

An Overview of the Wildfire Airborne Sensor Program

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Each year wildfires consume many acres of forest and endanger the lives and property of anyone who stands in their way. Many large fires grow out of relatively small ignition events such as lightning strikes; early detection and rapid response to these events are essential in preventing the situation from quickly growing out of control. Current methods of finding a fire from a remote platform have defined limitations that reduce their overall effectiveness in providing valuable reconnaissance information to a fire manager. To address these issues, the Laboratory for Imaging Algorithms and Systems (LIAS) has designed and constructed a multi-spectral mapping camera system known as the Wildfire Airborne Sensor Program (WASP). WASP's goal is to be able to provide quality annotated map products that relay the current status of the fire efficiently and quickly to those who need it. To accommodate the ambitious development schedule, the 4 camera system utilizes commercially available equipment to minimize the amount of custom hardware and software needed; as a result, an innovative control software architecture was devised that allowed the use of a non-real time operating system on the acquisition computers. WASP's architecture was designed to be quite modular so its capabilities can be easily expanded or slimmed down. The system's performance is currently being evaluated and trial map products are being generated manually. The team's next goal is to develop an on-board data processing chain that will automatically generate maps on the fly in near real time. This presentation will describe the architecture of the system, discuss issues during development, show the results of testing done thus far, display some sample imagery, and report on the current status of the project.

Jason Faulring is a Systems Integration Engineer for the Laboratory for Imaging Algorithms and Systems. A 2003 Computer Engineering graduate of RIT's Kate Gleason College of Engineering, Jason joined the LIAS group in 2003 and is currently responsible for maintaining, debugging, installing, upgrading and flying with the WASP sensor. His other projects include collaborating on a complete rebuild of the acquisition system for RIT's Modular Imaging Spectrometer Instrument (MISI), design and integration of ground based data logging systems, and implementation of other aerial imaging systems. Jason is also a certified type II wild land fire fighter which allows him to actively participate in gathering live data on the front line during real fire events.