Artificial Intelligence (AI) and Computer-Mediated Communication in Newsroom: Challenges for the Journalist

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Abstract

The role of an anonymous automated machine has so far been seen as a medium or a facilitator for communication, generally interpersonal communication. The recent development in the field of Computer Mediated communication (CMC) not only effects the communication in the newsroom but also controls the content and dissemination of multiple media messages. Advances in the use of personalization and customization algorithms in news industry with the help of Artificial Intelligence (AI), agentic machines and bots have greatly increased the ease and convenience of producing, retrieving, receiving and disseminating news and information. These advancements not only threaten the role and existence of human journalists on one hand but have also raised significant concerns about credibility of news, transparency of technologies and mistrust among audiences. This article within the framework of Artificial Intelligence (AI) and Computer-Mediated Communication focuses on the communication and interpersonal communication which takes place in newsroom. This article looks at the challenges which Artificial intelligence poses for Journalists and argues that:

1. The existing communication paradigm needs to be redefined in the emerging context of AI and Computer Mediated Communication (CMC) in order to understand the communication process between humans and machines in a Natural language generation(NLG) driven newsroom.
2. The role of human journalist as agents of gate keeping and validation of data will become even more relevant in print media.

Finally the paper extends the framework of theory of robot communication and proposes a new mode of communication in newsrooms.

Keywords: Mass Communication, Artificial intelligence, Computers, Data, Algorithm, Human Machine Communication, Natural Language Process

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1. Introduction

Artificial intelligence(AI) is understood to be a discipline related to computer science and social science which is used to create machines and codes which behave, think and act like humans (Diakopoulos, 2019). AI and its related areas like Machine learning (ML) and Deep learning (ML) use algorithms to do different tasks (Campesato, 2020) .Actually, AI is not just about robots. It's also about creating a mechanical mind that can think like a human. Algorithm is defined as a finite series of prescribed rules or processes to solve a problem and as a sequence of stages it transforms inputs through specified computational procedures into output (Lazer et al, 2014). Once an algorithm has been trained and its accuracy of the results is acceptable it is ready to use. The algorithm continues to train itself with the addition of new data and human response in order to approximate human intelligence.

To understand the technological advancement in newsroom this paper does not propose a new theory or classification but revisits the communication between the algorithms and humans by extending the conceptual framework proposed by Johann F Hoorn (2018). This framework tries to reconceptualise the communication in NLG newsrooms where the sender, facilitator and receiver are machines which are part of systems and run on dedicated software and use algorithms to generate new stories. Readers will find this conceptual framework useful and will appreciate the way literature has been integrated into a new perspective of automated journalism which looks at the challenges which the human journalists may face in these newsrooms through a theoretical perspective. This paper looks at the challenges which arise in the communication which happens in automated newsroom. The paper puts its argument in the context of AI and Human machine communication also termed as HRC. In this paper Robot, Bot, Algorithm has been taken as an autonomous code which processes an input and gives an output. This paper finally proposes that newsrooms will have a third mode of communication to be fully automated which may be termed as SCS, System Code Communication

2. CMC and HMC within Perspective

Computer Mediated Communication (CMC) is the usage of computer in offices, institutions, government organisations etc. to maintain continuous exchange of message and information (Gunkel, 2012). It is seen as a technology to maintain relationships in virtual settings and takes the user from physical space to virtual space while doing communication. Scholars have also defined CMC as human communication with the help of computers. It can

be argued that CMC in a way is derived out of the communication theory. Human-Machine communication (HMC) has gone one step forward by putting machines in place of human senders in the communication process. HMC is seen as study of communication with the computer, whereas CMC looks at how communication systems facilitate communication, report in a different way CMC looks at how different digital technologies can act as channels in the communication process. HMC on the other hand investigates how these technologies can act as communicators. Looking from the communication theory perspective HMC analyses how AI driven technology can act as communicators that is, senders as studied in the traditional models of communication. The HMC phenomenon within the AI perspective is derived from technological aspects of the algorithms, data and the human component which makes the learning process of algorithms better and with each training of datasets they approach human intelligence only. This sort of learning comes with its own drawbacks as one tries to understand the similarities between machine intelligence and human intelligence (Ekbia, 2008). In such cases HMC with machines as communicators and interlocutors will negatively affect AI and communication.

