Chapter 3
Methods and Tools of Big Data Analysis for Terroristic Behavior Study and Threat Identification: Illegal Armed Groups during the Conflict in Donbas Region (East Ukraine) in Period 2014–2015

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ABSTRACT
Paper aimed to consider of approaches to big data (social network content) utilization for understanding of social behavior in the conflict zones, and analysis of dynamics of illegal armed groups. Analysis directed to identify of underage militants. The probabilistic and stochastic methods of analysis and classification of number, composition and dynamics of illegal armed groups in active conflict areas are proposed. Data of armed conflict – antiterrorist operation in Donbas (Eastern Ukraine in the period 2014-2015) is used for analysis. The numerical distribution of age, gender composition, origin, social status and nationality of child militants among illegal armed groups has been calculated. Conclusions on the applicability of described method in criminological practice, as well as about the possibilities of interpretation of obtaining results in the context of study of terrorism are proposed.

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INTRODUCTION

In criminological practice and research of terrorism, there are many cases requiring application of sophisticated scientific instruments. Not only at the stage of analysis of evidences, but also at the preliminary stages, in particular, at the stage of crime identification.

Description of criminal activity and identification of a crime is a challenge in some cases, for example, in the areas of crisis, conflict, and fighting. This is due to significant limitations of existing information and data available.

In such cases it is necessary to use many different sources of information, including social networks, with adapted statistical approaches to assessment of this data. Correct statistical methods of data collection, analysis, filtering and regularization in such cases are critical.

Obtained with the mathematical methods, robust spatial-temporal distributions of data could be used to define the event and to identify a crime.

Social networks reflect the motivations of the behaviour of different groups of society and varied social environments (Wasserman, Galaskiewicz, 1994). So, because of the large scope, it is a good base for sociometrics and behavior analysis (Krause, Croft, James, 2007). However, formal numerical methods of social network data analysis are still not sufficiently developed for a wide range of important cases, in particular for crisis management (Lerbinger, 2012) and conflict analysis (Scott, 2012).

The task of extraction of structured distributions of data regularized by determining parameters from the large sets of non-structured data is solving. The algorithm based on specifics of dig data distribution, and on data source characteristics (e.g. group behavior). Realization of this approach aimed to detection of stable indicators of criminal and/or terroristic activity. At the same time the analyzed data and cyber activity, producing it might be legal in most cases (if propaganda is beyond our scope).

The proposed algorithm allows to analyze the content of social networks on the base of the set of selected indicators. These indicators allow to control the social dynamics of different social groups represented in social networks and analyze their behavior, including identification of evidences of terrorism.

The analysis of social dynamics and the behavior of social groups is becoming an important factor in the control of terrorist activities. Not only and not so much as for the identification of the criminals, but the identification of the crime, the identification of its social base, to determine the causes and driving forces of terrorism is a task to be solved by approaches proposed in this study.
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