# Live Lecture Chat Window
## November 29, 2023

**14:30:44 Can it [Instancing] be used for crowds?**

Yes, you just need to use gl_InstanceID to randomize height, hair, clothing color, skin color, etc. so the crowd doesn't look to uniform.

**14:35:01 Are there any heuristics for the size of instanced objects when dealing with objects that can be modeled as collections of other objects? I'm making a forest for my final project and was thinking of using instancing and was curious about whether there are best practices in terms of instancing at the individual leaf level vs. at the level of a branch or a tree.**

Great question, and I don't really know.  I would think one would use the branch level.  The leaf-level seems too detailed because the shader could not place the leaves without also knowing something about the branches.  But I'm not sure.

**14:52:42 Would you need raytracing to cast light from the moon onto earth?**

Possibly if you want it to be done perfectly.  But, if it was me, I would try to fake it by treating the moon as a light source with a variable intensity (depending on phase).