

Determination of the accuracy of optical measurement obtained by matching point clouds using markers

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Abstract: Recently, the interest in measuring optical systems has significantly grown due to their increasing accuracy. Another factor, namely the price/measuring speed ratio, is responsible for the rising number of their supporters. Manufacturers of 3D scanners have also noticed an increasing interest in utilizing optical systems for measuring large-scale objects. Currently, there are many solutions that allow to match point clouds which are the result of optical measurements. One of the most common methods is using markers – characteristic points, which allow to roughly match individual scans to each other. In this paper the accuracy of the optical measurement was determined, using the 3D scanner provided by courtesy of SMARTTECH 3D company. The measurement accuracy was obtained each time from five scans, and matched with each other using markers [1,2].



Fig. 1.
Measurement processing 3d scanner and markers

[1] Owczarek D., Ostrowska K., Harmatys W., Sładek J. " Estimation of measurement uncertainty with the use of uncertainty database calculated for optical coordinate measurements of basic geometry elements" *Advances in Science and Technology Research Journal*, Volume 9, No. 27, Sept. 2015, pages 112–117, DOI: 10.12913/22998624/59092

[2] Gębarski K., Jasiński D. „Dokładność metrologiczna bezdotykowego skanera 3D według normy VDI/VDE 2634 – przykłady pomiarów certyfikowanym, polskim skanerem 3D firmy SMARTTECH”. *Mechanik*. Nr 2 (2014)