The overall goal of my independent study proposal is to create a fully functional Android application using OpenGL ES. I would like this to be the final goal since my final project last year was a month of working on finishing a game and though I did finish I did not manage to get a high level of quality (polish) on the game. Even though it was not polished, the experiences learned from making the game are invaluable. It taught me time management, the realities of how long it takes to get some tasks done as compared to others, and was a small preview of life after high school. I am still trying to decide what type of Computer Science I would like to specialize in and this gives me an experience of Game Development (a specialization I am looking into).

If it is at all do-able I would like to create said program for Android using no libraries to help with the graphics as I have not used too many low level languages and I feel being low level makes it more powerful for performance optimization and such. In addition to that learning OpenGL ES is valuable as it is roughly the same across mobile devices and is somewhat similar to OpenGL used on desktop systems.

In order to learn OpenGL ES I will be using the provided OpenGL ES sample code that comes with Android ([http://developer.Android.com/training/graphics/opengl/index.html](http://developer.android.com/training/graphics/opengl/index.html)). I will also be using NEHE (<http://nehe.gamedev.net/>) tutorials to OpenGL ported to OpenGL ES and Android (<http://insanitydesign.com/wp/projects/nehe-android-ports/>). While going through these tutorials I will learn in the only way I know how, by playing around with it and using it in contexts that I see it could work with.

In terms of meeting and evaluation we can meet once a week and I can show what I have created on my phone. I will try to use new skills I have learned that week, or show off new features I have developed. The issue is that the Android emulator only supports OpenGL ES after 4.0.3 and even at that version it is highly specific (In fact I couldn’t get the emulator to work with hardware acceleration on my own high end computer) about drivers and such. It is likely that I will only be able to test on my own device. On the programming side I can install a plugin in Netbeans that will allow me to develop for Android which I can likely install on the school computers. I can put the Android SDK folder on my flash drive and it will work. The only issue is that the school may block some batch files that are required. It will take a bit of startup time to get the workflow working from school and home.

After I learn OpenGL ES enough I will start working on my final ‘application’. I say application because what comes of it depends on a ton of things, how well I get to know the graphics language, how good I can get the performance and how much work it takes to get that performance. The ideal situation is that I make a full-fledged game in OpenGL ES but if that is not possible for any reason I could simplify as needed maybe a live wallpaper instead or something. Though it is fairly unlikely, it is possible that with this game concept (as many of mine are) that I am in way over my head. But this is the first game concept that I have had which seems realistic (in comparison to most my other ideas) and is 100% my creation.

So the game idea was inspired by a blog post that said, give the player something of value and then tempt them to lose it. It was also inspired by the cargame project I did last year. The idea is that you are given a map (procedurally generated) and raw resources one at a time. You get a car to transport these resources around to different tiles which can convert them into something more valuable. Then you must decide to either sell these, use them to create something of more value (by putting in more materials) or using them to improve your map. The user will be allowed to create multiple cars to increase efficiency and there will be some motive to the player being efficient (that’s the only part I haven’t figured out yet). Creating more cars makes a higher risk of collisions. The map can be improved by speeding up “factory” tiles and even making ever so slight automations (automatically pipe gas to the gas station maybe). The idea is that the player gets an absolutely awesome setup, but only to lose it as after you have lost, you cannot recover the map. It’s about the decisions made during the game and reflecting upon them after you lose. On the more technical side, the graphics will be 2d but ideally (if possible) isometric. Being isometric means that it is a grid but on a 45 degree angle. This way it feels 3d without actually being 3d (saving on performance). The only hard part will be the art style. Isometric is the same style all the Sim City games used (except for Sim City 5 which was awful anyways). Graphically it will basically be a gridded city where buildings can interact as said above.

The game is over ambitious, a huge project, very complex and will be a struggle. But that is why it will be fun. The concept is not fully fleshed out, but it is something I thought up 6 months ago and haven’t changed since then. So that means its solid enough to me. I may be way in over my head with this, but what a better time to try. When there is really nothing to lose and this is possibly the only time in my life I get a chance to do something like this with nothing to lose.