

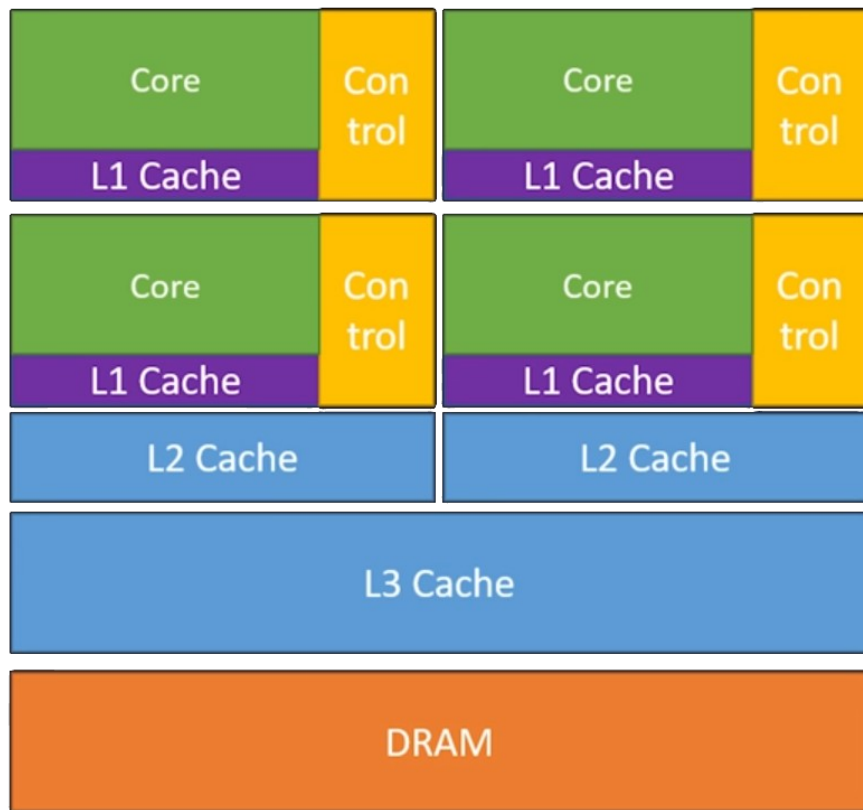
The background of the slide is composed of several large, overlapping triangles in various colors: red, orange, yellow, green, blue, and purple. These triangles are arranged in a way that they create a dynamic, abstract composition. The text is centered over the white space between these shapes.

Computer Graphics Lecture 1

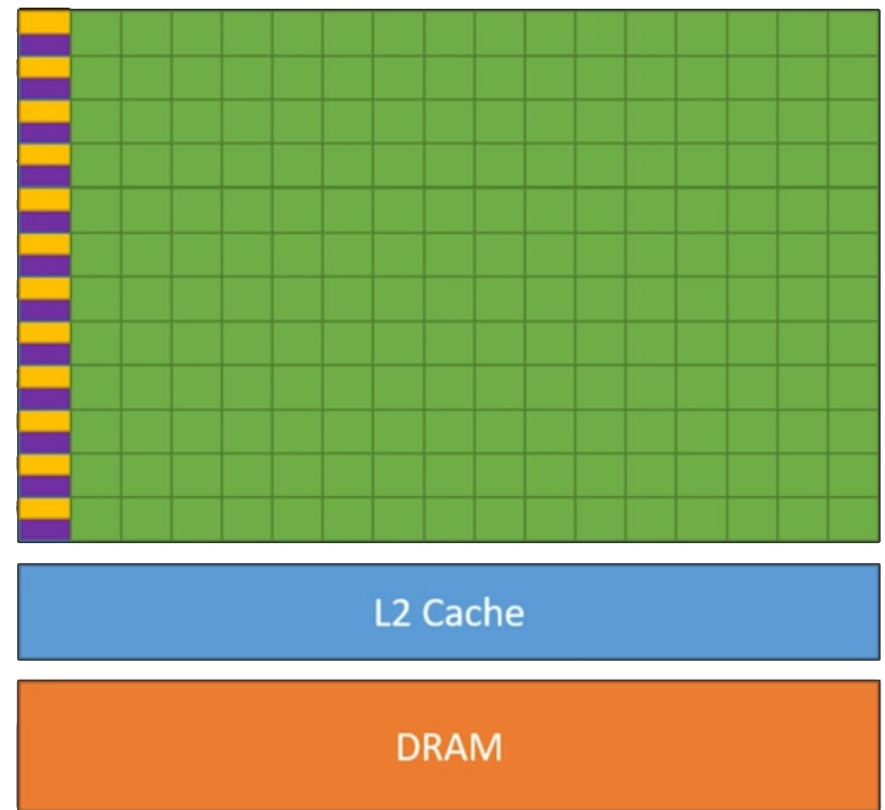
The background of the slide is composed of several large, overlapping triangles in various colors: red, orange, yellow, green, blue, and purple. These triangles are arranged in a way that they fill the entire frame, creating a dynamic and modern aesthetic. The text 'CPU vs GPU' is centered in the white space between these colorful shapes.

CPU vs GPU

CPU vs GPU



CPU

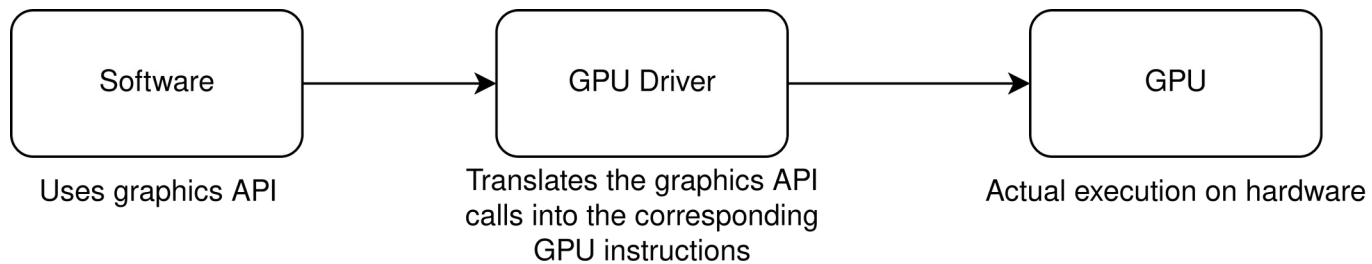


GPU

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Graphics APIs

Graphics API calls life-cycle



Common graphics APIs

- OpenGL (High-Level, Open Standard)
- Vulkan (Low-Level, Open Standard)
- Direct3D (Windows & Xbox only)
- Metal (macOS & iOS only)

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OpenGL

OpenGL Pros & Cons

Pros

Easy to learn

Extensive documentation

Cons

Performance depends on BOTH the understanding of API and the driver

Cannot be used for lower level if needed

Delegates GPU selection for either the window manager or the OS

Support Libraries

- Window Management: SDL (C), SFML (C++), GLFW (C)
- Math: GLM (C++)
- Models Loaders: ASSIMP (C++)



C++, Git & OOP

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Why do we rarely
see people using it?

Useful links

- <https://www.youtube.com/watch?v=Axd50ew4pco>
- <https://www.youtube.com/watch?v=r5NQecwZs1A>

Documentation

- <https://docs.gl/>
- <https://registry.khronos.org/OpenGL-Refpages/gl4/>

Useful Books

- <https://www.amazon.com/OpenGL-Programming-Guide-Official-Learning/dp/0134495497/khongrou-20>
- <https://www.amazon.com/Fundamentals-of-Computer-Graphics/dp/1032122862/>