

Statistical classification of a sequence of objects based on a fuzzy approach

Andrey Savchenko

NRU HSE, Russia

Abstract. In this talk we focus on the problem of statistical classification of a sequence of identically distributed objects (e.g., the video-based image recognition, the phoneme recognition). The classification method on the basis of a fuzzy approach is discussed in details. Its preliminary phase includes the association of each reference object with the fuzzy set of classes. At first, each object (e.g., the frame) in a classified sequence is put in correspondence with the fuzzy set, which grades are defined as the posterior probabilities. Next, this fuzzy set is intersected with the fuzzy set, corresponding to the nearest neighbor reference object. The final decision for the whole sequence of objects is the arithmetic mean of these fuzzy intersections. We experimentally demonstrate, that our approach makes it possible to implement a voice control system, which does not need the general acoustic model if the latter does not fit to the user voice due to known variability sources (childhood, voice diseases, non-nativeness, etc.).