

COMS W4172 (Spring 2025) IA PAGE

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About

→ [Main 4172 Website](#)

→ [Courseworks](#)

Office Hours and IAs

Steve Feiner

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Office Hours:

- After class
- Make an appointment: Let me know what works for you

Leo Li

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Office Hours:

- Thursdays 5:00pm–6:00pm at Mudd 1335 or by Zoom:
<https://columbiauniversity.zoom.us/j/94056343073?pwd=Ks8pf4EMSIDYrjRyGfm42qaDI9mZ8p.1>)

Max Segan

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Office Hours:

- Mondays 3:00pm–4:00pm at CGUI Lab (Room 6LE3 CEPSR or by Video:
<https://meet.google.com/zew-ruiy-wyr>)

Useful Links and Resources

UI Design

[Jakob Nielsen's 10 Usability Heuristics](#) (and [applications to VR](#))

Development

Unity

For more information and best practices about working with Unity, see our documents [Installing Unity and Deploying to iOS/Android](#) and [Developing with Unity](#).

C#

Unity uses the Mono framework for scripting. All programming assignments in the course must be done in C#.

Unity scripting guide

- [Unity scripting reference](#)
- [Unity scripting tutorial videos](#)

.NET C#

C# and .NET differ slightly across different platforms (Windows and macOS).

- [The official C# reference site](#)
- [A good set of C# tutorials](#)

3D Math

Tutorials

- Unity has a short video on Vector math [here](#)
- A textual introduction can be found [here](#)
- A video by Unity: [A Little Math for Your Big Ideas](#)
- Steve Hazen's 3D programming articles (very enlightening with demonstrative videos)
 - [What is a vector](#)
 - [Vector addition/subtraction](#)

3D Modeling

3D Model Sources

- [Unity Asset Store](#)
- [TurboSquid](#) & [CGTrader](#)
 - Lots of great models, many free
- [Sketchup 3D Warehouse](#) (formerly Google Sketchup 3D Warehouse)
 - You can open these models in Sketchup then Export as 3DModel, Google Earth model (**.kmz**)
 - Change then extension on the google earth model (**.kmz**) to (**.zip**)
 - Open the archive and extract the model file (**.dae**) under models folder
 - Convert to **.fbx** using the [FBX Converter](#).
- [3dmdb](#)

3D Model Converters

- [Autodesk FBX Converter](#)
 - “Transfer project data from one application to another quickly and easily with the FBX Converter. This utility lets you convert OBJ, DXF™, and 3DS files to and from the FBX format.” - <http://autodesk.com/fbx>
 - Note: When running the convert, ensure you choose a FBX format version compatible with your end application. The developers of Unity encourage usage of the latest versions of FBX.
- [3D Object Converter](#)

3D Modeling Software

Use these programs to create your own models!

- [Autodesk Student and Educator Access to Products](#)
 - One of the industry leading 3D modeling software providers
 - Powerful package with large community of users
 - Free downloads for students
- [Blender Open Source 3D Modeling tool](#)
- [Trimble Sketchup](#) (previously Google Sketchup)
 - Large community (tutorials, plugins, etc.)
 - Easy to get started

3D Model Viewers

- [Autodesk FBX Review](#) (for Windows and macOS)
- [Lynx3D Viewer Lite](#)
 - Use this to debug model scaling, origin, normals, etc

Texture Sources for Models

- [Texturer](#)
- [CG Textures](#)

Inexpensive AR Compatible Android Phones

The following devices are intended to be used as hand-held computers with cameras that can communicate through Wi-Fi and USB. (They are restricted as to the carrier plans with which they can be used, but you won't need to use them as phones for our course.) In general, you'll want a device that supports the ARCore “Depth API” (as documented at <https://developers.google.com/ar/devices>). You will probably need one only if your regular phone is an iPhone and you do not have a macOS computer that can deploy to it.

- [Samsung Galaxy A15 5G \(renewed\)](#)
- [Samsung Galaxy A15 5G \(renewed\)](#)