BEGINNING METAL

HANDS-ON CHALLENGES

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15 Resources

By Caroline Begbie

Fundamentals of Computer Graphics

https://youtu.be/7Hn5qUmL-Q8 - A great seminar on Computer Graphics fundamentals. It's well presented and an excellent introduction. A great next step after Beginning Metal to consolidate terminology.

Metal resources on the web

Apple WWDC Videos and Documentation. Lots of Metal Videos at WWDC 2016.

Warren Moore's *Metal By Example*, http://www.metalbyexample.com. The first and best resource for Metal. It's aging a little as it's in Objective C and doesn't use MetalKit.

Marius Horga's *Swift Development Blog*, http://mhorga.org and http://metalkit.org. Excellent blog which explores Metal in playgrounds.

Simon Gladman's *Creative Coding in Swift*. So many different things to try out here.

Books on Computer Graphics

JungHyun Han (2011) *3D Graphics for Game Programming*, CRC Press. This is a small book, but has all the basics for starting Computer Graphics, and isn't as overwhelming as these other massive tomes.

Peter Shirley, Steve Marschner (2016) *Fundamentals of Computer Graphics, Fourth Edition*, A K Peters/CRC Press.

Andries van Dam; James D. Foley; John F. Hughes; David F. Sklar; Steven K. Feiner; Kurt Akeley; Morgan McGuire (2013) *Computer Graphics: Principles and*

Practice, Third Edition, Addison Wesley.

Edward Angel, Dave Shreiner (2015) *Interactive Computer Graphics: A Top-Down Approach with WebGL, 7th Edition*, Pearson.

Linear Algebra on the web

Immersive Linear Algebra, http://immersivemath.com/ila/index.html - Excellent interactive site where you can move vertices around and watch the mathematical results change.

Grant Sanderson *The Essence of Linear Algebra*, http://www.3blue1brown.com. Concepts are important and that's what this teaches.

Computer Graphics Course

https://www.udacity.com/course/interactive-3d-graphics--cs291. This will teach you principles of Computer Graphics, but it's using Javascript and WebGL.