

# Legal Resilience in the Phenomenon of Social Media Political Buzzer in Indonesia

Muhammad Syirazi Neyasyah<sup>1</sup>

<sup>1</sup>Master Degree of Law, Faculty of Law, University of Indonesia, Jakarta, Jiangsu 210046, Indonesia

\*Corresponding author. Email: syirazinneyasyah@gmail.com

## ABSTRACT

This paper raises the issue of legal resilience in Indonesia in dealing with the phenomenon of social media buzzer which is present as a result of social media development in the contemporary era. Social media can be accessed and used by anyone in Indonesia who has the ability to use the technology needed, currently there are no rules that specifically regulate the use of social media even though Indonesia already has Act Number 11 of 2008 concerning Information and Electronic Transactions, but in fact, it has not been able to anticipate the phenomena of buzzer that are present as a result of the development of social media. Identification of the problem under study is how arrangements in Indonesia related to social media buzzer and how steps can be taken by the Government of Indonesia to be able to anticipate the increasingly widespread conflict that occurs as a result of the social media buzzer activities. This research is normative legal research, using a conceptual approach, using primary, secondary and tertiary legal materials. Analysis of legal material is done using qualitative analysis, with deductive reasoning. The results of the study indicate that the buzzer is not something that is forbidden, they should make specific legal rules about registering on social media and create a system for resolving social media buzzer based on character building education so the people will use social media positively.

**Keywords:** *buzzer, social media, government act, legal resilience*

## 1. INTRODUCTION

Nowadays, modernization is already bringing us to jump out the border across the nations all around the world. The ARPANET invention by Leonard Kleinrock in 1961 then became something that influencing the whole world today. The ARPANET which now well-known as the Internet has become one of the main elements that constructing the social environment. The Internet developing technology then leads to the birth of Social Media. According to the Cambridge Dictionary, social media is forms of media that that allow people to communicate and share the information using the internet or mobile phones. (Resa Eka Ayu Sartika, 2018). The problem is, whenever we trying to communicate or building some social relationship, there is always the risk of conflict which could happen. The fact is using social media as the platform to communicating with people has to lead us to the cyber problem which is still cannot be anticipated well by Indonesian Law right now. Social media is a common phrase that we heard all day long these days. Social media often described as things that we share on some applications like Instagram, Facebook, Whatsapp, Twitter, and others. (Daniel Nations,

2019). It can be said that social media are web-based sites that allow people to communicate with each other. As a means of social interaction in the contemporary era, social media also risks causing social conflict, especially the nature of social relations formed through social media is a long-distance relationship where the people who interact do not face each other so that the emotional exchange between parties does not proceed as usual.

Social media and conflict are two things that bounded each other, social media can become the supporting tools for conflict, this can happen because in conflict conditions, social media can:

1. makes communication for individuals and groups easier;
2. increasing the speed and spread of information;
3. examine the interaction and strategic dynamics between movements and elites;
4. generates new data and information about popularity, support, and the conflict environment (Patrick Haller, 2011).

Social media also encompasses a diverse range of communication styles. Every people that used it has a different way of using multimedia and short messages, has

different interests, different activities, it is a complex network. When looking at complexity theory about concerning information systems, the networked world is an adaptable complex system with the potential to self-organized. (Merali, 2006). Social media provides so many opportunities for everyone to get a job. Jobs such as content writers, influencers or web designers are some of the jobs that were born in the era of social media. Besides this work, one of the other jobs that often causes problems in the era of social media is to become a "buzzer".

In the context of social media, buzzers are defined as people who echo, echo, promote, or campaign for an issue or product by utilizing their social media. Therefore, one of the main requirements to be a buzzer is to have a social media account that has a large number of followers. In the beginning, buzzers were widely used for business promotion purposes through social media, but now as social media is becoming more popular as the main communication platform for people, buzzers reach other worlds, one of which is politics, which often results in conflict. (Komunikasipraktis.com, 2019). Ross Tapsell, a political and media expert at Australia National University said that it was normal for candidates in Southeast Asia to hire online campaign strategists, who mobilized an army of people to spread content on social media. (dw.com, 2019).

The buzzer campaign has gone far beyond the efforts of Facebook and other social media companies to limit the creation of fake accounts and the spread of fake news. Reuters media found that although robotic accounts are sometimes deleted, personalized fake accounts such as Twitter and Facebook platforms, despite violating company rules. Besides often using fake accounts or robot accounts as buzzers, the buzzers do not in fact pre-filter the content to be distributed, whether the content is hoaxed or not. Indonesia itself in the Act Number 11 of 2008 concerning Information and Electronic Transactions states that the spread of hoax news is a temporary violation of the use of fake or robotic accounts is not a violation of the law. (dw.com, 2019).

