Python and MatPlotLib based Open Source Software System for Simulating Images with point Light Sources in Attenuating and Scattering Media

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Abstract

Simulating images of various objects in a real world scene has wide applications while testing algorithms for machine vision applications as well as in computer graphics and gaming software industry. Most current algorithms use collimated light sources and assume the medium to be non-scattering and non-attenuating. In real world, most light sources are too near to the objects in the scene and hence cannot be assumed to be collimated. Real world mediums, such as oceans in case of Underwater Robotic Vehicle (URV) applications or smoke and vapor filled air in case of industrial welding applications, scatter and attenuate light. A software system that makes no such assumptions and uses point light sources in scattering and attenuating media has been developed. Another novelty of current work is use of open source Python programming language along with associated 2D graphics and plotting library, MatPlotLib.

References

1. Woodham, R.J., 1980 . Photometric method for determining surface orientation from
multiple images. OptEng, 19(1).


Index Terms

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Keywords

Point Light Sources, Attenuating Media, Scattering Media.