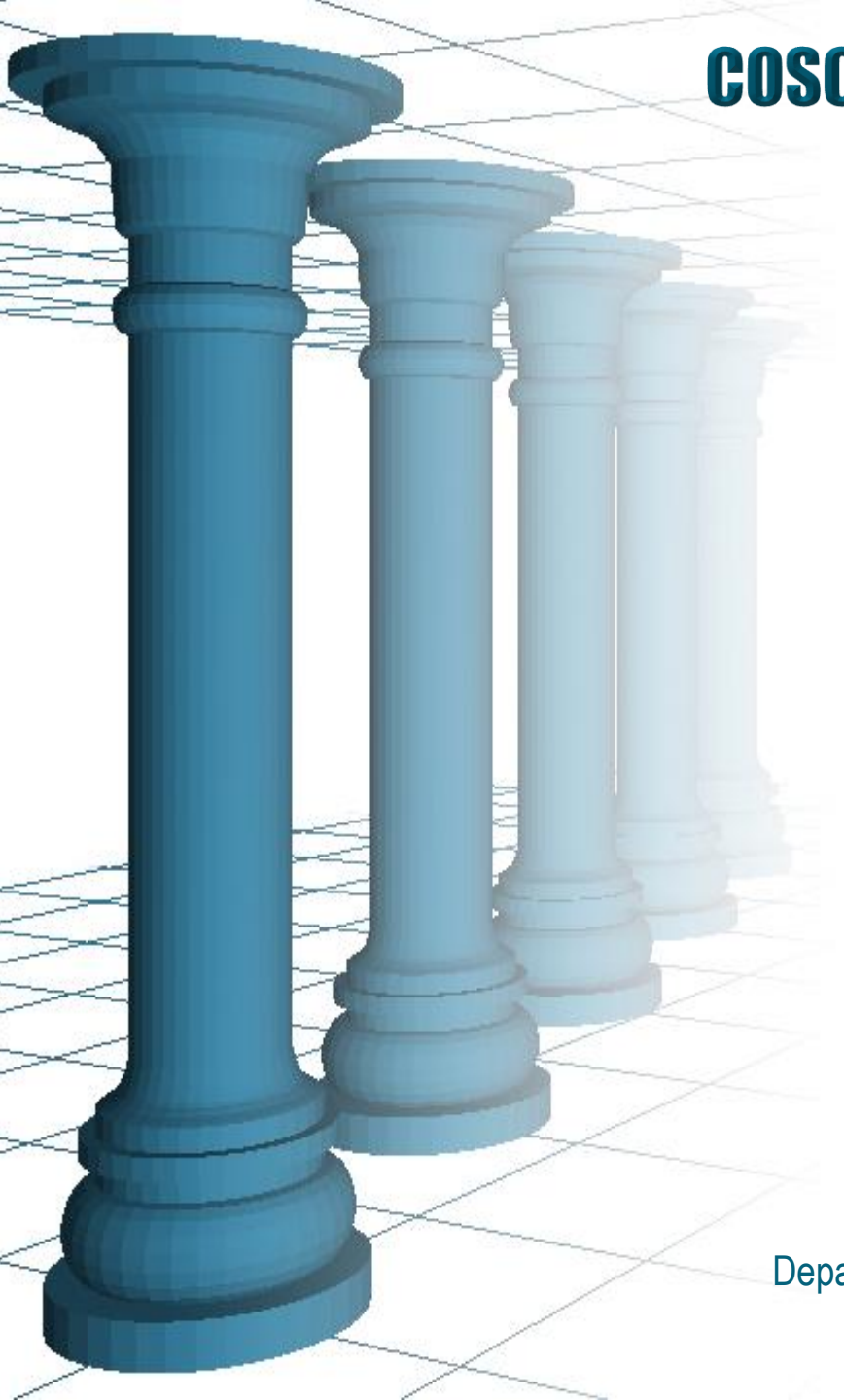

COSC363 Computer Graphics

Assignment-1

Imagination

↓

Creativity

↓

OpenGL

↓

COSC363 Assignment ☺

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Assignment-1

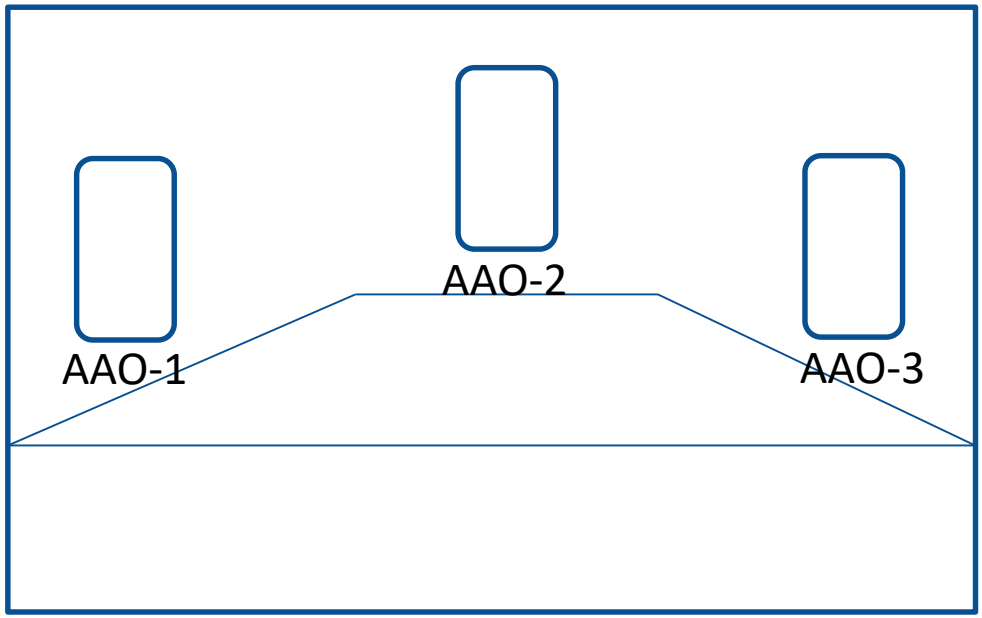
- Due: 11:55pm, **31 March 2023**.
- Maximum Marks: 20
- Assignment handout available on Learn page.
- Use only C/C++ programming language and OpenGL API
- Not a group project. Your submission must represent your own individual work
- Students may discuss assignment related problems using course forum. However, code segments or any part of your assignment submission should not be posted on Learn.

Assignment-1

- The assignment section on Learn contains
