Virtual Ohio

Challenge Problem and Resources

Developed by:

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Gaming Research Integration for Learning Laboratory™ (GRILL™)
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1. CHALLENGE PROBLEM: VIRTUAL OHIO

The use of modeling and simulation (M&S) has become an area of interest, specifically for its use in the military training world. Recently, the Air Force Research Laboratory (AFRL) has invested significant effort in the development of M&S capabilities to enhance live, virtual, and constructive (LVC) training capabilities for first responders. At the center of this effort is Calamityville, which was previously a manufacturing site that has been converted into a training ground for first responders. This site contains an array of environments used to complement first responder training in an effort to create realistic training scenarios. These include a simulated helicopter crash, silos, tunnels, and an office building containing numerous classrooms.

Ongoing research efforts involving Calamityville include the Sensor Integration and Data Fusion for Operations and Training (SIDFOT). SIDFOT is focused on the development of an architecture allowing the integration of Live, Virtual, and Constructive sensor data through ad-hoc sensor networks enabling data fusion for innovative operations and training research. As part of the SIDFOT effort, a virtual representation of the Calamityville site was produced using the game engine CryEngine®. The SIDFOT effort provides a capability that can be used during emergency response operations but may also be adapted for use in an AOC or equivalent military operations center. For national disasters, it provides a common architecture for state, local, and military operations alike.

As in the case of military simulator training, the locations and corresponding terrain databases utilized in training are swapped out based on the goals of the training audience and program. Future capabilities will allow for first responder communities to involve additional sites in their virtual training environments to expand the training audience. Accordingly, there is interest in maintaining a library of virtual models for use in LVC training activities. There is particular interest in developing models of relevant buildings throughout the state of Ohio. Of highest priority are building that are specifically relevant to first responder training. Some examples may include fire stations, Red Cross shelter locations, large centers of population concentration (e.g., office buildings), hospitals, warehouses and/or factory buildings.

1.1. THE TOOLS

This challenge problem is focused on the development of high fidelity virtual models, as described above, formatted to facilitate import into a game engine. Each building will be modeled using 3ds Max® or SketchUp. The formatting requirements for creating these models are as follows:

- *When saving files, be sure there are no spaces in the filename.*
- *Save all of your model and texture files (ex: .jpg, .tif, .bmp, .png, .dds) in a model folder for easy retrieval*
    - *Save original model files (.skp or .max) and common format (.dae)*
- **Note:** Additional formatting requirements may be necessary and the game lab will specify these recommendations

1.2. THE SOLUTION

Populate the GRILL™ electronic database that contains building models that have been designed by your team, replicating a virtual Ohio. This database will be accessible to anyone registered with our website and will also offer forums and the ability to have users upload their own modeled environments into the system. The website will serve as a host database allowing students, teachers, and other interested persons to have access to local maps, buildings, and realworld terrain design. The advantages of such a site will allow users the ability to access real life models of cities that will directly benefit the creation of virtual training environments used in military training.