

A morphological assessment system for 'show quality' bovine livestock based on image analysis (2011)

Título: A morphological assessment system for 'show quality' bovine livestock based on image analysis Autores: Horacio M. González Velasco, Carlos J. García-Orellana, Miguel Macías, Ramón Gallardo Caballero and Antonio García-Manso Revista: Computers and Electronics in Agriculture Vol./Pag.: 78 (1), 80-87 Ed./Año: Elsevier B.V., 2011 DOI: 10.1016/j.compag.2011.06.003 Abstract:

Morphological assessment is one important parameter considered in conservation and improvement programs for bovine livestock. This assessment process consists of scoring an animal based on its morphology and is normally carried out by highly qualified staff. These animals are all of agreed "show quality"™ and hence they are morphologically very similar.

This paper presents a system designed to provide an assessment based on a lateral image of the cow. The system consists of two main parts: a feature extraction stage, to reduce the information on the cow in the image to a set of parameters, and a neural network stage to provide a score based on that set of parameters. For the image analysis section, a model of the animal is constructed by means of the point distribution model (PDM) technique. Later, that model is used in the searching process within each image, which is implemented using genetic algorithms (GAs). As a result of this stage, the vector of weights that describe the deviation of the given shape from the mean is obtained. This vector is used in the second stage, where a multilayer perceptron is trained to provide the desired assessment, using the scores given by experts for selected cows.

The system has been tested with 138 images corresponding to 44 individuals of a special rustic breed, with very promising results, given that the information contained in only one view of the cow can not be considered complete.