  - The assignment handout
  - This set of powerpoint slides
  - Supplementary material useful for the assignment

COSC363 Assignment 1

- Title: **Optical Illusions Art Gallery**
- Three animated models and a gallery showing a spatial arrangement of these models ("animated art objects")
  - Two animated optical illusions
  - One 3D model displayed using two or more animation sequences



Gallery

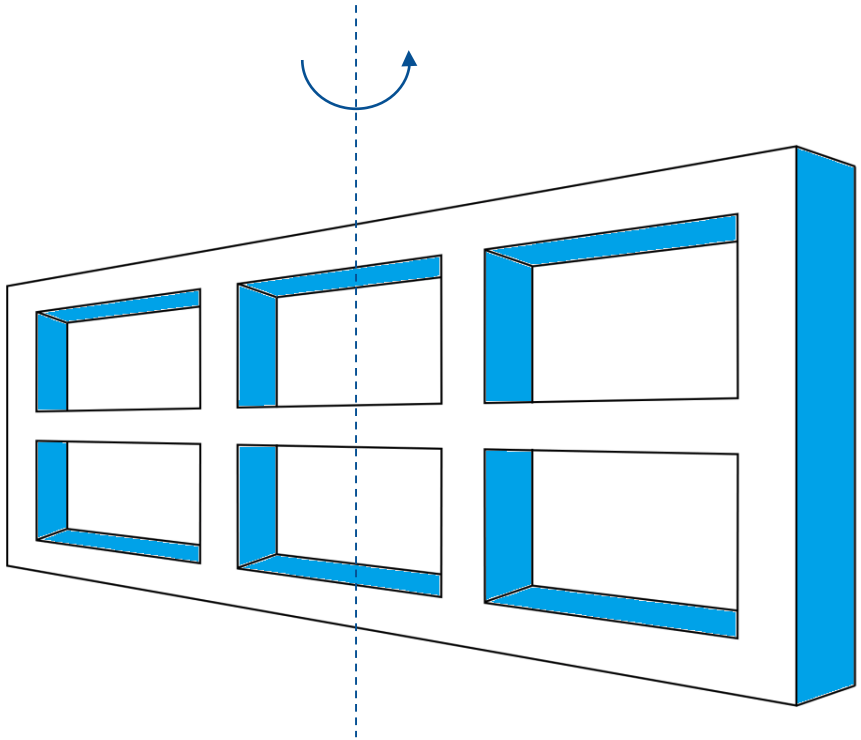
Animated Optical Illusion

- An optical illusion generated by a three-dimensional motion of objects.
- Examples:
  - Ames Window illusion ---- AAO1
  - Scanimation (a.k.a Barrier Grid Animation)
  - Dual Axis Illusion
  - Moire Patterns
  - . . .
  - . . .

