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Fake News and the Role of Semantics and AI (Artificial Intelligence). "How to Recognise the Falsity of the Information?"

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Abstract

Fake news is not a new phenomenon. Fake news is "a form of propaganda that consists of deliberate misinformation or pranks spread through the traditional press, the media or online social media". Artificial Intelligence (AI) is a particularly important challenge, as it means the development of an appropriate computer system that will connect computing ability and physical reality. This makes it possible to convey concepts such as objective reality, conventional theories and language from a new perspective. This private experience and the consequences of this reconstruction sometimes has many disadvantages leading to alterations of information and to a new era, cyber era of reality, using fake news as a weapon to reduce the threat of free thinking and free will.

Keywords: Communication model • Semantics • Artificial intelligence • Bio-degradation • Fake news • False information • Propaganda • Defamation

Introduction

The first major model for communication was introduced by Claude Shannon and Warren Weaver for Bell Laboratories in 1949. The original model was designed to mirror the functioning of radio and telephone technologies [1]. Their initial model consisted of three primary parts: sender, channel, and receiver [2]. The sender was the part of a telephone a person spoke into, the channel was the telephone itself, and the receiver was the part of the phone where one could hear the other person. Shannon and Weaver also recognized that often there is static that interferes with one listening to a telephone conversation, which they deemed noise. In a simple model, often referred to as the transmission model or standard view of communication, information or content (e.g. a message in natural language) is sent in some form (as spoken language) from an emisor/sender/encoder to a destination/receiver/decoder. This common conception of communication simply views communication as a means of sending and receiving information (Crammer and Singer, 2001). Web Communication "Web Communication" is being developed into the following three areas [2]:

Social Media: That which we use to create an engaged community of users, blogs, wikis, social networks, evites, etc.

Web Based Content: Web comm is more than just the above. It's more than just creating social media content. It's web site content, urls, redirects, SEO and navigation. It's also email and outdoor campaigns that reference the web.

Analytics: Often overlooked or tacked on to someone's existing job description, analytics are crucial to this position. Email, web and social media analytics combine to create real actionable results.

The strengths of Web communication are simplicity, generality, and quantifiability (Crammer and Singer, 2001). Social scientists Claude

Shannon and Warren Weaver structured this model based on the following elements:

- An information source, which produces a message.
- A transmitter, which encodes the message into signals
- A channel, to which signals are adapted for transmission
- A receiver, which "decodes" (reconstructs) the message from the signal.
- A destination, where the message arrives.

Shannon and Weaver argued that there were three levels of problems for communication within this theory.

- The technical problem: how accurately can the message be transmitted?
- The semantic problem: how precisely is the meaning "conveyed"?
- The effectiveness problem: how effectively does the received meaning affect behavior?

Daniel Chandler critiques the transmission model by stating: It assumes communicators are isolated individuals [2]. No allowance for differing purposes. No allowance for differing interpretations. No allowance for unequal power relations. No allowance for situational contexts. In 1960, David Berlo expanded on [3] linear model of communication and created the SMCR Model of Communication. The Sender-Message-Channel-Receiver Model of communication separated the model into clear parts and has been expanded upon by other scholars [2]. Communication is usually described along a few major dimensions: Message (what type of things are communicated), source / emisor / sender / encoder (by whom), form (in which form), channel (through which medium), destination / receiver / target / decoder (to whom), and Receiver. Wilbur Schram also indicated that we should also examine the impact that a message has (both desired and undesired) on the target of the message. Between parties, communication includes acts that confer knowledge and experiences, give advice and commands, and ask questions [2]. These acts may take many forms, in one of the various manners of communication. The form depends on the abilities of the group communicating. Together, communication content and form make messages that are sent towards a destination [2]. The target can be oneself, another person or being, another entity (such as a corporation or group of beings).

