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B. M. Shumilov, **K. A. Abdykalykov**, **A. Zhumadiluulu** (Tomsk, TSUAB)**. To the solution of the problem of three points in computer vision.**

Automatic recognition of road distresses has been a challenging research area since it reduces economic loses before cracks and potholes become too severe [1]. Mobile video filming is traditionally used at "manual" diagnostics and certification of current state of highways. One major issue with pure video based systems is their inability to discriminate dark areas not caused by pavement distress such as tire marks, oil spills, shadows and recent fillings. The break in the solution of such tasks has been made with use of the systems based on laser scanning [2]. However work is complicated by the fact that daily use of this sort of the hardware and software is available only as a part of the large road-building and design organizations functioning, as a rule, on the main directions. So, this technology was very expensive for municipal and regional budgets. For the purpose of increase in mobility and depreciation of works on inspection of highways the use of a photogrammetric method on the basis of stereo-images is offered. Algorithms of calibration of the camera and the solution of a problem of determination of spatial coordinates of 3D-object according to two photos received from different viewpoints are proved [3].

The real stereo pairs corresponding to two photos of a standard road cone against the background of a hollow in road surface are considered. Coordinates of seven vertexes of 3D-object were measured by a ruler. Corresponding pixels on images were fixed in the graphic editor with use of the mouse manipulator. Being set by the measured values of the roadbed point, it is possible to check performance of Pythagorean theorem. In our case the calculated distance from cone top to the asphalt basis has made 31,975 cm that for 0,078% differs from passport value of 32 cm. Application of a "three-point" method [4] on condition of preliminary determination of internal parameters of the camera has given value of 21,174 cm that provides a relative error of measurements of 33,8%. Addition in this context of the fourth point has given value of 30,756 cm (3,8%). Opened so far there is a question of use of angular measurements opportunities of modern smart-phones.

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