AAO2

Ames Window

- A very popular animated optical illusion generated by a simple rotation of a planar object.
- Templates provided in the assignment section.

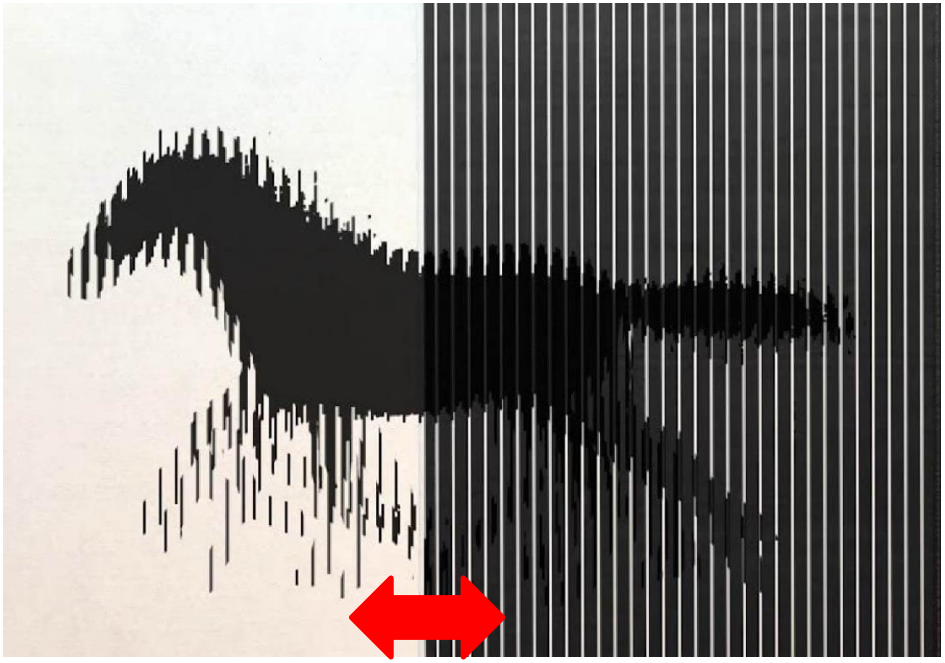


A 2D polygonal shape!

Scanimation

- Also known as Barrier Grid Illusion, Picket Fence Effect
- A striped transparent overlay (grating) is moved over an image to display 6 frames in quick succession.

