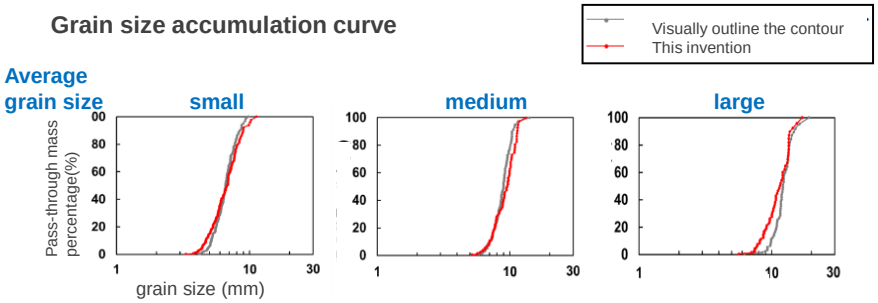
Tohoku Univ. Technology

Estimation method of grain size of crushed stone

Real-time high-precision estimation of grain size of blasted crushed stone



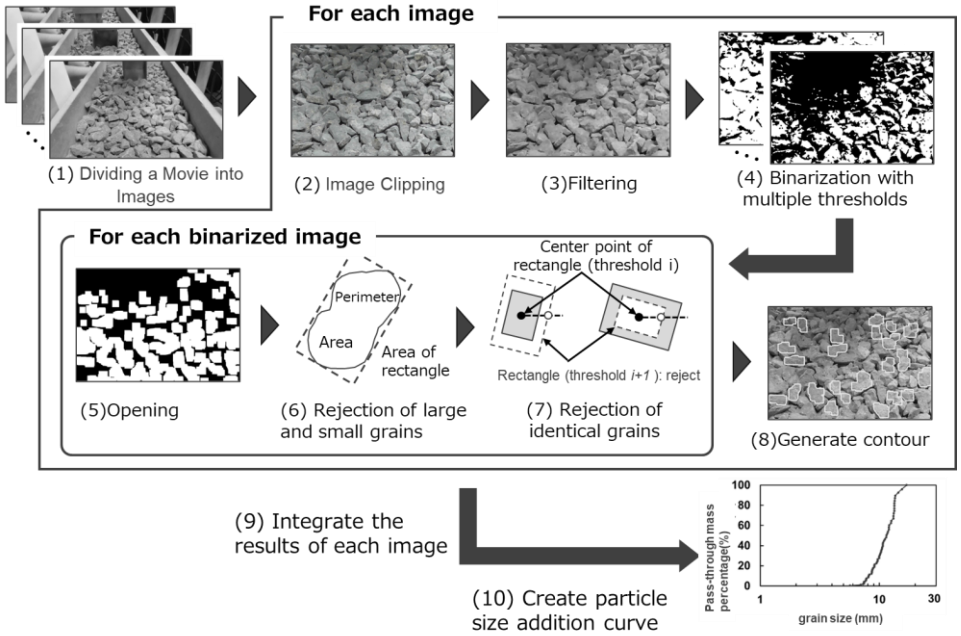
Overview

Crushed stone is essential materials for transportation infrastructure and civil engineering structures. Crushed stone mining is carried out in the order of drilling, blasting, splitting, scooping, and transportation. The cost of scooping and transportation is affected by the grain size of the blasted crushed stone. Therefore, the blasting aiming at the optimum grain size is important, and the automation of the grain size evaluation of the blasted crushed stone is required.

Conventionally, a method for extracting grain size by binarizing images has been devised. However, there have been problems in estimation accuracy because of similar colors of crushed stone and overlapping of crushed stones.

In the present invention, focusing on the fact that the overlap of crushed stone changes during the scooping process using a hydraulic shovel or the like, we developed a method for accurately estimating grain size by eliminating the overlap of crushed stone by binarizing images extracted from the video of the scooping process with multiple threshold values. This invention is expected to lead to automation of the blasting cycle and realize safe and efficient blasting.

Flow of grain size estimation



Product Application

- Estimation of grain size distribution of crushed stone
- Automation of blasting

IP Data

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