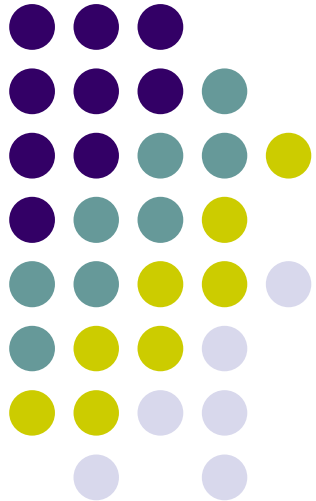
Computer Graphics (CS 4731)
Blending

Joshua Cuneo

Computer Science Dept.

Worcester Polytechnic Institute (WPI)



Slides Courtesy of Emmanuel Agu (WPI) and Matt Stoker (Utah)

Colors

1.00f , 0.24f , 0.29f , 0.30f

Alpha Channel

Red Channel

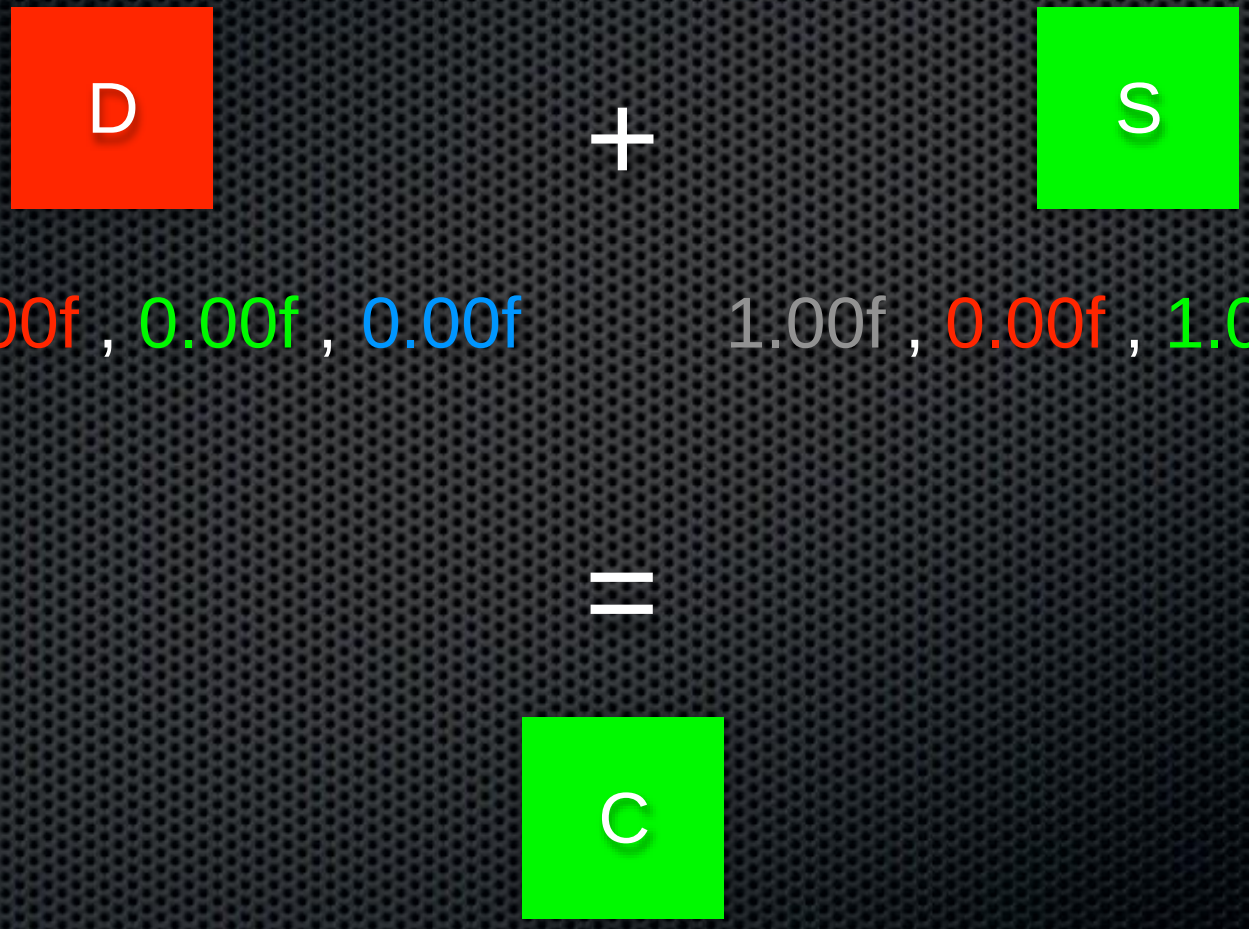
Green Channel

Blue Channel

Add and scale are applied to **channels**

Blending

Function: C = S

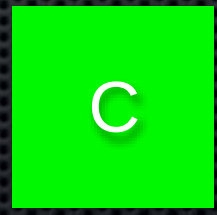


Blending

Function: C = S

1.00f , 1.00f , 0.00f , 0.00f 0.50f , 0.00f , 1.00f , 0.00f

=



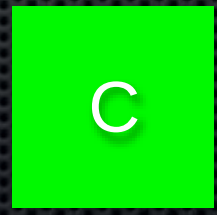
0.50f , 0.00f , 1.00f , 0.00f

Blending

Function: $C_{rgb} = S_{rgb}$

1.00f , 1.00f , 0.00f , 0.00f 0.50f , 0.00f , 1.00f , 0.00f

=



1.00f , 0.00f , 1.00f , 0.00f

Blending