This problem has led to many conflicts that started from elbowing and spreading hoax news on social media, while the spreaders were so difficult to detect because the account used did not use the real user's identity. Conflicts in social media also often happen as a result of Buzzer's behavior in cyberspace will then lead to violence in the real world as experienced by Ninoy Karandeng which occurs due to differences in political views. (Jamaludin Akmal, 2019). The use of buzzers in the contestation of political power has, in fact, brought a shift in meaning for the buzzer itself from what was previously something positive for the business to something negative and potentially causing lies and conflict.

The Act Number 11 of 2008 concerning Information and Electronic Transactions, in fact, has not been able to optimally anticipate the phenomenon of conflict resulting from the activities of buzzers, this shows the weakness of the construction of Indonesia's legal resilience to the possibility of conflict caused by political buzzers. Based on the above background then the problem formulation was raised, how is legal resilience in Indonesia in anticipating the phenomenon of political buzzer in Indonesia and how steps can be taken by the government to make a comprehensive overhaul of the use of social media primarily related to buzzers

### 1.1. Methods

The results of literature searches conducted at the University of Indonesia library and on the internet network show that this article is a new idea that has never been raised before, writing articles about the relationship between law and social media and the problems that follow are very few found before. Some social media-related writings mostly discuss the side effects on society such as the article entitled "Perilaku Sosial Media Terhadap Perilaku Remaja" (Wilga Secsio Ratsja Putri, Nunung Nurwati, Meilanny Budiarti S, 2016), while for writings related to legal and social media relations there are writings titled "Analisis Penegakan Hukum Tindak Pidana Penghinaan Terhadap Suatu Agama Melalui Media Sosial". (Reza Ferdianto, 2018) or an article entitled "Kebebasan Berekspresi Melalui Media Sosial Menurut Hukum Islam dan HAM". (Yusri Wahyuni, 2018). For this reason, it can be said that this article is writing that has a new idea that has never been raised before.

This paper is normative legal writing, using a conceptual approach, which is done by examining social phenomena that are studied to be solved based on the concepts of solving chosen. (Peter Mahmud Marzuki, 2010: 93). The Presentation of legal materials in this paper is analytical descriptive in nature, express concepts relating to legal theories and non-legal materials that have relevance to the object of the problem under study (Zainuddin Ali, 200: 57) through searching the law library. This study aims to provide a detailed, systematic and comprehensive picture of all matters relating to the legal resilience in the phenomenon of social media bullying by adolescents in Indonesia.

Legal materials in this paper are primary legal materials, secondary legal materials, and tertiary legal materials. Primary legal material, constituting binding legal materials consisting of legislation relating to the object of writing. Secondary legal materials, namely materials that provide explanations about primary legal materials, such as written results, or opinions of legal experts obtained from various

literature books in the field of science related to this paper, and tertiary legal materials, namely materials that provide instructions or explanations for materials primary law and secondary legal material.

Analysis of legal material is carried out using qualitative juridical analysis, meaning that it starts with the provisions of the applicable laws and regulations that develop through discussion in secondary legal materials. Then with deductive reasoning, all legal materials that have been selected and processed are presented as-is (descriptive), as an answer to the problem under study.

## 2. RESULT

### 1. Legal Resilience on Anticipating "The Kind of Negative Buzzer" in Indonesia.

The dynamics of political activity in social media in the October 2019 period in Indonesia were enlivened by the issue of the widespread use of political buzzer services by certain groups. The issue of "palace buzzer" is rife in various forums, social media users claim that palace buzzers are people who are "paid" to support any government policy. Some well-known social media accounts are referred to as buzzers such as Yusuf Muhammad, Katakit, Abu Janda, Aldi El Kaezzar, Pepih Nugraha, Info About the President, Indonesian Editor, Eko Kuntadhi, Our Comics, Komiran Periphery, Habib Think, Salman Faris, and Seward.com. (Nibras Nada Nailufar, 2019). Although the Presidential Chief of Staff, Moeldoko stated that there was a buzzer but it was not paid for, the capture of Ninoy Karandeng who claimed to be a palace buzzer and was paid a salary of 3.2 million per month heightened discussions regarding this issue. (Nibras Nada Nailufar, 2019).

