Development of a consensus algorithm using the Truth Finder technique.

Advisor: Dr. Valderi R. Q. Leithardt

Research area: Distributed Systems and Artificial Intelligence.

Objectives

The Brazilian presidential election of 2018 was one of the most important in history, the political polarization has generated two extremes in the dispute for power. According to New York Times, 44% of the Brazilian population uses WhatsApp as a source of political information. On the eve of the election, the application was used to spread an alarming number of fake news, in favor of both candidates. With increasing technology expansion, the use of fake news detection techniques becomes necessary to protect users of social networks to be influenced by this kind of news.

Shu et al., showed an in-depth study on the definition of fake news and different ways to detect this kind of news. Among the techniques presented, the truth-detection technique is more consistent with the current scenario, where the primary objective is to discover the reliability of the news source and the veracity of the news at the same time. One of the problems that can prevent the use of this technique efficiently is the publication of news without a database to perform the comparison. For this, it is necessary to use a technique that allows to store the data and keep them continually updated.

In 2008, Satoshi Nakamoto developed blockchain technology and showed it to the world through bitcoin, a cryptocurrency without centralizing bank unit. This technology proved to be revolutionary for ensuring user privacy and authenticity in the transactions performed on the platform. Over the years, several applications focused on different scenarios have been developed using this platform.

Therefore, the student should use the blockchain framework for fake news detection in social media. The differential of the architecture to be implemented is in the consensus algorithm. The Truth Finder algorithm should be used to guarantee the authenticity of the information stored in the blockchain.

Tasks and Chronology

T1 Study of the problem and state of the art;

T2 Study of the truth finder algorithm;

T3 Application development;

T4 Project report writing;

T5 Scientific article writing.

Schedule

	Feb	Feb	Mar	Mar	Apr	Apr	May	May	Jun	Jun
T1	X	X	X							
T2		X	X							
T3			X	X	X	X	X	X		
T4								X	X	
T5									X	X

Technical / Academic Requirements

Have good grades and knowledge in programming, distributed systems and artificial intelligence.

Elements of Evaluation

The student must submit the following elements for evaluation:

- Printed report (see regulation on the number of copies);

- CD or DVD (or another element of mass memory) with implemented algorithms and copy of the report in PDF format;

- An article in digital format to include in the CD or DVD;

Expected Results

• Implementation of the Truth Finder technique in the form of a consensus algorithm;

• Survey of the state of the art and related works;

• Project report;

• Scientific article.

References

N. Y. Times, **"Fake News is Poisoning Brazilian Politics. WhatsApp Can Stop It."** Nova York, Estados Unidos, 2018.

URL: https://www.nytimes.com/2018/10/17/opinion/brazil-election-fake-news-whatsapp.html

K. Shu, A. Sliva, S. Wang, J. Tang, H. Liu, **"Fake News Detection on Social Media: A Data Mining Perspective"**, CoRR, 2017. doi: 1708.01967.

URL: https://arxiv.org/abs/1708.01967

Y. Li, J. Gao, C. Meng, Q. Li, L. Su, B. Zhao, W. Fan, J. Han, **"A survey on Truth Discovery"**, CoRR, 2015. doi: 1505.02463.

URL: https://arxiv.org/abs/1505.02463