

WASTE SANDS IMAGE ANALYSIS FOR GRAIN SIZE ESTIMATION

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As the mining industry progresses, the quick and efficient characterization of the excavated soil becomes valuable information to use in mining processes evaluation and planning. Grain size distribution of soil has a great impact on its compressibility, liquefaction potential and many other parameters.

Image analysis techniques come with the advantage of effective and sustainable evaluation of the size of soil particles and its characteristics. Current study aims to investigate the ability of the image analysis to characterise the waste sands for assessment of the sand liquefaction potential and potential damp model evaluation. For this, an image dataset of several waste sand representatives were collected and processed. Results of its analysis consist of soil grains measurements, such as diameter, area and perimeter, and its shape estimations.

Comparison with sieve analysis suggests successful computation of the grain size distribution curve that 89% matches to the one made in the laboratory. Combination of the advanced quickshift segmentation method and image polygon properties calculation makes adequate estimation of grains real size without excessive economical, material and time expenses.