Indonesia is a country that has a very rapid growth and development of the internet even though in terms of the percentage of population distribution and penetration is still relatively low. Indonesia is currently one of the countries with the largest number of internet users in Southeast Asia. (Indonesia Media Defense Litigation Network dan Institute for Criminal Justice Reform, 2011). Perkembangan internet dan teknologi yang menopangnya itu mestinya diimbangi dengan melakukan antisipasi dengan membentuk aturan undang-undang yang dapat menyerap kemungkinan konflik yang terjadi akibat dari perkembangan internet.

To anticipate the development of the internet, the Government of the Republic of Indonesia then formed Act Number 11 of 2008 concerning Information and Electronic Transactions which subsequently amended several provisions in Act Number 19 of 2016 concerning amendments to Act Number 11 of 2008. Although efforts to anticipate the development of internet technology have been carried out, in fact, these rules still have shortcomings and seem unable to keep up with the rapid development of internet technology, including the result of

the birth of social media and all the conflicts that accompany it.

One of the things that failed to be followed by Act Number 11 of 2008 concerning Information and Electronic Transactions was the emergence of the buzzer phenomenon. The Buzzer has not been regulated in Indonesia law. As long as the content that is "touted" is true and is not a lie nor does it contain hate and SARA, buzzers cannot be snared using Act Number 11 of 2008 concerning Information and Electronic Transactions. (Farouq Arnaz, 2019). This means that the opinion expressed at the beginning of this article is in accordance with the conditions that exist where the action against the buzzers can be done by dissecting the buzzer action first whether against one of the legal norms in Act Number 11 of 2008 concerning Information and Electronic Transactions or not, the problem there are some norms that can be imposed by buzzers, be it spreading false news, defamation or even both, this is a bad thing because it shows that there is legal uncertainty that arises in dealing with the buzzer issue.

Act Number 11 of 2008 concerning Information and Electronic Transactions is the result of the collective work of various ministries such as the ministry of transportation, the ministry of industry, and the ministry of trade. The drafting of Act Number 11 of 2008 concerning Information and Electronic Transactions is the result of government cooperation with a team from Padjadjaran University, Bandung Institute of Technology and the University of Indonesia. Implementation of Act Number 11 of 2008 concerning Information and Electronic Transactions turned out to have an impact on democracy in Indonesia. Since its entry into force, there have been cases of silencing freedom of speech on the internet snared with Act Number 11 of 2008 concerning Information and Electronic Transactions. (Arman Dhani, 2016).

The public for the first time recognized Act Number 11 of 2008 Concerning Information and Electronic Transactions when the Prita Mulyasari case surfaced in 2009. The mother of two children had to languish in the Tangerang Women's Penitentiary because of her e-mail regarding the services of the Alam Sutera International Omni Hospital. Prita spilled steam about Omni Hospital services via e-mail. Somehow, the e-mail spread from mailing list to mailing list to become viral. Omni Hospital was furious and reported Prita for alleged defamation. Prita is charged with three counts. First, Article 45 paragraph (1) jo Article 27 paragraph (3) Act Number 11 of 2008 Concerning Information and Electronic Transactions, also article 310 paragraph (2) and article 311 paragraph (1). The Tangerang District Court sentenced Prita to six months in prison with a one-year probation. Prita was also fined Rp. 204 million. (Arman Dhani, 2016).

Another victim of Act Number 11 of 2008 Concerning Information and Electronic Transactions was Nazriel Irham, also known as Ariel. The vocalist of the band Noah was ensnared by Act Number 11 of 2008 Concerning Information and Electronic Transactions in 2010. He is considered responsible for making and distributing pornographic video footage of his sex scenes with a

number of two famous celebrities. The recording circulated on the internet and Ariel was held responsible. In the trial process, Ariel claimed that he had never distributed the video footage to anyone. A Judge sentenced Ariel to 3.5 years in prison and a fine of Rp. 250 million. Ariel eventually became a resident of the Kebun Waru detention center in Bandung after previously being held at detention at the National Police Headquarters and Sukamiskin Prison. In the process, Ariel was only jailed for 2 years and 1 month. (Arman Dhani, 2016).

