IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)
NewSpace and Space Law (7)

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FUNDAMENTAL LEGAL CONCERNS RELATED TO A.I. IN SPACE

Abstract

This paper will analyze potential legal risks associated with implementing systems in the outer space environment utilizing Artificial Intelligence ("A.I."), which includes Machine Learning ("ML") algorithms. Generally, such applications will occur in two principal settings which are:

(i) autonomous robots or data collecting probes that can go where no human can go or has gone, autonomous spacecraft and swarm intelligence utilized in space activities, such as extraterrestrial resource extraction, terrestrial imaging, active debris removal, protection of space assets; and

(ii) analyzing and acting upon space based big data associated with space traffic management matters, debris monitoring data, satellite imaging and extraterrestrial habitats or settlements.

Elaborating upon a forward looking perspective, harnessing AI and ML technologies in accessing and exploring outer space as well as engaging in space based commercial activities will, in all likelihood, span a broad array of intended and unintended consequences flowing from the use and misuse of such technologies. This circumstance e legal concerns examined in this paper are:

(i) what constitutes appropriate State authorization and supervision of intelligent space objects pursuant to Outer Space Treaty Article VI and whether the need and scope for such authorization and supervision may vary according to the mission or function of an intelligent space object; and

(ii) the allocation of liability under the Space Law Treaty Regime for harm caused by the deployment and use of intelligent space objects which will include liability for erroneous or defective algorithmic programming employed by an intelligent space object. This will entail exploring whether an AI algorithm is a component part of an intelligent space object and whether Outer Space Article VII imposes a basis for international liability beyond that imposed by the Liability Convention.