**Student Name:** Sam Neville

**Programme:** BSc GSE

**Title:** Creating Virtual Landscapes Using Terrain Generation

**Outline:** This project will implement a terrain generation tool that can infinitely generate a 3D landscape. The deliverable portfolio product will be a Windows application that will produce digital landscapes with significant geographical features present (such as rivers, levels of foliage, hills, cliffs, and oceans.) This application will support changing various values to influence the generation of the terrain (such as tuning frequency of geographical features, or average temperature.) I will research existing terrain generation tools and their usage in both simulation and videogame environments, and the methods currently used to create these. I will also investigate real-world geographical structures, and experiment with ways to represent features that develop over many years within a digital environment, monitoring the performance of different approaches for both pre-generation and real-time generation. One of these features would be generation of oxbow lakes, something that can take decades to form as a result of erosion and would not exist in a standard simulated environment. I will undertake research into development options, but the project will likely be in C++ and OpenGL.

**Potential Supervisors:** Simant Prakoonwit, Karsten Pedersen, Leigh McLoughlin, Vedad Hulusic