Another case that had become viral was the upload of Florence Sihombing in 2014. The graduate student of Notary at the Faculty of Law at Gajah Mada University was also snared by Act Number 11 Of 2008 Concerning Information And Electronic Transactions because it was deemed insulting to Yogyakarta. The incident stems from the expression of Florence's frustration when trying to take the queue at the gas station, but was prevented. He expressed his frustration by reviling the people of Yogyakarta. The expressions of Florence's frustration on the Path then spread on social networks. Flo was reviled all-out on social networks. He finally apologized to the people and the King of the Kingdom of Sri Sultan Hamengkubuwono X. Even though he had apologized, Flo still had to undergo legal proceedings. Flo also had to languish in jail even though he later got a suspension of detention. Florence was charged with article 27 paragraph 3 in conjunction with Article 45 paragraph 1, and Article 28 paragraph 2 in conjunction with Article 45 paragraph 2 of the ITE Law. He was convicted and sentenced to 2 months in prison with a probation period of 6 months by the Yogyakarta City District Court. Florence was also fined Rp.10 million in one month in prison. (Arman Dhani, 2016).

The cases mentioned above, in fact, caused polemics in the majority of the community that Act Number 11 of 2008 concerning Information and Electronic Transactions which was formed to impose limitations on freedom of expression from the public in using social media has silenced freedom itself. The government is actually aware of this and is trying to revise Act Number 11 of 2008 regarding Information and Electronic Transactions, but in fact up to now it has not been able to absorb the phenomena of the presence of the internet and social media optimally let alone the phenomenon of the presence of buzzers which clearly have not been specifically regulated so the action must be broken down using several articles.

To anticipate this, the government can coordinate with social media provider platforms in setting regulations on the use of social media. To establish regulation in cyberspace, the state needs to ascertain "who does what and where". To know "who", the state must know how "identification" works in general and how it works on the internet. Identification revolves around three things, namely:

- 1) Identity;
- 2) Authentication;
- 3) Letter of Trust. (Lessig, 2016).

Identity can be shown, for example, by showing a resident card (KTP). The KTP contains, *inter alia*, gender, age,

occupation and marital status. However, the KTP needs to be authenticated. (Lessig, 2016). This authentication process can be as simple as the authentication process carried out by financial technology companies by asking for a selfie while holding a KTP. In addition to authentication, credentials that also have legal consequences between the platform and the user need to be made, and this can usually be done simply by e-signing or clicking on the check box after the potential user has read the credentials. This registration process does seem to make it difficult for people to use social media, but it is a solution in the many negative actions of political buzzers on social media.

The absence of relative authentication in cyberspace makes it very difficult to regulate behavior there. The state may say, "Don't let children watch pornographic shows," but website operators will never be able to find out the entities that access their websites are children or adults. It's just that certain websites that require registration for users can recognize the identity of the relevant internet users, for example Facebook, Twitter, and other social networks. However, identification in cyberspace still leaves a problem: is the identity that the internet recognizes is an identity that really exists and is the same in the real world? (AP Edi Atmaja, 2014).

The more stringent application of social media registration can certainly help reduce the amount of negative buzzer activity that is mostly carried out by anonymous accounts that use fake identities and of course difficult to track if legal action is needed against them. The Indonesian government may take too many repressive actions which make rules based on conflicts that have occurred not anticipate before the conflict, but one simple step that can be very helpful now is to synergize with social media platforms in creating a measurable registration system so that the effect Bad effects from buzzer activity can be reduced.

## 2. Character Building as The Long-Term Solutions for Social Media Problem.

The problem of conflict due to the use of social media and the rampant negative activity of buzzers cannot actually be resolved simply by taking action in the form of establishing legal rules or taking legal action against violations that occur. There must be a long-term plan that must be done through efforts to educate the community through social engineering efforts. Social engineering is expected to be able to change people's mindset and actions in using social media. Social change is a major concern for many social theorists. Many modern social science experts pay attention to these various social changes or even predict future social change projections. Weber, Marx, and Durkheim were the pioneers of classical social theories around the 19th century and issued theories of "evolutionary" or "unclear" social change, which were later developed by following developments and existing social realities. (Nur Lailly Mazkiyatul F, 2004).

Karl Marx, in his theory, outlines individual and social life based on the economic principle. The ideal social condition is the condition of a just, prosperous and peaceful society so that from the concept of social ideals that Marx wants about change is the idea of freeing people from class bondage which is then interpreted as a revolutionary movement, although at first Marx's thoughts were heavily influenced by Kant's thought which states humans start from perfection (the holy spirit of god) and then enter a world full of dirty limitations and not so holy. (Robet M. Z. Lawang, 1988).

Jalaluddin Rahmat asserted that social change must begin with social engineering that emphasizes paradigms or mindset. Because he considers that change is impossible if we are still trapped in errors of thought. This departs from the condition of society which at that time was an intense intellectual disruption under the authority of the New Order regime. So that the emergence of the concept of change is nothing but a social problem.

