

Content Analysis of Jihadi Extremist Groups' Videos

Arab Salem, Edna Reid, and Hsinchun Chen

Department of Management Information Systems, The University of Arizona,
Tucson, AZ 85721, USA
{asalem, reide, hchen}@email.arizona.edu

Abstract. This paper presents an exploratory study of jihadi extremist groups' videos using content analysis and a multimedia coding tool to explore the types of videos, groups' modus operandi, and production features. The videos convey messages powerful enough to mobilize members, sympathizers, and even new recruits to launch attacks that will once again be captured and disseminated via the Internet. The content collection and analysis of the groups' videos can help policy makers, intelligence analysts, and researchers better understand the groups' terror campaigns and modus operandi, and help suggest counter-intelligence strategies and tactics for troop training.

1 Introduction

In recent years, web-hosted audio and video clips have become a powerful and robust information platform and communication medium for jihadi extremist groups (henceforth referred to as extremist groups). This has been made possible by technological advances and the decreasing cost and size, ease of use, and sophistication of video capturing and editing technology have made web-hosted audio and video clips a powerful and robust information platform and communication medium for jihadi extremist groups (henceforth referred to as extremist groups). Extremist groups have become independent and prolific producers of multimedia artifacts. Multimedia resources are widely used to spread and gain wider acceptance of radical ideologies, raise funds, and show real results based on their view of justice. This exploratory study analyzes extremist groups' Arabic videos and constructs a coding scheme for examining the types of video, groups' modus operandi, and production features. This study is part of a larger effort called the Dark Web Portal research project that exploits automatic methodologies for collecting and analyzing extremist groups' web-based artifacts to support research communities.

2 Related Work

In this section, we review trends in extremist groups' videos, approaches for organizing and analyzing extremist videos, and video content analysis.

Extremist Groups' Usage of Videos. Several studies [3, 4, 7] describe the diversity of extremist groups' videos in terms of language, size, format, and purpose. Some of

the videos are mirrored hundreds of times on the web within a matter of days. According to Berger [3] the vast majority of the videos are simple, amateur productions filmed with handheld cameras or video cell phones. Videos a) are a powerful and easy way to communicate messages quickly; b) are a cost-effective means to produce lots of information in a short amount of time; and c) can provide persuasive action, vivid images, and sound to reach viewer's emotions.

Collections of Extremist Videos. Several organizations collect and analyze extremist groups' videos. The most notable organizations are IntelCenter (60 volumes), Intelwire.com (208 titles), SITE Institute (400 titles), and Global Terror Alert (134 titles). Most of the organizations analyze the videos and generate report; while the Artificial Intelligence (AI) Lab at the University of Arizona expands on this approach and collects videos using a systematic spidering and performs research using web content and link analysis. The AI Lab's Dark Web video collection contains 346 titles from the 6th batch collected in November 2005.

Content Analysis of Videos. Extremist groups' videos contain massive amounts of information that is useful for analyzing the types of violence [1], trends in groups' operations [13], leadership styles, and networks [7]. There is a wealth of content analysis studies of violence in television programs, video games [9], and music videos [10]. However, in-depth studies of the videos such as patterns of the groups involved, types of violence, modus operandi (e.g., targets, weapons, locations), and sophistication of videos are not available. Content analysis is a methodology for making inferences by objectively and systematically identifying specific characteristics of messages [6]. Automated content analysis approaches such as the Movie Content Analysis [12] and the Informedia Digital Video Library [14] projects are needed to extract structural and semantic content from the videos for use in terrorism research. A systematic exploration of the content of the videos is therefore in order.

3 Methodology

By using the video as a unit of analysis we aim to answer the following two research questions:

1. What types of video, groups' modus operandi, and production features are identified in extremist groups' videos?
2. How are the videos used by the extremist groups?

The content analysis process includes several steps: sample selection, constructing and assessing the coding scheme reliability, design of a coding tool (Multimedia Coding Tool), coding the videos, and analysis of results.

Sample Collection. We used a collection development approach used by Chen et al. [4] in their Dark Web portal project. For the sixth batch we collected 346 video files, totaling 73 hours and 45 minutes of video. From this collection we identified Arabic videos that were produced by extremist groups or their sympathizers in Iraq, and then randomly picked 20 videos.

Coding Tool and Scheme. The coding scheme is based on features of videos, terrorism ontologies [5, 11], the IntelCenter's video categorization [8], and the (narrowly scoped) domain of videos produced by extremist groups. The process of refining the scheme was incremental in nature.

Table 1. Coding Scheme

Content Category	Content Feature	Description
Class 1. Types of Video (Violent Attacks)		
Attack	Planning, Statement, Target, Weapon used (e.g., bombing)	attacks except hostage taking & suicide bombing
Hostage Taking	Captive's name, Nationality, Demand, Execution, Negotiation, Statement	Person held against his/her will
Suicide Bombing	Method, Suicider's name, Suicider's nationality, Statement, Target	Attack leads to a certain death of the attacker
Class 1. Types of Video (Others)		
Message	Tribute, Leader Statement, Newsletter	Statement by extremists
Education	Instruction, Training	Documenting training
Class 2. Content Properties		
Victim	Name, Nationality, Civilian/Military	Injury or loss of life
Date of Attack	Hijri Calendar, Julian Calendar	Reported attack date
Location	City, County, District, Town, Country	Location of depicted event
Target of threat	Person, Organization, Country	Threatened entity
Class 3. Groups		
Extremist group	Name, Sub-group, Media agency	Group involved
Class 4. Expressions		
Quotation	Religious quotation, Violent quotation	Quotation used
Reference to Media	Arab Media, Western Media	Mention of media
Class 5. Production		
Production Feature	Title, Sound, Visual, URL, Multiclip	Video feature