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Fake News

Fake news is "a form of propaganda that consists of deliberate misinformation or pranks spread through the traditional press, the media or online social media" [1]. False news can be spread through a variety of communication methods [4]. The main element that has changed about fake news in the 21st century is the way it is spread. In addition to the "traditional" type, which is still used to create propaganda, modern means of transmitting information are based on the use of Internet (Crammer and Singer, 2001). Newspapers, magazines and news agencies (especially the largest in scope) have acquired their own website, online channel and online "publications" to take advantage of the widespread development of the Internet [4]. Access to these media has become very easy on the internet being a source of information for millions of people around the world [1]. According to a survey by the Reuters Institute (2016), the majority of residents in 26 countries rely more on social media than on the print media. What are the effects and risks of spreading false news online? The first of the most detrimental effects of fake news are legal. It has to do with possible infringements of information and expression rights. These rights are enshrined in the European Convention on Human Rights, or the ECHR (Article 10) and are constitutionally enshrined in Greece under Articles 5 A and 14. Based on these provisions, every Greek citizen must be able to be informed and expressed, without restrictions (unless there are exceptions) [1]. The impact of fake news, in legal terms, initially seems to be significant: this news misinforms the citizen with consequent violation of his fundamental rights [4]. At first glance, therefore, the dissemination of such news is constitutionally prohibited in Greece. This ban applies to all-media coverage, including the Internet [5]. On a practical level, fake news encountered in online environments can be harmful, given the way in which they become known and accessible to the general public. The means by which this news is conveyed (ie the Internet) helps: a) the ease of writing, b) the ease of transmitting (in which the recipient of such news can now play an active role, e.g. further sharing / sharing them with more people through social networking platforms) and c) the difficulty of verifying the source of the news, given the huge amount of information available on the Internet [1].

What do the above mean?

Quite simply, the ease with which such news can reach an Internet user, combined with the already available and new information, makes it extremely easy to spread. So, literally, the false communication via (AI) today, goes "viral", because of the technical and iconic convenience to spread. This convenience is greatly enhanced with the help of social media, offering an extremely effective channel for communicating such news with their final recipient [4]. Due to their ease of creation, they can be extremely convincing and plausible. At the same time, this news is difficult to cross-check and confirm, due to the already large amount of information available on the internet, and the given difficulty of "filtering" them, by the average internet user [5]. Undoubtedly, the most harmful effect of false news is the dissemination of their (untrue) content [6]. The person who is the target of such publications, new and content, in general, faces the risks arising from the motives of those who disseminate them [7] point out that the field of problems arising from the prevalence of biopower and its strategies, is more critical and enigmatic than ever. The concept of bio-degradation (bio-apodomesis) identifies a level of analogy that include the following elements, initially, that it concerns the "vital" character of human being in relation to the biological reasons of existence, linked to biological characteristics, as knowledge, logic and potentiality of free will. So, is the case of fake news a new virus, a new biological weapon capable of making us to talk about a pandemia of false information, or otherwise, is that an "infodemia" using technically the (AI)? Trying to understand how the information works at an AI system, we consider that is based on the relationship between experience and rationality in a way that includes access to the primitive elements of that experience, the knowledge [6]. It is the empirical process that lead to the recognition of human intelligence. The application of such theories, taken individually, is linked to the activity of human activity according to rules related to human intelligence as the execution of a computer program (Crammer and Singer, 2001).

Communication, Semantics and AI

Communication can be seen as processes of information transmission governed by three levels of semiotic rules:

- Syntactic (formal properties of signs and symbols),
- Pragmatic (concerned with the relations between signs / expressions and their users) and
- Semantic (study of relationships between signs and symbols and what they represent).

In linguistics, it is the study of the interpretation of signs or symbols as used by groups under specific circumstances and situations [5].

So, is there a connection between fake news, reality and misinterpretation of language signs? Saussure and Stoics [8] had seen in every form of language an important content. What matters the most is the set of exemplary and constitutional semantic relationships that characterize each word. In other words, the position of a word in the semantic system of language and the relationships it develops used in the specific sentences of the same language [9]. In the philosophy of language, the related fields include Communication and Semiotics.Thus, the formal study of signs is complex. The term "significant", in its modern version, seems to have appeared in France in 1897 by Michel Bréal. Semiotics refer as well as the history and changes in the meanings (meanings) of the words [5]. However, this definition is not simple, as it can be used for at least 3 different types of research, conducted by completely different groups of scientists:

- the investigation and analysis of the systems of meanings, which are closely related to modern linguistics or belong to it organically,
- exploring the nature of meaning,
- the investigation of the difficulties that people face due to semantic (semantic) confusion and (inter-)distortions [4]. With the right analysis, research, tactics and methods communication can lead to success in every field.