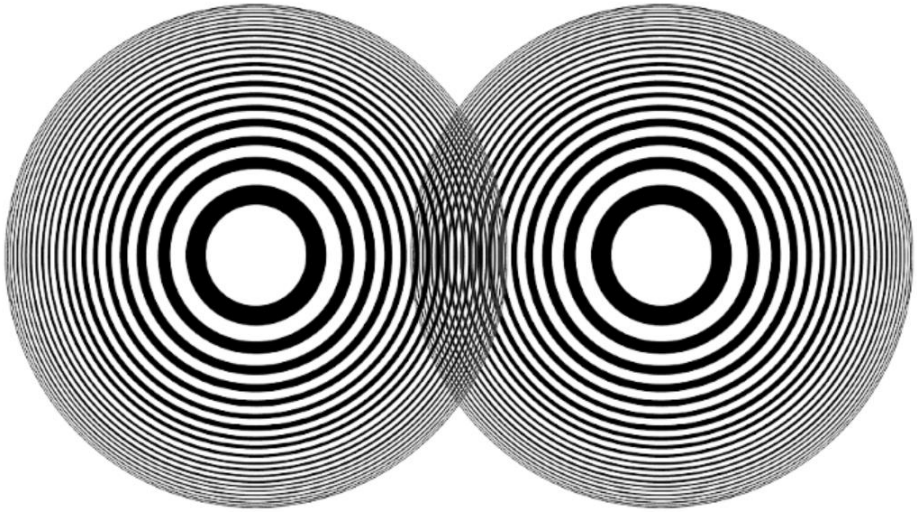
Frames



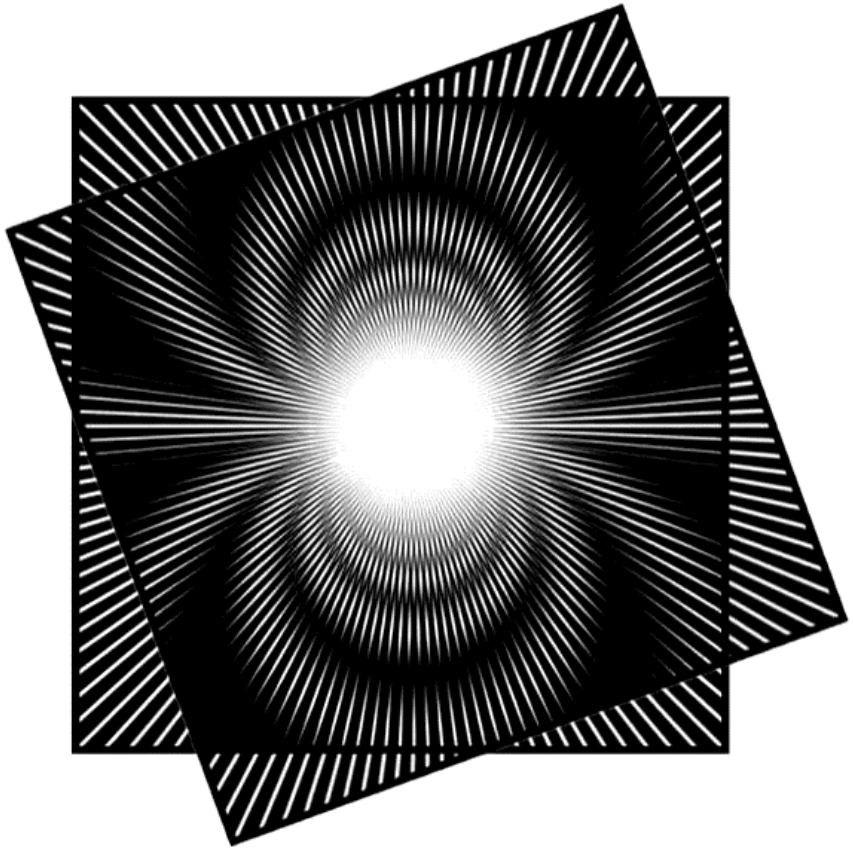
Grating
1-5-1-5

Moiré Patterns

- Interference patterns
- Generated by moving one system of lines/curves over another system of lines/curves in a different direction.



