ECE 588 – PROJECT Progress ReportProject Name: Parallel Graphics Rendering using CUDASamant Yadnesh (ysamant@pdx.edu)  
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**Project Status:**

* We ordered the Nvidia Jetson TX-1 Development board.

We have been able to setup the CUDA Development toolkit, run some samples and get the environment up and running smoothly. This part took a little work.

* The toolkit contains the Nsight CUDA Debugging tool. We had to setup the remote debugger because there is no native compiler, for the ARM processor on the Jetson board.

We thus, cross compile our programs on the host machine (laptop) and then remotely debug the application on the development board. We make use of git and the debugger tools to synchronize source and compilation files.

* We performed a study of sample programs and parallel processing algorithms and the general architecture and structure of CUDA programs,
* We then successfully proceeded to setup a test program to generate random circles and render them using CUDA cores on the Jetson Tx1.
* Using some of the CUDA API’s we are able to obtain technical data regarding the number of SM’s (Streaming Multiprocessors) and CUDA threads being used.

**Work yet to be done:**

* We are currently working on setting up a performance comparison between running the sample program sequentially and on CUDA cores (Parallel).
* We are considering tweaking our program code by researching similar implementations online and checking out pre-existing samples.
* Implementation of the display module.

Although the images are being rendered successfully, we are having some difficulty displaying them. There is to be some interoperability between CUDA and OpenGL. We are trying to figure out the specifics of OpenGL (Its quite buggy!) to get this working in our remote debugging environment.

**Add-ons (time-permitting):**

* Render more images using different parallel algorithms.
* Use the Nsight profiler to obtain more statistical and analytical data regarding out program performance.