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CRATER DETECTION IN OPTICAL PLANETARY IMAGES BASED ON SPARSE  
REPRESENTATION MODEL**Abstract**

Due to morphological diversity of crater in images and the massive amount of craters, crater detection from imagery data is a challenging problem for the planetary geomorphology and safe landing on planetary surface during the planetary exploration. We present a novel detecting method based on sparse representation classifier (SRC) which is robust to the variations of crater image condition. The method contains two parts: crater candidate blocks selection and crater detection finely. In the first part, crater candidate blocks selection is achieved by mathematical morphology on highlight regions. The second part of the approach employs a sparse linearity model classifier with the Gabor-LBP features for crater detection, which are proposed as crater detail structure from candidate blocks for detecting the craters. The results of the last experiment demonstrate that effective and robust detecting results with high accuracy on Mars Global surveyor probe database.