ADVANCED OPTICAL SYSTEMS, INC. AOS

DEVELOPING SYSTEMS THAT see understand AND act

- ELECTRO-OPTICS
- INFRARED
- AUTOMATIC TARGET RECOGNITION
- DIGITAL ELECTRONICS
- EMBEDDED PROCESSORS
- SITUATIONAL AWARENESS
- PROXIMITY OPERATIONS
- RENDEZVOUS AND DOCKING
- ACTIONABLE INFORMATION
- AUTONOMY

Developing Systems

that see, understand and act

Advanced Optical Systems (AOS) develops systems that see, understand, and enable the customer's or user's action. We use or develop cameras, IR sensors, laser sensors, and other optical devices in order to see. We develop extremely fast, hardware enabled, algorithms to identify what the sensor sees, track it, and convert data into information in order to understand. We provide action-enabling results, rather than after-the-fact analysis. Several examples are shown on the opposite page.

Our customers tend to give us complex problems, and push for increased capacity, higher resolution, faster, smarter, and cheaper. Therefore we focus on practical solutions carried to hardware prototyping. We revel in field experiments and testing. We cover the disciplines needed for electro-optic systems: optics, physics, chemistry, mechanical and electrical engineering, with business and management skills, too. We have a cleanroom, ESD controlled work space, and a variety of design and analysis tools. Our span of competence covers:

- Research and Development
- Design and Rapid Prototyping
- Hardware-in-the-loop testing
- Field Demonstration
- Protoflight production

AOS is ISO 9001:2000 registered. Our business systems are audited by DCAA and DCMA. We hold a SECRET facility clearance, and are ITAR compliant.

AOS customers include: Army, Navy, MDA, Boeing, Lockheed-Martin, Northrop Grumman, Raytheon, and Orbital Sciences Corp.

We are responsive – if you call, we answer the phone!

Rotorcraft Auto External Load Lift

Demonstrated the first autonomous sling-load cargo pick-up and delivery, using customer's UAS

See: Optical and Radio Frequency subsystems

Understand: Load identification and position relative to the rotorcraft, with centimeter accuracy and > 10 Hz navigation updates

Act: After GPS flight to area, precision location of target, navigation of UAS, automatic pick-up of sling-load

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Rendezvous and Docking

Demonstrated rendezvous hardware and firmware, in space, during several customers' missions. Hardware and firmware are manifested on NASA's Hubble Servicing Mission.

See: Active and passive optical sensors

Understand: Position and relative pose of the target (e.g. Hubble or space station)

Act: Spacecraft GN&C system uses information to control trajectory and dock safely

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Automatic Target Recognition

ATR that really works, works in the real world, and works fast enough to support user's action.

See: With photography, video, IR, SAR, and laser radar

Understand: Recognize individual objects, track them up to 180 Hz with 5 msec latency, constant vigilance, provide ID and location information

Act: Inform operator, control tracking mount, control robot, provide missile guidance signals

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The customer's complex problems get practical solutions and hardware prototypes.

- Smart sensors
- Uncooled IR seeker test bed
- Low Cost cryogenic seeker
- Unique semi-active laser seeker optics
- Ladar resolution enhancement
- Design for lower cost optics
- Measurement and testing using optics
- Space flight VHDL and data link design

ADVANCED OPTICAL SYSTEMS, INC. AOS

Advanced Optical Systems, Inc. strives to surmount technical challenges in arenas of national importance.

Our goal is to give the warfighter or astronaut the means to perform their mission better and at lower personal risk. AOS has hardware, software, and technical expertise ready to rapidly explore your application.

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