

IMAGE PROCESSING APPARATUS, IMAGE PROCESSING METHOD, AND COMPUTER-
READABLE RECORDING MEDIUM

ABSTRACT

5 An image processing apparatus 10 includes: a feature point extraction unit 11 that extracts combinations of feature points from images of a target object; a matrix calculation unit 12 that calculates, when two or more corresponding line segments or points are designated, a numerical matrix representing a geometric relation between the line segments or points; an unnecessary-
feature-point specifying unit 13 that specifies a combination of feature points between which the
10 geometric relation is inconsistent, using the numerical matrix; a three-dimensional coordinate calculation unit 14 that calculates three-dimensional coordinates corresponding to feature points using a camera matrix of the feature points calculated excluding the specified combination, a suitability determination unit 15 that calculates two-dimensional coordinates that are obtained by
applying, for each combination of feature points, a camera matrix to the three-dimensional
15 coordinates of the combination and thereby projecting the three-dimensional coordinates onto an image from which one of the feature points was extracted, and determines whether or not the feature point is appropriate based on comparison between the two-dimensional coordinates and original two-dimensional coordinates of the feature point; and a three-dimensional shape
constructing unit 16 that constructs a three-dimensional shape of the target object using three-
20 dimensional coordinates corresponding to appropriate feature points.

[FIG. 1]