

Artificial Intelligence and 5G Will Force Journalism Schools to Accentuate the Basics in Instruction

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Abstract

This reflection considers the need for journalism schools to more intensely teach skills that cannot be replicated by AI or 5G. Critical thinking and writing are examples of Non-curation skills and they may need to be taught more because they cannot be mimicked by AI. Curation skills involve borrowing from other sources, which include human and digital platforms. It might be prudent to teach curation skills as a tool that is meant to strictly support non-curation journalism skills - which are commanded only by a human. The most secure journalism jobs will be those which cannot be replicated by AI.

Keywords: Artificial Intelligence • Virtual reality • Augmented reality • Curation • Non-curation 5G wireless • Robots • Journalists

Introduction

As technologies such as Artificial Intelligence and 5G wireless increase in mainstream use, the numerous benefits will come with many drawbacks as well. The genesis and initial definition of the term Artificial Intelligence was at a 1956 Dartmouth Summer Research Project on Artificial Intelligence. The lead scientists represented the private sector and the academy, including Dartmouth University, Harvard University, IBM and Bell labs. The group was theorizing the potential of machines and how a machine could one day interact with or even imitate humans. Dartmouth mathematics professor John McCarthy wrote that the summer gathering of scientists was "to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it" [1].

Artificial Intelligence or AI has taken on more than just one definition in the 63-years since the Dartmouth conference. Data scientist Jerry Overton broadly defines AI as the ability of a machine to do things that humans find of use, of interest or otherwise difficult to do. The definition and potential of AI depends on different factors, including communications infrastructures, government regulations and private investments [2].

The global growth and spread of AI will be unabated. It is a world changing force and it has a technology-cousin in fifth-generation wireless technology. Combined, the two technologies will touch upon just about everything – and every person.

The first-generation wireless, 1G, was created in the 1980's for the first cell phones that communicated in analog voice only. The next generation wireless, 2G, was created in Finland and it was an upgrade to a digital format that allowed cell phones to communicate in voice, text and photos. When 3G came about in 1998 it not only moved more data over cell phones, but the speed of data transmission was greatly improved. The 3G technology permitted the use of video and a connection to the Internet. Fourth-generation wireless, introduced in 2008, is the standard for today's cell phone industry. It has all of the technology features of 3G, but at much faster

speeds. On 4G wireless cell phones have better access to the Web, video games, HD mobile TV, video conferencing and other processes that demand high speed delivery to smartphones, tablets and Personal Computers [3].

The fifth-generation wireless, 5G, was officially rolled out for early experimentation in June 2018. It is now commercially available in small pockets of the U.S. By 2020 5G will have massive commercial unveilings around the world, with the U.S., China, South Korea, Japan and parts of Europe leading the way. The 5G speeds are anywhere from 100 to 1,000 times faster than 4G speeds, depending on supporting infrastructures. Whereas the typical download of a movie from the Internet may take minutes on 4G wireless, the 5G wireless backbone will download movies in one or two seconds [4].

Artificial Intelligence and 5G are now part of what is known as the Internet of Things or IOT. As part of IOT, electronic devices and humans around the world are able to - or will be able to interact instantly. Machines will communicate with other machines instantly. Household appliances and autonomously driving vehicles connected to a high speed, intelligent, Internet are just a fraction of what will become a global IOT. Just about any physical object will have the ability to be part of IOT [5].

Challenges for Journalism Pedagogy

As the flow towards automation in the work place increasingly takes over jobs, there are certain bottlenecks to its expansion. Some jobs are just too difficult to automate. Jobs that involve using social intelligence, negotiating skills, creativity, complex reasoning, manipulation and functions that require physical tasks in an unstructured environment are all less vulnerable to automation [6].

Much of a journalist's work involves the above-mentioned talents. Nevertheless, journalism will still be changed by AI and 5G. Therefore, the student journalist needs to be grounded in the basics of the disciplines of journalism where the reporter is the master of original content and is assisted by automation - not replaced by automation.

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Non-curation newsgathering

Non-curation information is the detailed type of work that can only be done by a person, not a robot (Figure 1). Non-curation newsgathering is where the practice of using intuition, face-to-face interviewing, objectivity, equipment operation, critical thinking and writing with clarity are all developed. A good journalist can knock on a person's door and interact with them by asking relatable, empathetic, or sympathetic questions. A robot cannot interview witnesses, law enforcement or government officials and ask antagonistic questions or even questions tinged with irony or emotion. Software programs cannot add nuance or creativity to information gathering. Critical thought flourishes within non-curation newsgathering. The student journalist should be strong and well trained in non-curation news.

