

**Prospectus**

**The Charlottesville Fire Department**

(Technical Report)

**Fake news and Disinformation**

(STS Research Paper)

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

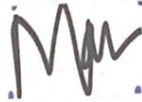
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## Technical topic

The Charlottesville Fire Department is part of larger network of public service agencies that provides service to community and to students and has been contributed to the city since 1865 (Caldwell, 2019). The Charlottesville Department provides service to emergency situations and fire situation. It is known that is Charlottesville Fire Department (CFD) providing emergency services by many ways such as customer service, education, prevention, and preparedness. The Fire Department reported that sometimes the department respond to the same location and individual, which indicates the needs of these individuals and locations. The 911 system requires actual cost to deliver service, build new location and hire more staff to meet the needs of the community at large. Therefore, the technical report will focus on developing meaningful and objective way to support budgeting decisions and program planning. To help Charlottesville Fire Department improve their decisions and program planning, first we have to understand the characteristics of the people and different regions in Charlottesville.

Charlottesville's area is around 10.3 square miles. The city could be described as primarily suburban and urban with 156 miles of street. And almost 75% is for residential development (Annual Report, 2017). The Charlottesville Fire Department has a total of 91 men and women staffs and approximately twenty -five staffs are on duty. The CFD has three stations which are located on 203 Ridge Street, US-250 Bypass and 2420 Fontaine Ave (Annual Report ,2017). In the report, The CFD Annual Report studied that the expectations of the department are to provide core fire and EMS services, along with public education. Secondly, the department expects to engage other city departments to enhance services. Last but not least, they expect to continue partnerships with major event mitigation and planning and implement strategic use of technology (Annual Report, 2017). These expectations mentioned before are not only the department's expectations but also the expectations of the community. The Fire Department has analyzed their strengths which are needed to be focused. CFD department stated that it is important to identify its strengths to ensure the strengths are consistent and improved each day. Fire Chief has mentioned that their concerns over years are prudent management of fiscal resources, effective program and response deployment, and collaboration and engagement amount city department (Annual Report,2017). To help Charlottesville Fire Department improve their decisions and program planning, we have done a research and calculation about the current situation and make assumptions, as well as propose the alternative solutions. At the beginning of the research, we identified the problem by categorizing the call Type for all emergencies, and the call type for frequent utilizers and frequent locations. The statistic indicates that for all emergency situations, breathing problems takes the highest percentage among all of the sickness; while frequent utilizer has the higher chest pain phone calls compared to breathing problem. The downtown mall area has been noticed for having the highest density of calls from frequent utilizers. Downtown area is only 0.7 miles from Ridge St Fire Station and frequently holds special community events and programs. Downtown area is also the location of many homeless individuals in Charlottesville. Besides making a statistic of the number of phone calls, we also estimate the response cost and time response for each call.

The purpose of the research is to understand the impact of providing these services so that they can be compared to another alternative solution to meet the needs of community at large. Moreover, the purpose of this technical topic is to develop a meaningful way to help the fire department make their decisions on the budget allowed. In the future, the Charlottesville Fire Department hope they can improve their service to bring safety and happiness to the community by providing services focused on preparedness, response and recovery.

**References:**

Caldwell, Doug (July 31, 2019) Charlottesville Fire Department Leverages Community Volunteers. Retrieved from <https://www.smartcville.com/blog/2019/07/31/charlottesville-fire-department-leverages-community-volunteers/>

Annual Report (2017).2017 Annual Report Charlottesville Fire Department, 1–28. Retrieved from <https://www.charlottesville.org/Home/ShowDocument?id=61737>

## **Introduction and Background:**

As the information manipulated on the internet, and the online reporters take advantage to spread out the false content in the global scale, the threat to every country around the world has increased in a significant way. To prevent the dissemination, fact-checkers have been developed such as Factcheck.org, PolitiFact or Washington Post Fact Checker (Nyhan and Reifler, 2013) to examine the accuracy of the reported news on the internet and even on the traditional newspaper. However, the critiques of fact checking have always been the questions which are raised due to its credibility. Most of the majority wonder how the fact-checkers shape our understandings and how much the users understand about the fact checking after using it. Even though fact checking algorithm attracts many technology company and computer science students to explore and learn about it, it is still not a common tool for the majority of citizens and most of us still have not really understood about it works. Therefore, the research essay will focus on how fact-checking influences users and what user's judgement towards the fact-checkers by interviewing two groups of people, one understands the topic and other who does not. The experiment will draw the conclusion of the value of fact-checkers in the real life according to user's evaluation.

## **Theoretical Framework and Methods:**

The essays will focus on how the users evaluate the checking system, to see if the fact-checker is credible or not in their opinion. In order to explore this, I would do the interview two groups of people, one does understand and have a decent knowledge about coding, and the other does not. The interviewees can use either Politifact.com or Factcheck.org, which are the most popular fact-checkers at this time. Two groups could choose any statement, but it is recommended to choose the statements that are popular and may have the power to influence people. The way the fact-checkers work is that it will show if the statement is true, half true, mostly false, and false (Chloe Lim, 2018). After using the checking tools, two groups would give their opinion and judgement about the website and its credibility. Fact-checking methods have become a popular topic since it is one of the important ways to fight fake news and disinformation. Even though fact-checking methods are not completely developed, readers might be curious to see how it affects the society. Evaluating fact checkers sites as to being credible or not bears little sustenance in the way they can influence others into what is correct. Many with a strong belief in whatever topic already approach the debate with a pre-existing notion of what is considered true. As such, preconceptions due to conformational biases hinders one's ability to become open minded in regards to facts backed by sources. This results in the immediate dismissal of claims presented to them

