{P}(\mu, 0)(1 - \nu) + \mathbf{P}(\mu, 1)\nu + \mathbf{P}(0, \nu)(1 - \mu) + \mathbf{P}(1, \nu)\mu - \mathbf{P}(0, 0)(1 - \mu)(1 - \nu) \\ & - \mathbf{P}(0, 0)(1 - \mu)\nu - \mathbf{P}(0, 0)\mu(1 - \nu) - \mathbf{P}(1, 1)\mu\nu \end{aligned}$$

On page 4 at the end some of the parameter values were set to zero rather than 1. The correct versions are underlined below.

$\mathbf{P}(\mu, 0)$ : a cubic polynomial in  $\mu$

$\mathbf{P}(\mu, 1)$ : a cubic polynomial in  $\mu$

$\mathbf{P}(0, \nu)$ : a cubic polynomial in  $\nu$

$\mathbf{P}(1, \nu)$ : a cubic polynomial in  $\nu$

$\mathbf{P}(0, 0)$ ,  $\mathbf{P}(0, 1)$ ,  $\mathbf{P}(1, 0)$  and  $\mathbf{P}(1, 1)$ : the corner points,

## **Tutorial 6**

There were several minor numeric errors in the original solution to tutorial 6. The web version is now (hopefully) correct.