Parallax 3D on Aerial Multi-Mission Pod

Leidos has created a powerful hybrid capability by hosting Parallax 3D (P3D) on the Aerial Multi-Mission Pod (AMMP).

P3D is an extensible framework prototype for automatic 3D model generation using Full Motion Video (FMV) or still imagery sources. P3D is designed to provide a cost-effective means for analysts, decision-makers, first-responders, civilians, and the warfighter to comprehend objects, structures, and tactical situations.

AMMP's flexible mission configuration enables airborne processing at the "point of collection" followed by processed intelligence dissemination at the tactical edge. This reduces reach-back bandwidth, data requirements, and signatures. Ground units benefit from timely geospatial intelligence.

Following collection and P3D processing on the AMMP, a mobile ROVER device can view and manipulate finished P3D models for tactical needs such as line-of-sight, terrain, cover determination, and pre-action planning. .

BENEFITS

› Enables small units
› Timely intelligence
› Enhanced situational awareness
› Point of collection processing
› Direct downlink
› Compatible with ROVER
› Avoids burn-in issues
› Standard aircraft interfaces

P3D generates models that can easily be viewed on screen, manipulated in industry standard tools like MeshLab, Blender, or Trimble® SketchUp® or viewed as an augmented reality hologram in the Microsoft HoloLens™ or viewed in the field.

The Aerial Multi-Mission Pod AMMP can do onboard processing of mission data that can be downlinked directly to soldiers using ROVER gear.

The AMMP mounts to aircraft using a standard aircraft interface (such as various Bomb Release Unit [BRU] mounting) enabling carriage on a wide variety of aircraft.

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AIRBORNE IMAGES TO 3D MODELS

Structure from motion (SfM), the core science behind P3D, though mathematically intensive, is a well-established imaging technique. It is based on the concept that multiple 2D digital images can be assembled to create a 3D reconstruction of the original scene with a single camera. With SfM, the motion of the camera between "poses" allows photos to be captured spatially, providing the parallax to determine the missing depth dimension. P3D software executing on the AMMP platform leverages the video sensors to construct "point clouds" and textured meshes and, ultimately, full-color, 3D models. These artifacts are then downlinked to forces via a VORTEX and are manipulated using common image tools on approved platforms, such as the ROVER.

ENABLING TECHNOLOGIES

Recent advances in algorithm performance and aerial processing capabilities have enabled Leidos to run its P3D software onboard the AMMP system. The AMMP itself is a multi-mission aerial platform that can be configured for particular warfighting objectives due to the flexibility of the AMMP, the availability of high-performance processing cards with GPU capabilities, and downlink systems like VORTEX.

ENGAGE WITH P3D AND AMMP

To learn more about Parallax 3D, the Aerial Multi-Mission Pod, or to schedule a demonstration, contact one of our Leidos experts or visit us online.

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