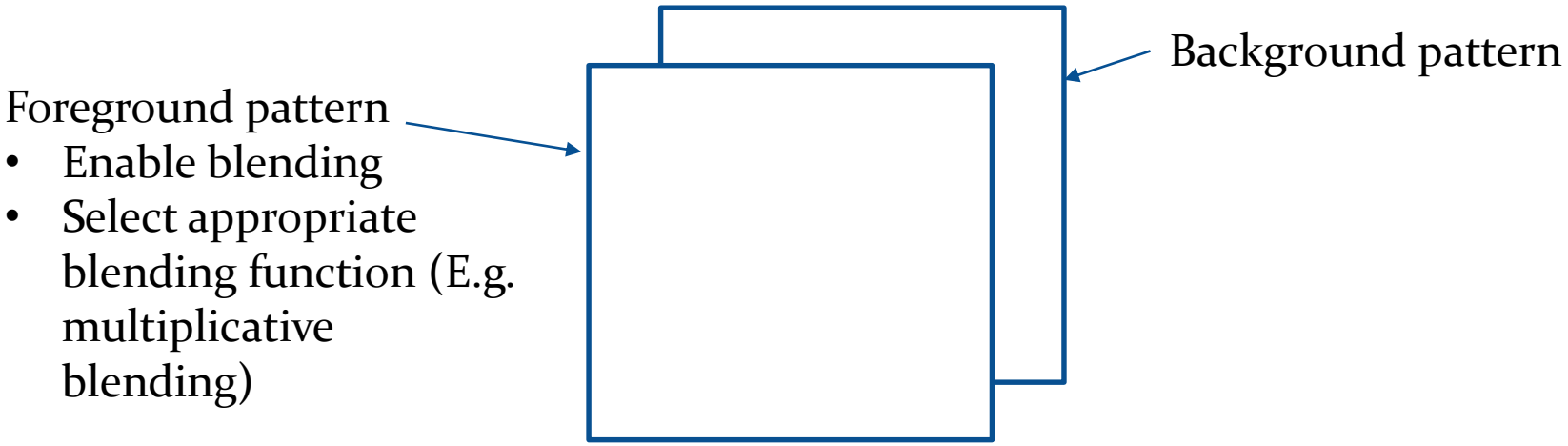
Moiré Patterns



https://www.youtube.com/playlist?list=PLC514EB7071035606

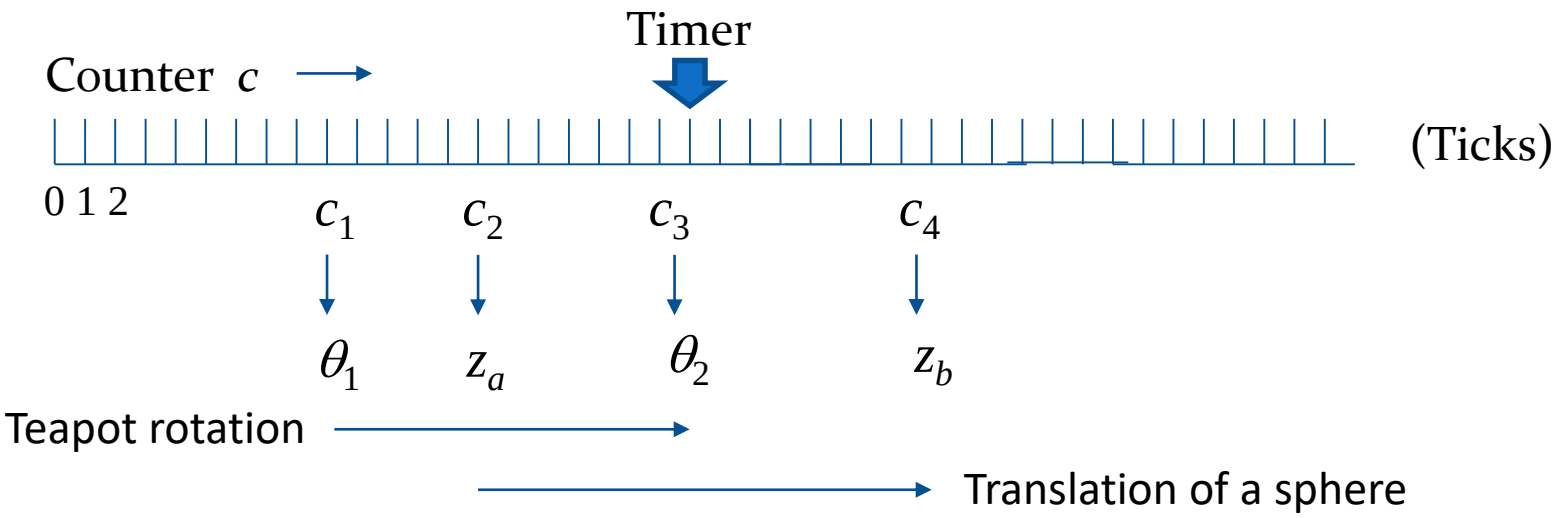
Pattern Animation

Images used in pattern animations (scanimation, moire' patterns etc.) may be texture mapped on to quads, transformed relative to one another, and rendered using appropriate blending functions.



Multiple Animations

- Suggested method:
  - Use only a single timer event sequence
  - Delay: 50 msec (corresponds to 20 fps)
  - Define a global `int counter` variable, incremented each time inside the timer callback function
  - Define start and end points of animation sequences based on the values of the counter variable.



Max. Marks

- Animated Optical Illusion 1 (Ames Window): 3 marks
- Animated Optical Illusion 2: 3 marks
- 3D model with animations: 4 marks
- Gallery: 2 marks
- User interaction functions: 2 marks
- Extra features: 4 marks
  - Shadows, spotlight
  - Texture mapped sweep surfaces
  - Static optical illusions (max 1 mark)
  - Physics based animations
- Report: 2 marks

Timeline

AAO-1 (Ames Window)	Lab 1, Week 2
AAO-3 (3D Model with animation)	Lab 2, Week 3
AAO-2 (Texutre mapping for displaying images/patterns)	Lab 3, Week 4
Gallery (Surface modelling)	Lab 4, Week 5
Assignment help	Lab 5, Week 6
Assignment submission	31 March