Function: $C_{rgb} = (1-S_a)D_{rgb} + (S_a)S_{rgb}$

+

1.00f , 1.00f , 0.00f , 0.00f

0.50f , 0.00f , 1.00f , 0.00f

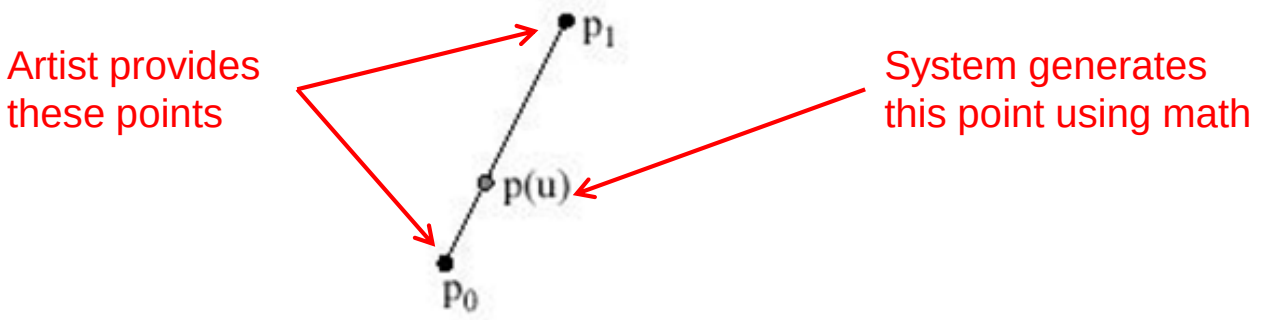
=

1.00f , 0.50f , 0.50f , 0.00f

De Casteljau Algorithm

- Consider smooth curve that approximates sequence of control points [p0,p1,….]

$$p(u) = (1-u)\,p_0 + up_1 \qquad 0 \le u \le 1$$



- Blending functions: *u* and *(1 – u)* are non-negative and sum to one

Blending

Function: $C_{rgb} = (1-S_a)D_{rgb} + (S_a)S_{rgb}$

D + S

1.00f , 1.00f , 0.00f , 0.00f

0.50f , 0.00f , 1.00f , 0.00f

=

C

1.00f , 0.50f , 0.50f , 0.00f

Ordering

Function: $C_{rgb} = (1-S_a)D_{rgb} + (S_a)S_{rgb}$

D + S

1.00f , 1.00f , 0.00f , 0.00f

0.50f , 0.00f , 1.00f , 0.00f

Bunny Last

=

C

Bunny First

1.00f , 0.50f , 0.50f , 0.00f