

**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING**

CZ2003 Computer Graphics & Visualization Lab 5 Submission

Morphing

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Lab Group: SSP2

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# Lab 5 Tasks

1. Calculate formula number
2. Modify formulae to use parameters *u* and *v* to be in the same range: *u, v* ϵ [0, 1]
3. Displaying surface defined by formula number: 3
4. Displaying surface defined by formula number: 5
5. Define animated shape
6. Adjust resolution to make shape look smoother while still rendering within 2 seconds

# Lab 5 Files

Only one file is to be evaluated for lab 5: Lab5.wrl

# Task 1: Calculate Formula Number

Number in the attendance list = **3**

Lab Group = **SSP2**

Formula\_number\_1 = **3**

Formula\_number\_2 = **5**

# Task 2: Modify Formulae

## For Formula Number 3

|  |  |
| --- | --- |
| **Given Formula** | **Modified Formula** |
| x = *b* \* cos (α)  y = *b* \* sin(α)  z = *b* \* sin(2\**b*\*π) \* sin(α)  0 ≤ α ≤ 2 π  0 ≤ *b* ≤ 1 | x =v\*cos(u\*2\* π)  y = v\*sin(u\*2\* π)  z = v\*sin(2\*v\* π)\*sin(u\*2\* π)  u, v ϵ [0, 1] |

## For Formula Number 5

|  |  |
| --- | --- |
| **Given Formula** | **Modified Formula** |
| x = cos(ϕ)  y = cos(2\*ϴ) \* sin(ϕ)  z = sin(2\*ϴ) \* cos(ϕ)  0 ≤ ϴ ≤ 2 π  0 ≤ ϕ ≤ 2 π | x = cos(v\* π)  y = cos(2\*u\* π)\*sin(v\* π)  z = sin(2\*u\* π)\*cos(v\* π)  u, v ϵ [0, 1] |

# Display Surface Define by Formula Number 3

|  |  |
| --- | --- |
| **Smooth Graphics Mode** | **Wireframe Graphics Mode** |
|  |  |
| **Code** | |
|  | |

# Display Surface Define by Formula Number 5

|  |  |
| --- | --- |
| **Smooth Graphics Mode** | **Wireframe Graphics Mode** |
|  |  |
| **Code** | |
|  | |

# Define Animated Shape

|  |
| --- |
| **Animated Shape Morphing Midway** |
|  |
| Note: View the Lab5.wrl to view the morphing animation |
| **Code** |
|  |

# Adjust Resolution

For the experiment, the resolution has been adjusted to 200 to create smooth surfaces on the shapes and smooth animation during the morphing.