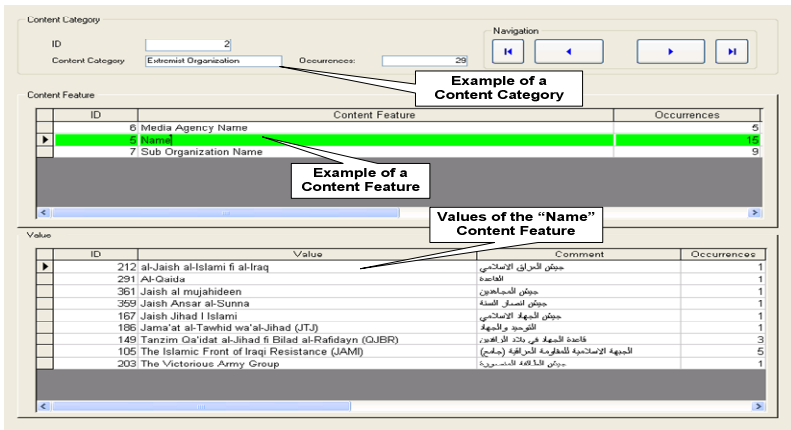


Fig. 1. MCT Interface for Coding Extremist Group's Videos

Table 1 summarizes the coding scheme, arranged into class, content category, content feature, and description. The first four classes focus on the types of video such as violent attacks and others, the content properties, groups involved, and expressions. Production is the last class, which includes the technical features of the video. Each class is subdivided into content category and feature that capture specific aspects of the videos.

We designed a Multimedia Coding Tool (MCT) that allows the coder to record his observations in a systematic and structured manner. The MCT manages the coding scheme and supports database query. Fig. 1 displays the MCT interface for coding videos. To validate our coding scheme, we performed an intercoder reliability (ICR) test.

4 Results

We analyzed the content of 20 videos. The average length of the sample videos was 3 minutes and 6 seconds. The videos are often filmed in real-time, instructive (take the viewer inside the planning and attack execution processes including scenes of the different weapons and skills required for their operations), low quality, and appeal to diverse audiences through use of Arabic and English subtitles. The plots are simple (focus on few goals such as to destroy the enemy's tankers), versatile (can be used for training, fundraising, motivational sessions), persuasive (display actors' emotions and dedication), succinct, and targeted (producers have complete control over the message and sequence of events).

Types of Video. The videos were organized into two categories: violent attacks and others. The violent attack video was the most frequently identified (18 videos out of 20) and some included planning sessions with maps, diagrams, and logistic preparations (13 attack, 4 suicide bombing, 1 hostage taking). The remaining 2 videos are leader messages.

Groups and Modus Operandi. We found 9 unique groups who took credit for the videos. In 5 videos the groups did not identify themselves. Two Iraqi insurgency groups, the Islamic Front of Iraqi Resistance (JAMI) and the Tanzim Qa'idat al-Jihad (QJBR), produced a total of eight videos that were in our sample. Extremist groups, such as Tanzim Qa'idat al-Jihad (led by Abu Musab al-Zarqawi), produced videos which included planning meetings (with maps, diagrams, and logistic preparations) before bombings. Scenes provide emotional and spiritual support by showing



Fig. 2. RPG Attack to Disturb a Supply Line



Fig. 3. Al Qaeda Video with English Subtitles

hugging, greeting, and praying together. Our results show that 60% of the targets are Western military humvees, cargo convoys, and other vehicles. Other targets include military bases (25%), military facilities such as barracks (10%), and infantry soldiers (5%). Most attacks occur in the Sunni triangle. Roadside bombs and RPGs (rocket propelled grenades) are the most common types of weapons utilized. These results are compatible with media reports on the Iraqi insurgency. Fig. 2 provides a snapshot from a video of someone shooting an RPG.

Production Features. A range of production patterns, from amateurish to professional, were identified. In addition, diverse visual production patterns were identified such as the use of subtitles, the groups' logos, background hymns (with/without music), and leaders' speeches. "Al-Sahab" (Al Qaeda's media agency) delivered a professionally produced video of a message from Bin Laden (see Fig. 3). The production quality and English subtitles suggest that the video is directed towards a worldwide audience. Ideologies and customs identified in the videos were consistent with real-world activities. For example, hymns in Tanzim Qa'idat al-Jihad's (QJBR) videos were not accompanied by musical instruments, abiding by the strict stance on the use of such instruments in Salafi jihad ideology. In summary, the videos convey messages that we believe are powerful enough to mobilize members, sympathizers, and even new recruits to launch attacks that will once again be filmed and disseminated via the Internet.

5 Conclusion

In this study, we conducted an exploratory analysis of 20 Arabic extremist groups' videos and designed a Multimedia Coding Tool (MCT) as well as a coding scheme for examining the content. We identified types of videos, extremist groups, modus operandi, and video production features.

Because extremist groups' video collections will continue to grow, a system for automatic extraction of structural (e.g., subtitles, images) and semantic content (e.g., weapons, target locations) is needed. Therefore, we need to expand our efforts to analyze video content by creating collaborations with research teams in the automated video content analysis domains [12, 14].

The results of this research are relevant for our Dark Web project, in that they provide a glimpse into some of the challenges of analyzing Arabic extremist groups' videos. Because this study was limited to a sample of 20 Arabic video clips, future studies of this kind should endeavor to enlarge the sample and verify if similar results are found. Further research should also be done to provide insights into extremist groups' operations and diffusion of multimedia.

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