Understanding Lashkar-e-Taiba

Since its inception in 1990, Lashkar-e-Taiba (LeT) has proven to be one of the most deadly terror groups on the planet with over XXX attacks worldwide. Supported strongly by Pakistan’s Inter Services Intelligence agency, LeT carried out the infamous terrorist attacks on Mumbai in 2008, leading to the deaths of 175 people (including 9 terrorists).

Researchers now at NSAIL carried out the first comprehensive study of a terrorist group using advanced machine learning methods going back to 2011. The purpose of this study was to: (i) understand the behavior of LeT using Temporal Probabilistic rules, (ii) to predict future attacks by LeT through learned machine learning models, and (iii) to develop methods to reshape the behavior of LeT so as to minimize attacks by it.

Understanding LeT’s Behavior

Researchers now at NSAIL developed the first ever predictive model of a terrorist group. Using, at the time, 21 years of data, NSAIL researchers learned temporal probabilistic (TP) rules. A TP-rule has the form “if condition C is true in the environment within which a terror group is operating, then the group will carry out an attack of type A sometime in the next d months.” Our book on LeT presents over 60 such TP-rules covering the following types of attacks: targeting civilians on the basis of ethnicity, attacks against public, symbolic and tourist sites or transportation facilities, attacks on professional security forces, attacks against security installations, attacks on holidays, armed clashes (which may not be an intentional attack) and attempted, but unsuccessful attacks. Some of the key findings about LeT's attack behavior are given below.

Internal cohesion of LeT played a critical role in their propensity to carry out attacks. As long as LeT was not splitting or engaged in intra-organizational, virtually every type of attack continued unabated, but during times of internal strife, there were almost no attacks.

Support from the Pakistani Government is linked to virtually every type of attack studied.

Deaths of LeT Commanders is positively correlated with some subsequent attacks on Indian civilians and armed clashes in Jammu & Kashmir, but negatively correlated with all the other kinds of attacks studied.

NSAIL Researchers were the first to build a machine learning based predictive model of any terror group. Our work on understanding LeT has led to significant policy breakthroughs.

Government action, (typically by Pakistan) is positively correlated with an uptick in attacks on civilians as well as in the number of armed clashes.

Desertion by LeT members seems to be followed by subsequent LeT attacks on civilians.

Release of arrested LeT terrorists (typically by Pakistan) is linked to an uptick in attacks against Indian security forces, Indian civilians, and virtually every type of attack we studied. Such releases seem to serve as a “green light”, giving or perhaps even encouraging LeT to launch attacks.

International Trials and Tribunals of LeT personnel also seem to be followed, within 1–3 months, by armed clashes with Indian security forces.

Predicting LeT Attacks

Our team has developed NTEWS, a machine learning framework within which we can generate forecasts about future attacks by LeT. The NTEWS forecasting engine uses an ensemble approach to generate such forecasts. NSAIL researchers have put out real forecasts of LeT attacks during the 2010-2014 period. NTEWS will start generating continuing monthly forecasts of LeT attacks, starting September 2022.

Policies to Reshape LeT’s Behavior

The TP-rules that predict LeT behavior play a very valuable role in helping formulate data-driven policies that can help mitigate attacks by LeT. Researchers currently at NSAIL have previously developed algorithms that take a set of TP-rules and automatically generate policies that can help mitigate such attacks. They introduced a new paradigm called *action probabilistic logic programs* or ap-programs. An ap-program uses a form of reasoning called *abduction* in order to make predictions. While *deduction* tries to infer new hypotheses from a given body of knowledge, abduction finds a way to infer possible hypotheses which, when combined with existing knowledge, will imply a given set of desired outcomes. Ap-programs can be used even when there are constraints about what can or cannot be done which is certainly the case with LeT.

Researchers now at NSAIL discovered that when LeT has internal conflict, they carry out virtually no attacks of any type.

Impact of our Work

Prior work on LeT by researchers now at NSAIL has been briefed to senior policy makers including individuals at the national security advisor level in multiple countries and leaders in the intelligence community. In addition, these findings have been briefed at multiple US intelligence agencies. important TV news programs and top news outlets such as the *Baltimore Sun, The Economist*. The work has also been cited in UN reports.

Additional Information

**Accolades for our work on LeT**

"Aaron Mannes and V.S. Subrahmanian have produced a fascinating framework for a disciplined analysis of terrorist groups..." R. James Woolsey, Director, Central Intelligence Agency (1993-1995)

"This important book contains a number of policy suggestions that provide a framework which could help mitigate future LeT terror attacks, and ultimately save lives. As a former Director of National Intelligence, I know this book will be an invaluable asset to counter-terrorism analysts and policymakers. It is a must read." J. Mike McConnell, Director of National Intelligence (2007–2009)

**References**


**PARTICIPANTS**

Lead: V.S. Subrahmanian

Current: Priyanka Amin, Chongyang Gao, Aaron Mannes, Chiara Pulice,

Past: John Dickerson, Jana Shakarian, Amy Sliva

https://sites.northwestern.edu/nsail/projects/let/