Propaganda and fake news

Fake news detection is a challenging problem with tremendous political, ethical and economic impacts [9]. Table 1. Empirically, there is an investigation of automatic fake news detection based on surface-level linguistic patterns [10]. Vlachos and Riedel (2014) are the first to release a public fake news detection and fact-checking dataset. In order to succeed an approximate pattern to avoid fake news, we use as methodology the case study project and we compare two different paradigms on the category of fake news to understand the role of linguistics, artificial intelligence and communication of social media Table 2.

Case Study I

Medical scientists have named vaccination as one of the most important accomplishments of health research in the previous century [11]. However, resistance to vaccination has subsisted as long as vaccination itself [12]. The

Table 1. Semantic and linguistic approach of fake information (Gelfert Axel, 2018).

(Linguistic area)	(Artificial Intelligence tools)
Fake News	Fake news definition
What was published/ posted?	Distorted event
	Non cross referenced fact
	Fabricated false information.
	Publicly spread through the Internet
	Knowingly/ purposely mislead/ deceive people

Results: The goals vary from the criminal to the political and ethical (legal or not).

Table 2. Kinds of fake communication (Gelfert Axel, 2018).

What kind of news item was it? (Criteria/characteristics of fake news items)
a) Fabricated News (completely manufactured story, news leading to deception).
b) Propaganda (Manipulation that cause damage)
c) Conspiracy Theories
d) Hoaxes (Distorted, tricky information)
e) Clickbait (exaggerated headline with inflammatory language values to approach public curiosity)
f) Photo Manipulation(actual images or videos building a false narrative)
g) News Satire
h) News Parody (misinformation based on humor)
i) Rumor
j) Defamation (Negative false review)

anti-vaccination movement was most fiercely strengthened in the past few years when a former British doctor, Andrew Wakefield, published a paper which submitted belief) vaccine and growth of autism in young children [13]. However, later studies denied a causal relationship connecting the MMR vaccine and autism [14]. As a result, the MMR vaccines sank from 92% in 1996 to 84% in 2002. A recent paradigm in EU: The bell has rung for the European Commission and the World Health Organization (WHO) on the growing number of unvaccinated children and disease outbreaks, often with fatal consequences, which could be prevented with vaccines (Newsroom, CNN Greece, 2019). The results of the Eurobarometer in 2019 showed that more than 80% of EU citizens consider vaccines effective for health and consult the opinion of doctors about vaccinations, but almost half of respondents mistakenly believe that vaccines cause side effects (Newsroom, CNN Greece, 2019). After two centuries of effective use of vaccines, what is happening today?

Is trust in medical science shaken and by whom? The publication of the findings of the Eurobarometer and a series of studies by the WHO and UNICEF fuel the public debate and point out the causes and risks. In view of this situation, which according to experts is a "time bomb", the Commission and WHO decided to hold a world conference on vaccination on September 12, 2019 in Brussels, sending a clear message in favor of vaccination, research on better vaccines, and the need for equal access to vaccines for all.The World Health Organization has described the misinformation about vaccines as "one of the 10 most important public health risks." (Newsroom, CNN Greece, 2019).

The role of Internet and social media

The online European magazine Politico, tried to shed light on the causes, links the lack of trust in vaccinations to the propaganda of certain populist political forces, but also to the deliberate or irresponsible misinformation via the Internet (Newsroom, CNN Greece, 2019).

In France, 60% of people mistakenly believe that vaccines have side effects and are the fourth highest in the EU after Cyprus, Croatia and Malta. Marin Le Pen's National movevent has opposed the policy of compulsory vaccination, arguing that "people should have the right to make their own health decisions" (Newsroom, CNN Greece, 2019). However, vaccination coverage is of collective value, as, for example, children who have survived cancer are at risk of transmitting infectious diseases from unvaccinated children. In England, National Health Service chief Simon Stevens warned a few days ago that public vaccination was a "public health watch bomb" after a UNICEF study found that more than 500,000 children in the UK did not have vaccinated against measles, the most contagious disease, between years 2010-2017 (Newsroom, CNN Greece, 2019). European health authorities stress that "large outbreaks of measles with fatal development are occurring in countries that have previously eliminated this risk. Last year, there were 12,000 measles cases in the EU and significant increases in France, Poland, the Czech Republic, Belgium, Bulgaria and Ireland in 2019, while the outbreak in Germany led the Ministry of Health to draw up

