

# Chapter 12

## A Method for Social Network Extraction From E-Government

**Rasim M. Alguliyev**

*Institute of Information Technology of Azerbaijan National Academy of Sciences, Baku, Azerbaijan*

**Ramiz M. Aliguliyev**

*Institute of Information Technology of Azerbaijan National Academy of Sciences, Baku, Azerbaijan*

**Gunay Y. Niftaliyeva (Iskandarli)**

*Institute of Information Technology of Azerbaijan National Academy of Sciences, Baku, Azerbaijan*

### ABSTRACT

*Nowadays, improvement of governance, ensuring security and timely detection of propaganda against the government are major problems of e-government. The extraction of hidden social networks operating against the state in e-government is one of the key factors to ensure the security in e-government. In this article, a method has been proposed for extracting hidden social networks to improve e-government management, prevent promotion against the government and ensure the security. In this approach, hidden social networks are extracted through the analysis of user's comments via opinion and text mining technologies. The authors assume that all comments are written in one language. Unlike previous methods, to detect social relationships between actors, content analysis technology, namely opinion mining technology was used in the proposed approach.*

### 1. INTRODUCTION

The last decade society has witnessed the revolutionary spread of Information and Communication Technologies (ICT), which have become a major element in daily life (Vicente & Novo, 2014). ICT is one of the main factors that affect to the structure, work principle, activity, and changes of organizations. The rapid development of ICT and the Internet opens new possibilities for the relationship among citizens, governments, and institutions. The government has passed to the electronic government (e-government) era using the ICT in order to fulfill its functions more advanced and ensure transparency.

DOI: 10.4018/978-1-6684-7472-3.ch012

Levy and Danet (2010) studied the impact of users' involvement, resistance, and computer self-efficacy on the implementation success of a centralized identification system. The results of this study indicated a strong reliability for the measures of all constructs - user involvement, computer self-efficacy, user's resistance, and information system (IS) usage. The authors also demonstrated that user's resistance has no significant impact on IS usage, while end user involvement had a strong negative impact on user's resistance.

The rapid development of the Internet at the same time contributes the wide spread of social networks in the web. The wide use of social media tools among citizens makes the government agencies to think about how to take an advantage by joining to these sites. Several studies related with e-government services are studying the relation networks between the people, businesses and government. E-government sites are considered as public sites and citizens who are able to access these sites, directly take part in the decision-making process of government.

The government is a political organization, management process of the citizens living within certain borders. Today there are more than 200 countries in the world. These countries differ from each other according to the administration form, internal structure, and economic prosperity, and so on. The main goal of the government is to provide citizens' satisfaction and to improve their living standards.

Nowadays, the improvement of governance, ensuring the security and the timely detection of propaganda against the government are major problems of e-government. The extraction of hidden social networks operating against the state in e-government is one of the key factors to ensure the security in e-government. It is known that the users are able to respond to any information via their comments in e-government. These comments should be analyzed to determine whether is there any criminal groups and propaganda behind these comments against the government or not. At present, text mining is one of the most advanced and efficient technologies in text analysis.

As seen, the extraction of hidden social networks is one of the most actual problems in the term of national security. In the information society era suspected groups can commit malicious activities against the state and society not only in the real world, but also in a virtual environment (Internet, e-government). These activities usually have various purposes, including propaganda against the state, which can promote terrorism and shake the foundations of national and spiritual values. The timely detection of this groups in e-government is very important in ensuring the security of the state and society, which is one of the most pressing scientific-theoretical and practical problems of our time (Aliguliyev & Niftaliyeva, 2015). Based on the urgency of the problem, this study proposes an approach for extracting of hidden social networks from the e-government. The paper is organized as follows. The role of social networks in e-government management is given in Section 2. Section 3 discusses social network extraction methods in different environments. In Section 4, an approach to extract hidden social networks from e-government is proposed. A conclusion and future work are provided in Section 5.

## **2. THE ROLE OF SOCIAL NETWORKS IN E-GOVERNMENT MANAGEMENT**

E-government is defined in the literature as “the use of ICT, particularly the Internet, to enhance the access to and delivery of government information and services to citizens, businesses, government employees, and other agencies” (Hernon et al., 2002, p. 388; Almarabeh & AbuAli, 2010; Zandi & Madjid, 2011). The main difference between the classic government and e-government is the services provided faster, be more efficient in terms of time and finance.

18 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/a-method-for-social-network-extraction-from-e-government/312680](http://www.igi-global.com/chapter/a-method-for-social-network-extraction-from-e-government/312680)

## Related Content

---

### The Benefits of Social Networking Sites in Building Reputation for Enterprises

María Victoria Carrillo-Durán and Juan Luis Tato-Jiménez (2022). *Research Anthology on Social Media Advertising and Building Consumer Relationships* (pp. 1325-1345).

[www.irma-international.org/chapter/the-benefits-of-social-networking-sites-in-building-reputation-for-enterprises/305397](http://www.irma-international.org/chapter/the-benefits-of-social-networking-sites-in-building-reputation-for-enterprises/305397)

### Understanding Social Media Addiction Through Personal, Social, and Situational Factors

Ozge Kirezli and Asli Elif Aydin (2021). *Analyzing Global Social Media Consumption* (pp. 155-182).

[www.irma-international.org/chapter/understanding-social-media-addiction-through-personal-social-and-situational-factors/264937](http://www.irma-international.org/chapter/understanding-social-media-addiction-through-personal-social-and-situational-factors/264937)

### Situated Evaluation of Socio-Technical Systems

Bertram C. Bruce, Andee Rubin and Junghyun An (2009). *Handbook of Research on Socio-Technical Design and Social Networking Systems* (pp. 685-698).

[www.irma-international.org/chapter/situated-evaluation-socio-technical-systems/21442](http://www.irma-international.org/chapter/situated-evaluation-socio-technical-systems/21442)

### An Abstract Framework for Modeling Argumentation in Virtual Communities

Tudor Groza, Siegfried Handschuh, John G. Breslin and Stefan Decker (2009). *International Journal of Virtual Communities and Social Networking* (pp. 37-49).

[www.irma-international.org/article/abstract-framework-modeling-argumentation-virtual/34094](http://www.irma-international.org/article/abstract-framework-modeling-argumentation-virtual/34094)

### A Cross-Cultural Examination of Student Attitudes and Gender Differences in Facebook Profile Content

Katherine Karl, Joy Peluchette and Christopher Schlagel (2010). *International Journal of Virtual Communities and Social Networking* (pp. 11-31).

[www.irma-international.org/article/cross-cultural-examination-student-attitudes/45776](http://www.irma-international.org/article/cross-cultural-examination-student-attitudes/45776)