Course description

3D computer graphics ("CG") is a practical, exciting, color-filled, profitable area of computer science - it is the technology behind animated movies, videogames, visual effects, augmented reality (VR), virtual reality (VR), 3D-printing, scientific visualization, etc. CG is useful for entertainment, education, communication, commerce - which together make up the bulk of human activity.

This course will teach you timeless CG principles from the ground up - the knowledge you will gain, is sure to be helpful to you, for decades to come. Throughout the course, we will complement the theory of CG, with use of the following free, and free-for-personal-use, software: Blender, Maya, RenderMan, THREE.js, OpenJSCAD, aframe.io. You will be using some of this software for at-home exercises, as well as for your project which you will present during the 7th (last) week of the course.

In one word, here is what this course is about: **fun**!

Topics/schedule

Week1: Introduction and overview; mathematical foundations (linear algebra)

Week2: The 'classic' 3D graphics pipeline

Week3: Extensions to the 3D pipeline - global illumination

Week4: Modeling, animation, simulation

Week5: Mathematical/generative/procedural art

Week6: AR, VR, 3D-printing

Week7: Project presentations, 'graduation'