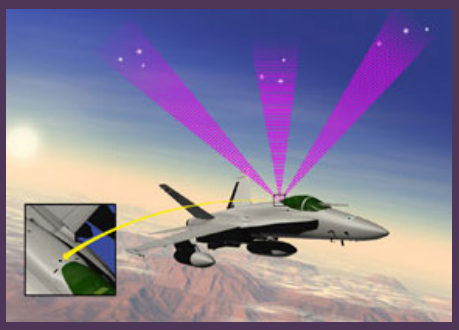
Navy SBIR/STTR Success



Daytime Electronic Stellar Imaging

An automatic, day/night celestial navigation system by observation of K-band or H-band infrared light from multiple stars provides the U.S. Navy with all of the benefits of a GPS system without the risks.

Topic: N02-104

SBIR Investment:
$3,318,965

Phase III Revenue:
$16,276,142

Mary Mathew
mmathew@trexenterprises.com
(858) 646-5490
10455 Pacific Center Court
San Diego, CA 92121
www.trexenterprises.com

About the Technology:

Global Position Systems (GPS) are the most popular navigation systems for worldwide, day-and-night position determination. However, GPS depends on man-made components such as satellites and transmitters and are therefore vulnerable to hostile attack and jamming. Trex Enterprises set out to develop an Automated Celestial Navigation (ASN) system, which provides an alternative to GPS by utilizing a fully automated star tracker for imaging individual stars both day and night to enhance navigation capability for the U.S. Navy. The tracking is achieved by using a patented automated star detection and pattern recognition algorithm designed by Trex.

Naval Benefit

Trex Enterprises' automated processing algorithm provides instantaneous determination of the ship attitude with respect to the celestial reference frame both day and night. This further enhances the navigation capability for the U.S. Navy without the vulnerability of GPS. The computer is also preferably programmed to use this celestial position information to calculate latitude and longitude, which may be displayed on a display device such as a monitor or used by a guidance control system. These embodiments are jam proof and insensitive to radio frequency interference. These systems provide efficient alternatives to GPS when GPS is unavailable and can be used for periodic augmentation of inertial navigation systems.

Transition

Trex's Phase II award with SPAWAR led to a Phase III contract (HM1575-09-C-0042) from the National Geospatial Agency to deliver a total of 15 Geodetic Astrolabes over a 5-year period. In addition to providing NGA with this highly accurate measurement, Trex is working with other interested parties including people in survey networks, geoid determination (mean sea level), GPS surveys, and geophysics. In addition, electronic imagers sensitive in the infrared portion of the spectrum as well as the contrast enhancement algorithm would have numerous applications in crime fighting, drug surveillance, and interdiction, and home and business intruder-detection systems.

Trex Enterprises Corporation

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