## **Crater Detection and Mapping in Lunar Images**

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The Moon has millions of Craters form on its surface. Crater detection is very much imp ortant for the proper landing of the probe and also for the determination of the relative age of the surfaces. Previously, the topography-based crater-detection algorithm offers a relatively simple and ready-to-use tool for identification and characterization of fresh impact craters with an adequate performance for the immediate application to Martian geomorphology. Imagery data is well suited for human visual interpretation but ill suited for automated processing. In this paper the process of crater detection is nautomated. The parameters of the best fit ellipse of the crater are provided. The lunar image is preprocessed to remove noise. The sharpened image is then used to find the features. Here the features are selected based on the intensity gradient in the x and y direction. These features imply that there exists some feature of interest. It may or may not be a crater. The features are pruned so that unnecessary feature points are eliminated and the resulting features are used to draw a window around the craters. Overlapping windows are merged together. In every window clustering is applied to find the appropriate seeds which are necessary for the region grow algorithm. After growing the region a best fit ellipse is drawn and the parameters are stored for further reference. The system developed can also be used to find the non-linear edges of the craters.

Keywords: Lunar Image, Feature extraction, Crater Mapping, Feature Point Extraction.

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