Selo Soemardjan, an Indonesian sociologist, provided an intellectual tradition in order to understand the direction of social change. According to him, social change is all changes that occur in social institutions that affect social systems, including norm and moral values in real interactions. This is more in line with what is expressed by Abdulsyani emphasizing changes in the function of culture and human behavior in society from certain circumstances to other conditions. (Abdulsyani, 1994).

Social engineering that can be done is to do a lot of community service activities and also include social media education in the national education curriculum. Planting a mindset about the use of social media right from an early age on students is believed to be able to improve the culture of using social media in a society that tends to be aggressive. Improving attitudes in one generation will improve the pattern of social media relations in Indonesia in the future and of course reduce the negative activities of the buzzers because of the level of knowledge and the ability of people to sort out information and use social media.

Social engineering will also succeed by participating in empowering elements of the community in the effort to socialize social media education in the context of character building. Empowerment is a process and a goal. As a process, empowerment is a series of activities to strengthen power or empower the weak groups in society, including those experiencing poverty problems. As a goal, empowerment refers to the state or results to be achieved by a social change, namely a community that is empowered, has power or has the knowledge and ability to meet their physical, economic, and social needs such as having confidence, being able to deliver aspirations, have a livelihood, participate in social activities, and be independent in carrying out their life's tasks. (Edi Suharto, 2005).

Community empowerment is the concept of economic development that encapsulates the values of the community to build a new paradigm in people centered and participatory development, in this framework the effort to empower the community can be assessed from

three aspects, first, Enabling, namely creating an atmosphere that enables the potential of the community to be able developing; secondly, Empowering, which is to strengthen the potential of the community through concrete steps that involve providing various inputs and opening up in various opportunities that will make the community more empowered; and third, Protecting, which is protecting and defending the interests of weak communities.

The empowerment approach essentially provides an approach to the autonomy of decision making from community groups based on personal, direct, democratic resources and social learning. Empowering the community is an effort to improve the dignity of the lower classes of society who, with all its limitations, have not been able to escape the pitfalls of poverty, ignorance, and backwardness, so that community empowerment is not only strengthening individuals, but also existing social institutions. Instilling the values of modern culture such as hard work, saving, openness, responsibility is an important part of empowerment efforts. (Munawar Noor, 2011).

### 3. CONCLUSION

1. Legal resilience in Indonesia in dealing with the buzzer phenomenon in Indonesia is still fragile because the buzzer has not yet been concretely regulated in Indonesian law. Actions of violation of the law by buzzers are currently resolved by using other rules such as defamation and the spread of hoaxes which creates legal uncertainty. The buzzers mostly use social media accounts without registering real identities so violations of the law are difficult to trace. The first step that can be taken to overcome this is to work in synergy with the social media platform to tighten the account registration process so that all account users use real identities and are easier to monitor.
2. Character building for the community is a long-term effort that must be taken to improve the culture of social media use in Indonesia. Character development can be done by conducting social engineering by conducting socialization and including social media education in the education curriculum in Indonesia. Also besides, this effort can be strengthened by empowering the community to accelerate and expand the reach of the government in carrying out social engineering to achieve cultural changes in the future use of socio-culture.

### REFERENCES

- Abdulsyani, Sociology: Skematika, Teori, dan Terapan, Jakarta: Bumi Aksara, 1994.

Arman Dhani, Ketika UU ITE Menjadi Momok Masyarakat, Tирто.id, <https://tirto.id/ketika-uu-ite-menjadi-momok-masyarakat-ct>, 2016, (accesed October 10, 2019)

AP Edi Atmaja, Kedaulatan Negara Di Ruang Maya : Kritik Uu Ite Dalam Pemikiran Satipto Rahardjo, Jurnal Opinio Juris, Vol. 16, September 2014.

Daniel Nations, What is Social Media?,

<https://www.lifewire.com/what-is-social-media-explaining-the-big-trend-3486616>, (accessed October 2, 2019).

Doyle Paul Johnson, Teori Sosiologi Klasik dan Modern, Penerjemah: Robet M. Z. Lawang, Jakarta: PT Gramedia, 1988.

Dw.com, Kisah Buzzer Jelang pemilu, <https://www.dw.com/id/kisah-buzzer-media-sosial-jelang-pemilu/a-47888500>, (accesed October 10, 2019).