Communication AI and HMC include virtual assistants, social bots, chat bots, automated writing software and devices like amazon's Alexa and apple's Siri. These automated systems use natural language processing (NLP) and Natural Language Generation (NLG) which enable machine to make sense of message written and communicated in human language(Dorr,2015). Through NLP (Allen, 2003) the machine interprets the message and replies in the language understood by the humans.

3. Newsroom and Natural Language Generation (NLG)

AI based systems take information in video, text, audio, graphics, images and any combination of these formats. These formats are designed to bring about planned behavioural change by engaging the people for longer durations. Many AI applications have information which is represented in the form of logical formulae, production rules and knowledge borrowed from social science, psychology and linguistics.

The rise and adaptation of machines and algorithms in news rooms have changed the journalistic routines and procedures for news production and distribution. Natural Language Generation (NLG) is one of the recent technical advancements in the area of computational linguistics which uses structured data to generate text in human language (Reiter and Dale, 2000). Associated Press (AP) uses NLG technology to automate their stories using wordsmith.

Wordsmith, developed by Automated Insights is an NLG engine that provides templates which converts data into text. In NLG the data is obtained through cloud, servers or a third-party data agency which is in a structured form like a RDBMS. The data may be for a sports, financial, weather or a health story. After obtaining the data is processed by NLG algorithms which use predefined linguistic and statistical tools to convert it into human readable text. The process of creating the story is getting largely automated and the human interference is being reduced to the minimum. To achieve this media organisations are implementing online content management systems in addition to Natural Language Processing techniques (Dorr, 2015). Natural language processing encompasses NLG and natural language understanding (NLU) which interprets and produces human language in both spoken and written form. The news room generates stories using NLG which are as per the editorial policy of a particular newspaper and suits the journalistic guidelines. The stories generated are often meet the criteria of topicality, periodicity, multimediality, interactivity, context sensitivity and universality. The output through NLG is in the form of human readable language which is a set of strength formed with the help of alphabets and uses grammar to structure the language (Pratt Harmann, 2010).

4. System-Code –System Communication (SCS)

In this proposed conceptual framework the communication in the news room is a type of human machine communication where machine is not only the facilitator but also the sender of the content. In fact in automated news rooms sender and receiver can be both machines where the output from one system becomes the input for the other system. From this perspective of the proposed SCS framework the theoretical paradigms of CMC need re-examination. The Shannon and Weaver Model is the most appropriate and gains more relevance where the human involvement is minimum or rather absent. The input is the signal which is processed upon and becomes the output which then reaches the final destination. The interpersonal communication in automated newsrooms resembles one dimensional flow of signals and information where the human editor may get involved at the end of the reading process.

In SCS mode the system is a machine with processing power and runs on a certain proprietary code. The SCS takes data as input, validates it and sends it in the right format to the algorithm or the code which generates human language, text and passes it to the second system for verifying errors related to syntax, grammar and lexical structure. In SCS mode the human journalist in the newsroom is aware of the system and the code being used to generate

stories. SCS can be understood as an extension of RMC. The second level of the framework uses online mechanism to disseminate new stories after personalising it to the subscribers. The audience who is the end receiver has no idea whether there is a human or machine behind the story. They shift their opinion from RMC to HRC. The audience finds it quite difficult to distinguish between stories generated between RMC and HRC and SCS since the parameters of multimediality, topicality interactivity and context sensitivity are almost the same. This proposed conceptual model of SCS is applicable to TV and newspaper news rooms. This proposed mode of communication in the newsroom is termed as SCS and it extends the conceptual framework of Computer-mediated communication and human-machine communication

5. Challenges for the Human Journalist

The communication by AI driven systems ignores psychosocial motives and lacks affection and social approval (Freimuth, Linnan & Potter, 2000; Rubin & Rubin, 2001). Natale (2020) argues that it is the person involved in the communication process who decides the communicator and the channel in a communication process. Natale, further says that the role of computer as social actor is itself questionable. Since the social actors are part of the newsroom and look at stories curated by NLG engines their interaction with the automated technology may affect news quality and the electronic paper. With the use of NLG by news rooms the expectations of audiences with respect to credibility and factual information and its interpretation is also increasing. Audiences are quick to crosscheck the facts and corroborate the information provided by other sources like social media and human social actors.

The lack of cues in newsroom communication will affect the relationship between machines and human journalists which will influence the quality and objectivity of news. The dehumanization of certain newsroom tasks will make it quite difficult for reporters to understand the messages given by the machine. Since machines lack emotions there is bound to be a degree of disinhibition which journalist will experience unless they become accustomed to the new environment. This disinhibition will not only affect the way they interact but will also change their behaviour. Overall, this change may make stories biased and with an element of deception in newsroom.

