T07. Estimation of age in forensic medicine using multivariate data analysis

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Estimation of age of victims' remains is one of the most important problems in forensic medicine. Usually this estimation is based on analysis of bones of skeleton, first of all because of their stability to putrefying transformation. Furthermore bones have different age-related information features, first of all caused by osteoporosis process. The existent methods use photocolorimetric definition indexes of light transmission and absorption for sponge tissue. These methods do not give stable results and require additional routine operations and calculations.

In the present work, a new method of remains' age estimation is proposed. The method is based on multivariate analysis of digital images of bone sections. Images were acquired by digital camera in visible light. Two different approaches (wavelet analysis and Angle Measure Technique) were used for extraction of problem related features from the images. Based on these features, several PLS models for each specific age period were established. The age of unknown sample was estimated by applying all models and choosing one with the smallest deviation value. The results of experiments include comparison between different feature extraction approaches as well as between different bone types used for imagery.