OKTAL-SE
Synthetic Environment

EO
AEO
RF
GNSS
RAY

SE-RAY-IR

FAST

HIGLY REALISTIC AND PHYSICS BASED ELECTRO OPTICAL IMAGES

SE-RAY-IR is a ray-tracing engine that computes high realistic spectral images both in visible and the infrared spectrum issued from complex scenarios including 3D terrain, 3D targets, atmospheric conditions, sensors models and associated trajectories

Features

- Highly spectral approach combined with a physics based rendering engine from 0.4 microns to 15 microns
- Computed radiances values have been intensively validated by key players in Defence and Aeronautic fields. A validation dossier is provided with the tool
- Friendly GUI available for all scenario edition functionalities: objects, trajectories, special effects and sensors parameters
- Advanced parameterization: Adaptative antialiasing, Sensor spectral response, User defined spectral band
- Distributed computation based on a multi-threading mechanism
- Compatible with the SKYDOME rendering

High Fidelity

SE-RAY-IR provides a ray-tracing engine that computes EO sensor images which are considered by sensor manufacturers and system integrators as the most accurate spectral rendering based on 3D synthetic environment modelling

This software relies on a highly spectral approach with several images for the same frame corresponding to numerous wavelengths within the bandwidth of the sensor in Visible and Infrared domains

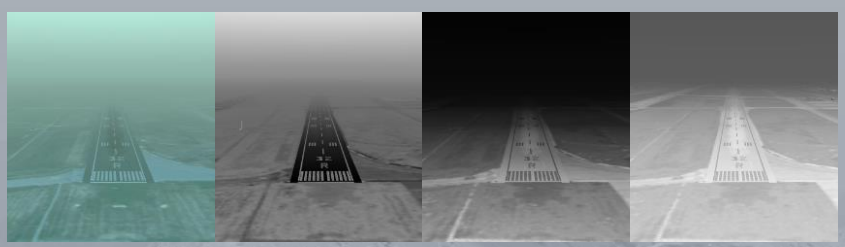
Physical Model Features

Thermal emission based on local material classification (textures)

Diffuse reflection of the environment (sky, ground), light sources specular reflections and multiple specular reflections

Bidirectional reflectance distribution function (HSTG, Li-Torrance), directional emissivity

Accurate atmospheric propagation



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REQUIREMENTS

SE-ATMOSPHERE for atmospheric propagation input file

3D geometrical data, thermal input data (computed by SE-THERMAL), enhanced with physical materials

Benefits

Reference images used to calibrate real-time rendering tool: SE-FAST-IR

Hyper spectral output data

CPU time optimization though multithreading

Thermal shadows automatic calculation

Validated for ground, aerial and space applications

System requirements

Windows

Linux

Additional modules

Multithreading: the computation of a single image can be dispatched on several CPUs sharing the same memory with a multi-threading mechanism

SE-RAY-IR is compatible with the library of special effects that enhances the image rendering realism:
- Particles: special effects rendering based on dynamic particles systems
- Flares: accurate flares description
- Clouds: clouds defined in a scenario

SE-RAY-IR is also compatible with the advanced SEA modelling features available in the OKTAL-SE offer

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