Research has indicated that differences between human and automated written text are difficult to identify (Van der Kaa and Krahmer, 2014; Clerwall, 2014). Guzman (2019) argues

that in HMC it is the humans who are responsible for deciding the final message given by the machine and making sense of the message. Human intervention will be needed in the communication process in newsrooms to make sense of the data as argued by Guzman & Lewis (2020). The author argues that though AI and HMC perspective suggest that communication happens with and through machines this will not replace human communication in the newsrooms. The proposed SCS mode is a hybrid system that uses human journalist at different stages to ensure that the news production routines are free of errors in all aspects i.e. data, syntax, grammar and language. Future work may look at the interrelationship between systems in SCS mode. Researchers may also look at how human journalists will communicate and understand the output produced by then automated systems within CS framework.

6. Discussion

The speed and relevance of content production in a media organisation is termed as topicality (Meier, 2003). In newsrooms with HRC mode the topicality may be affected due to social presence theory and missing social context. Topicality makes the visibility of news higher and there are more chances of a particular news being visible and being read by a larger number of audience. NLG system use hyperlinks and are interactive which gives the users the affordance to register their choices and preference on websites. The interactive features support multimediality where other formats of data like graphics, audio, video can be linked with NLG output which is primarily textual. These sort of NLG systems are in addition to RMC and HRC as discussed by Hoorn (2018). The context selectivity of NLG systems are based on data availability and data quality. The content refers to various subject interest of the user which NLG capitalises on and generates real time stories for the audience so that the stories could be sent when they need them the most. HRC mode may lead to individuation effects. The journalist working in these newsrooms may lose a sense of awareness of himself and others which will affect the news context, sensitivity and its credibility. This phenomenon will lower the reliability and sincerity of signals (human language) which the journalist will transmit in the newsroom (Donath, 2007). The credibility of the story is dependent on the data quality, any ambiguity, missing values and incoherence of data needs to be identified before using data to generate stories. This makes the role of a statistician or a data journalist quite evident at the data acquisition stage.

NLG is much ahead of online journalism since it can be understood within the perspective of AI and human machine communication. A newsroom which uses NLG to perform certain task of news writing, editing and modifying the stories as per individual user requirements use human journalist or machine to create stories. In news rooms where the human journalist is aware of the presence of the algorithm or a bot as a medium of communication between humans is termed as Robot Mediated Communication(RMC) as proposed by Hoorn(2018). RMC has been conceptualized as an extension of CMC. Situation where the audience is aware about the role of machine or bot as the sender of the stories within the AI perspective is seen as Human Robot Communication (Hoorn, 2018). That is people don't assume a human behind the machine then they are using the HRC mode. Print media newsrooms are gradually using NLG engines and seek more automation to minimize the cost of news production and distribution. The advancement in big data and Internet of things (IOT) will ensure early adoption of SCS and other hybrid models where the role and agency of algorithms, systems and human will vary on a continuum.

Systems using SCS mode may be designed to support multimediality and news routines and production in different languages. These systems will have human journalist to check document planning, data acquisition and data validation. After data validation the NLG systems will process the structured data to proceed to micro-planning and realisation, where the real text of the stories will be formed. This involvement of human journalist at crucial check points will enhance data integrity, objectivity and will minimize disinhibition and signalling errors. Newsrooms with different level of financial resources will do good to use SCS mode in their newsrooms to achieve sustenance by generating stories which are topical, interactive and universal. This proposed model is more efficient and faster which will provide immediate dissemination of relevant stories to its readers in real-time.

7. Conclusion

Technologies like AI, big data, cloud computing, Machine learning, deep, learning, wearable and virtual reality are the future of newsrooms but this technology needs to be used with discretion. AI is being used to design communication systems with the help of simulation of human capabilities like, reasoning, language production & comprehension to match human intelligence and emotions. This is where the role of communication becomes important. It is not only the interpretation using NLP but also the communication which will be done with the help of AI. The paper looked at the various challenges which a journalist faces in an automated

newsroom. These challenges are related to data authenticity, correctness of algorithm, context of the story and lexical errors of the stories written by NLG engines. In the end the paper proposed a new conceptual framework of newsroom communication between machines and humans which will minimize production routines, cost and increase the efficiency of newsrooms.

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