

Nanyang Technological University

School of Computer Science and Engineering



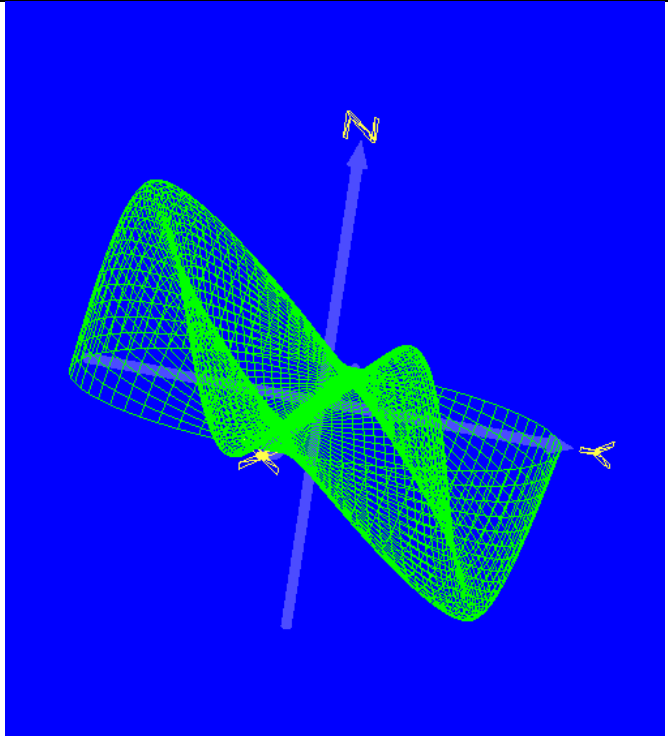
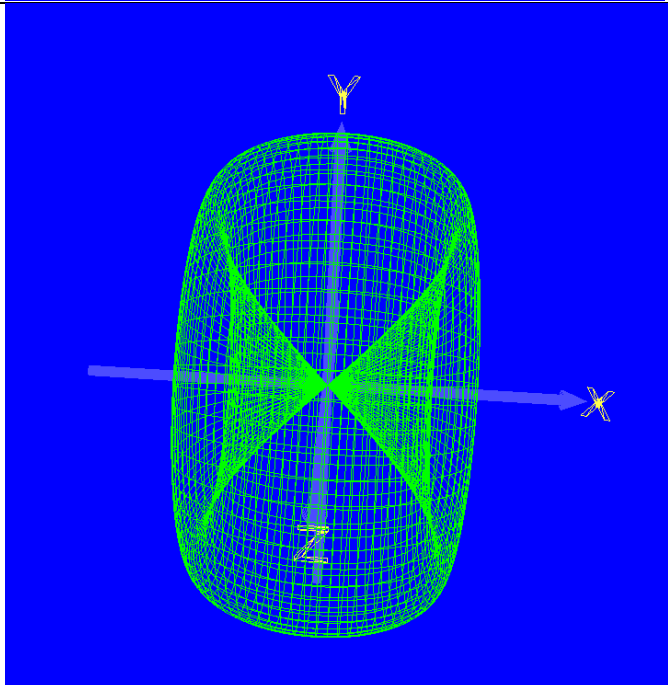
CZ 2003 - Lab 5: Morphing

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Lab Group: SSR1

Attendance list number = 81

Formula_number_1 = $81 \bmod 26 = 3$

Formula_number_2 = $(81+1) \bmod 26 = 4$

Shape Number	Formula	Surface Displayed
3	$x = b \cos(a)$ $y = b \sin(a)$ $z = b \sin(2b\pi) \sin(a)$ $0 \leq a \leq 2\pi, 0 \leq b \leq 1$	
4	$x = \cos(\varphi) \sin(\varphi)$ $y = \cos(a\pi) \sin(\varphi)$ $z = \sin(a\pi) \sin(\varphi)$ $0 \leq a \leq 2, 0 \leq \varphi \leq \pi$	

Normalizing Parameters

Shape 3:

$$u = \frac{a - 0}{2\pi - 0} = \frac{a}{2\pi} \Rightarrow a = 2\pi u$$
$$v = b \text{ since } b \text{ already in } [0,1]$$

New Equations:

$$x = v \cos(2\pi u)$$
$$y = v \sin(2\pi u)$$
$$z = v \sin(2v\pi) \sin(2\pi u)$$

$$u, v \in [0,1]$$

Shape 4:

$$u = \frac{a - 0}{2 - 0} = \frac{a}{2} \Rightarrow a = 2u$$
$$v = \frac{\varphi - 0}{\pi - 0} = \frac{\varphi}{\pi} \Rightarrow \varphi = v\pi$$

New Equations:

$$x = \cos(v\pi) \sin(v\pi)$$
$$y = \cos(2u\pi) \sin(v\pi)$$
$$z = \sin(2u\pi) \sin(v\pi)$$

$$u, v \in [0,1]$$

Morphing

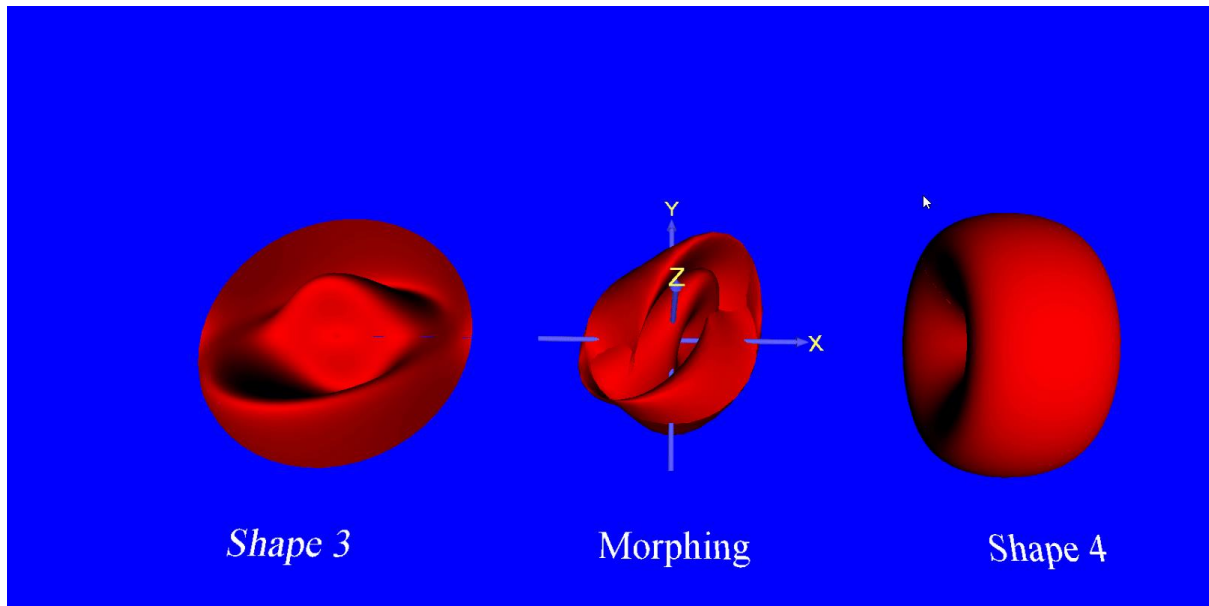


Figure 1: Still of morphing.



Figure 2: Gif of morphing, embedded using Giphy.com

Note: The hi-def version of the original gif is available in the lab5 folder as morphing.gif.