## **Literature Review**

Besides conducting my own interviews, I have also done the research about how another scholar evaluates the systems. Chloe Lim (2018) studied that she used two fact-checkers to evaluate if the statements are overlap or not. For example, the author checked Bush's claim that might be considered as misleading claim in the first place. The first statement is "Bush relied on raw job total". The second is "the year 1999 was omitted", and the third is "much of Florida's

job gains were due to an increase in low paying job” Chloe Lim studied that FactCheck.org rated that those are all false statements, while PolitiFact indicated the claims are half true. (Chloe Lim, 2018). Therefore, there are only a minor difference between the two systems due to the biased judgement. During the experiment, the group that does not know about machine learning algorithm took example of President Trump’s statement. As an example of the site’s fallacy, one of Trump’s “False” statements is as follows

*“They never thought ... that I was going to release that call and I really had no choice because Adam Schiff made up a call.”*

(Politifact National on Tuesday, November 19, 2019)

The interviewees indicated that Politifacts has labeled this claim as false. Under their “truth” meter, the only statement Politifacts provides to supplement their rating is “This statement is made up”. Without a quick and proper explanation of why this statement is made up will deter most Trump supporters from the validity of Politifacts and dismiss it as liberal propaganda with the aim to spread fake news. The interviewees also showed that the article itself reads like a typical article in the journalism format with hyperlinked phrases serving as sources for what claim is being made. After reaching the end of the article, they were expecting a citation of the sources used to quickly review the validity of the claims. However, Politifacts fails to do this. The interviewees stated that after doing the experiment, they are still not so sure about its credibility and its ability to evaluate one’s statement. The interviewees reported that the website is an effective tool for individuals with good reasoning skills and those with adequate technical skills to utilize the website’s tools. However, the website does not show their primary response of why a claim is true or false, and not present information or explain how to use the website in order to verify these claims. To have a better understanding about the trend of spreading fake news on social media versus how fact-checkers work, Chengcheng Shao, Pik-Mai Hui , ..etc researched the reaction of fact-checking consumers on Twitter. Chengcheng Shao, Pik-Mai Hui, etc reported a story focus on the claim that Mexico pledge to close the border if Donald Trump became the president of the United States. However, the Politifact and another fact-checkers site has debunked the claim. At first the story got user’s attention on July 15, then the rumor went down and nearly disappeared in two to three days. The claim disappeared on August 29 and went down again after August 31. (Chengcheng Shao, Pik-Mai Hui, etc, 2018). The research showed that whenever there is an act of involving of fact-checking series, the rumors are tackled and debunked in a couple days. However, some users have not been updated with the recent news. Therefore, they unintentionally share the fake news and make it appear again on twitter.

Noortje Marres researched that people might have false expectation on fact-checkers since in her opinion, fact-checkers are not helpful if users try to “advance mutual understanding among concerned publics”. The purpose of the fact checkers is to focus on its empiricism and aggravate public prejudice (Marres, 2018). Fact checker is a good online source for users that are lack in skills discerning if the statement is valid or invalid (Marres, 2018). Therefore, if we use fact checkers to check the mutual conflict that is happening in the real life or even check the validation of the sarcastic statements, we will get the results which are not what we are looking for. The interviewee that represents for a group that does know about coding stated that Politifact is a good website tool to use for an initial research on politician’s speeches. Reasonable and impartial can be tricky with this website because of their truth rating, “truth-o-meter” are rated

based on confirmed fact and spectacles information. The idea of Politifact is still good because it provides a leading information on all politician speeches. However, in order to get more people get familiar with the checking tool, Politifact needs a new way to label their information. Most people are biased towards their own political party and the use of words such as “pants on fire”, “full flop”, or even “half true” will turn people away and makes the site incredible.

## **Future Research and Conclusion**

The research from journals show that fact-checkers impede the fake news from spreading and help validating the statements. However, users would expect more about fact-checkers in which it would give more explanation of why the statement is indicated as false. This machine learning algorithm is not a new approach to fight fake news. However, it attracts many engineers from Computer Science and Artificial Intelligence to complete the approach. Preventing fake news is still a big issue to the technology company and authorities. However, it is not only the Government’s responsibility but also an individual's responsibility. To have a better understanding about the role of fact checkers in the community, my essay would focus more on collecting data from interviewing local residents in Charlottesville and to do more research about reaction of social media towards fake news.

## **References:**

Politifact National |. (2019, November 19). All statements about Adam Schiff. Retrieved December 3, 2019, from <https://www.politifact.com/personalities/adam-schiff/statements/about/>

Lim, C. (2018). Checking how fact-checkers check. *R&P*, 1–7. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/2053168018786848>

Nyhan, ., & Reifler, J. (2013). The effects of fact-checking threat. *Results from a Field Experiment in the States*, 1–8. Retrieved from <https://www.dartmouth.edu/~nyhan/nyhan-reifler-report-naf.pdf>

Marres, N. (2018). Why We Cant Have Our Facts Back. *Engaging Science, Technology, and Society*, 4, 423. Retrieved from <http://wrap.warwick.ac.uk/103446/7/WRAP>

Shao, C., Hui, P.-M., Cui, P., Jiang, X., & Peng, Y. (2018). Tracking and Characterizing the Competition of Fact Checking and Misinformation: Case Studies. *IEEE Access*, 6, 75327–75341. Retrieved from <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8532356>