



Esri Building Damage Assessment

Using vCompute Server and QvDWS for Deep Learning in Esri ArcGIS

OVERVIEW

The demo illustrates NVIDIA virtual GPU (vGPU) technology and the different product offerings within the vGPU portfolio. We are using Esri ArcGIS Pro, a commercially available software application that is industry-leading for mapping and spatial analytics for desktop users as well as Software as a Service (SaaS).

The critical task of damage claim processing is typically labor-intensive and requires a significant amount of time. The Deep Learning (DL) tools within ArcGIS sped up the process to provide aid to those affected by the Woolsey fire. This demo shows the workflow used; from training the deep learning model to inferencing which ultimately automated the detection of damaged homes.

For this demo, we used a client-server architecture which gives a clean separation of the roles of a Geographic Information System (GIS) Analyst and a Data Scientist. The GIS Analyst uses NVIDIA Quadro Virtual Data Center Workstation (Quadro vDWS) software to create, edit and explore spatial data. The Data Scientist uses NVIDIA Virtual Compute Server (vComputeServer) software to train/build a model which will then be used by the GIS Analyst to execute object detection Inferencing.

KEY POINTS

- NVIDIA virtual GPU solution allows you to virtualize a data center GPU and share it across multiple VMs, or assign multiple GPUs to a single VM to power the most demanding workloads. vGPU not only offers improved graphics performance for application and desktop environments, it also opens up a new set of functionality within Esri software that can leverage NVIDIA GPU technology such as compute.
- The entire process of training and inferencing can be virtualized, both on the server and client, empowering Data Scientists to work on multiple projects without waiting for long training cycles.
- NVIDIA T4 is a perfect mid-sized GPU for light and medium users working with mid-to-large sized models. The T4-8Q profile provides enough framebuffer for users to execute inferencing within ArcGIS Pro as well as the visualization of spatial data.
- NVIDIA V100 is the most advanced data center GPU for accelerating AI and HPC workloads. NVIDIA Virtual Compute Server software, allows IT to virtualize compute-intensive, server workloads.