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Machine Learning applied to Lunar Data to Characterize Potential Sites for Future Science, Mobile Exploration, Utilization, lunar Bases and Moon Villages.

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The lunar south pole is of particular interest to researchers because of its unique geographical features. It contains craters where the near-constant sunlight does not reach the interior. These craters are of enormous importance in the process of human exploration of the moon.This research aims to develop an identification algorithm applied to LROC data to characterize and identify potential regions of interest on the lunar south pole. Such areas of interest include (surroundings of) lava tubes, skylights, crater detection for age estimation, and planning traverses for the Artemis successive missions.Identifying these regions will be done using machine learning techniques such as a deep convolutional neural network that will be trained on labeled data and are then used to identify and characterize new regions of interest.