a vaccination plan (Newsroom, CNN Greece, 2019). But if some political forces play a negative role, the internet also has a share in misinformation: 20% of citizens are informed about vaccines from websites and social media, where the wrong information and beliefs become "viral" (Newsroom, CNN Greece, 2019). The AI (Internet) is one of the most famous ways to require information even relating to health issues. While this convenience is helpful, the propagation of deceptive and unreliable information found on the internet can also lead to catastrophic outcomes [15]. A study that analyzed the content of the first 100 anti-vaccination sites-results, (websites not evidence-based) after typing "vaccination" and "immunization" on Google search concluded that 43% of websites were anti-vaccination, so a kind of propaganda, disinformation leading to misjudgement [15]. The Guardian, for example, found that Facebook search results were dominated by anti-vaccination propaganda and that YouTube's viewers believed fake news (Wong, 2019). The Website is named "vaccinesrevealed.com": Scientists request the public to receive vaccination there is another Website that produces and supports such fake news. and claims that "When it comes to vaccine risk, the only debate is the degree of risk that vaccines pose." and that "without government compulsion or intervention, parents should have the right to choose". Commission Vice President also said that the Commission was carefully examining this influence, but that attention was now focused on the political content of the messages ahead of the European elections.The Commission is also working to develop an online portal for vaccines with the relevant European Public Health Authorities, to stop the spreading of fake news. But, it is not easy to fix things. In many countries, doctors do not send the right message either, according to a Commission study (Newsroom, CNN Greece, 2019). In Italy and Estonia, around 20% of doctors disagree about the compatibility of vaccines with religious beliefs, while in Poland the figure rises to 30%. A doctor from Sweden recently complained to UNICEF vaccine director Rob Butler that medical students are only trained for 40 minutes on vaccinations and immunology. "It's shocking", noting that doctors are the most reliable source of information for citizens and we disappoint them from the beginning of their careers (Newsroom, CNN Greece, 2019).

Case Study II

This is the case of Internet Defamation: *A false statement caused by the fault of a user (as a result of his negligence or malice) and harmful to another user's reputation*. In the Greek legal system, all these cases are characterized by the penal code as "Crimes against honor" (Article 361-369). Justice distinguishes it "Simple" defamation (claiming or spreading inaccurate information that harms someone's honor or reputation) and "Defamatory" (if the fact is false and the culprit knew it was false). Based on online research, the cases of defamation in Greece can be said to be divided into 3 main categories (Grover, 2019):

- Policy and public debate
- Human perversion for the purpose of punishment or revenge
- Human naivete or misinformation by users (Fake news).

A Paradigm

A customer, only known as Hannah C, complained about being charged £2 for a cup of hot water and a slice of lemon and she described the bistro as "absolutely awful" in her online TripAdvisor review. "I ordered hot water and a slice of lemon which, firstly, did not arrive on time with all my friends' cake and drinks. I was then charged £2 for the hot water and a thin slice of lemon," she wrote. Fortunately for everyone, the case did not reach the courts [1]. That's thanks to the cool reaction of coffee owner Mike Fisher, who eventually chose to post a monumental response to Trip Advisor, which went viral on the internet. More specifically, Mike analyzed the costs of his business in order to serve this glass of lemon water to customers like Hannah C. Mike Fisher, owner of Bennett's Café & Bistro in York, spelt out the exact costs of preparing the drink in his epic reply: "When I asked why I was being charged so much for some water the waiter rudely said,

'well, do you know how much a lemon costs?' Yes, it's definitely not £2. Mr Fisher replied outlining the costs of paying a waiter, the time his staff spent serving her and the overheads for running his business, "which works out at £27.50 per hour of trading", he wrote. As it turned out, the hourly cost of this service is 27.5 pounds, honestly leading to a simple finding (Grover, 2019). That is, the main cost of a coffee is not the materials it uses, but its operating costs [1].

Conclusion

Communication is social interaction where at least two interacting agents share a common set of signs and a common set of semiotic rules. This, commonly, held rule in some sense ignores autocommunication, including intrapersonal communication via diaries or self-talk, both secondary phenomena that followed the primary acquisition of communicative competences within social interactions. Forming a range of ideas, from the most incomplete to the most technically advanced, in terms of Artificial intelligence, the falsity of information is related to the problem of understanding the choice of the word. The problem of comprehension has been the subject of much formal research for a long time.

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