Edi Suharto, Membangun Masyarakat Memberdayakan Rakyat. Kajian Strategis Pembangunan Kesejahteraan Sosial dan Pekerjaan Sosial Jakarta: Aditama, 2005.

Farouq Arnaz, Buzzer Politik Belum Diatur UU, beritasatu.com

<https://www.beritasatu.com/nasional/578841/buzzer-politik-belum-diatur-dalam-uu-ite>, 2019, (accesed October 10, 2019)

Indonesia Media Defense Litigation Network dan Institute for Criminal Justice Reform, 2000-2010: Kebebasan Internet Indonesia: Perjuangan Meretas Batas [Briefing Paper Nomor 3 Tahun 2011], Jakarta, 2011.

Jamaludin Akmal, Sekjen PA 212 Jadi Tersangka, RMOL.COM  
<https://hukum.rmol.id/read/2019/10/08/405700/sekjen-pa-212-jadi-tersangka-ke-12-dalam-kasus-dugaan-penganiayaan-buzzer-jokowi>, (accesed October 10, 2019).

Komunikasipraktis.com  
<https://www.komunikasipraktis.com/2019/03/pengertian-buzzer-profesi-baru-era-medios.html>, (accesed October 10, 2019).

Lawrence Lessig, Code: Version 2.0, New York: Basic Books, 2006.

Nibras Nada Naifular, Kompas.com, <https://www.kompas.com/tren/read/2019/10/09/060029265/buka-bukaan-soal-buzzer-1-pengakuan-denny>

[siregar-dan-pepih-nugraha-soal?page=all](https://siregar-dan-pepih-nugraha-soal?page=all), (accesed October 10, 2019).

Nur Laily Mazkiyatul F, Pemikiran Pendidikan Islam Syaikh Ahmad Syukarti dan Transformasi Soaial, Semarang: t.p., 2004.

Patrick Haller, Social Media Changing Conflict <https://peacesciencedigest.org/social-media-changing-conflict/>, (accessed October 10, 2019).

Peter Mahmud Marzuki, Penelitian Hukum. Cetakan ke-6, Kencana Prenada Media Group, Jakarta, 2010.

Resa Eka Ayu Sartika, Penemuan Dunia Yang Mengubah Dunia: Internet,

<https://sains.kompas.com/read/2018/02/08/203300823/penemuan-yang-mengubah-dunia--internet?page=all>, (accessed October 2, 2019).

Reza Ferdianto, Analisis Penegakan Hukum Tindak Pidana Penghinaan Terhadap Suatu Agama Melalui Media Sosial, Thesis, Universitas Lampung, 2016.

Wilga Secsio Ratsja Putri, Nunung Nurwati, Meilanny Budarti S , Perilaku Sosial Media Terhadap Perilaku Remaja, Prosiding Penelitian dan Pengabdian Kepada Masyarakat, Vol. 3 No. 1, 2016.

Yusri Wahyuni, Kebebasan Berekspresi Melalui Media Sosial Menurut Hukum Islam dan HAM, Script, UIN Syarif Hidayatullah, 2018.

Zainuddin Ali, Metode Penelitian Hukum, Sinar Grafika, Jakarta, 2009

systems, in: J. Esparza, R. Majumdar (Eds.), Proceedings of the Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Springer, Berlin, Heidelberg, 2010, pp. 23–37. DOI: [https://doi.org/10.1007/978-3-642-12002-2\\_3](https://doi.org/10.1007/978-3-642-12002-2_3)

[34] B. Bollig, P. Habermehl, C. Kern, M. Leucker, Angluin-style learning of NFA\*, in: Boutilier and Craig (Eds.), Proceedings of the 21st International Joint Conference on Artificial Intelligence (IJCAI), AAAI Press, Pasadena, CA, USA, 2009, pp. 1004–1009.

[35] F. Denis, A. Lemay, A. Terlutte, Residual finite state automata, Fund. Inform. 51(4) (2002) 339–368.

[36] F. Denis, A. Lemay, A. Terlutte, Learning regular languages using RFSAs, Theor. Comput. Sci. 313(2) (2004) 267–294. DOI: <https://doi.org/10.1016/j.tcs.2003.11.008>

[37] L. de Alfaro, Formal Verification of Probabilistic Systems, Ph.D. Thesis, Stanford University, 1997.

[38] M.O. Rabin, D.S. Scott, Finite automata and their decision problems, IBM J. Res. Dev. 3(2) (1959) 114–125. DOI: <https://doi.org/10.1147/rd.32.0114>