Curation newsgathering

Curation information is composed of the non-curation information gathered personally by the student journalist and information that the student gathers from other journalists and digital sources, which also share credit as sources of content and data. Curation content is obtained through digital activities like cutting-and-pasting, digital downloads, streaming, copyright use, VR, AR and other forms of Artificial Intelligence. Curation is digital manipulation of content.

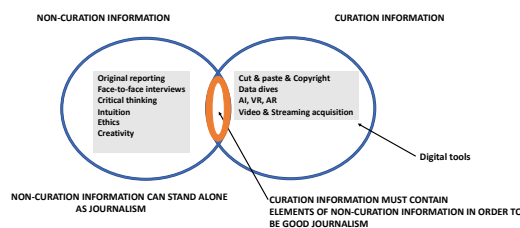


Figure 1. Non-curation and Curation do interface for producing good digital journalism. Non-curation is strictly human activity and skills. Curation involves digital assistances. Model created by writer.

There are ample examples of the directions automated journalism is headed. The financial reporting sectors are already heavily penetrated by automation. In Britain political reporting has been infiltrated by software.

Data Driven Politics

The December 12, 2019 General Election in Britain was covered in every constituency by automated political reporting bots hired by the British Broadcasting Corporation. Nearly 700 stories were written by computers. The computer generated stories still were double checked by human editors for clarity. The BBC said the technology is not meant to replace actual reporters, but rather the software enhances the overall political coverage. The editor of the BBC's News Lab, Robert McKenzie said, "Using machine assistance, we generated a story for every single constituency that declared last night with the exception of the one that hasn't finished counting yet. That would have never been possible [using humans]" [7].

Automated Business Reports

In 2014 the Associated Press announced it would use automated reports for its quarterly financial reports, in order to save time and money. At the time, AP claimed that the change would not eliminate jobs, rather it was expected to give the AP's reporters more time to do writing, researching and analyzing of the financial reports they were preparing each fiscal quarter. The AP assumed reporters would also be able to do more exclusive and investigative stories. Before the implementation of the automation plan the AP said its reporters were writing "approximately 300 earnings reports each quarter." AP managers expected the new automated bot reporting to create

at least 4,400 brief earnings stories in the same period of time. Managing Editor Lou Ferrera said automation will be part of many businesses, including media. As of today, automation has increased the number of corporations the AP reports on each quarter to approximately 5,000 companies a quarter [8].

The AP is now working with a North Carolina software company called Automated Insights, which claims it can improve writing presentations and turn raw financial data into sentences that appear to be written by humans. In addition to finance, Automated Insights has software writing strategies for automated weather and automated travel reports [9].

Automated Insights claims its Natural Language Generation software turns raw data into written prose. The company says the NLG software will not replace humans who write and report, but instead, it will augment the work done by reporters and free up more time for them to expand their journalistic roles that cannot be done through automation [10].

Automated play-by-play sports announcing

Automated Insights is making significant inroads into the lucrative world of sports reporting. In another partnership the company has with the AP it will help cover most Minor League Baseball games in the U.S. - especially those in remote locations - without the added expense of sending reporters to each game. The AP and Automated Insights claim that the automated baseball coverage gives sports reporters more time to cover other games that would not have been reported on under traditional circumstances [8].

Ominously, sports automation is expected to one day include voiced play-by-play announcing. Automated Insights is conducting research on play-by-play computer-voiced-announcing for sports. The company demonstrated how it can use AI and 5G to call the action of a ping-pong game being played by two of its research employees. During the presentation a ping-pong ball is tracked with a sensor and it wirelessly sends data to an Amazon Alexa. Alexa then translates the data to its Alexa voice, which announces the ping-pong game, play-by-play [11]. The demonstration shows how AI and 5G technologies can fully interact in the future to cover sports games using superfast 5G wireless, automation and AI computer voices.

Even though Automated Insights and the AP claim no reporters will lose jobs in the present or future because of their automation deals, journalism professors should be skeptical that such a future will mean job security for their students. Since Automated Insights first started making its NLG software in 2010, numerous other companies have entered the natural language space. At least nine major software companies are in keen competition to have their voice software used in the next generation of Amazon's Alexa [12]. The spirit of Moore's Law says journalism professors and students should prepare for a brave new world where technology can replace a reporter's voice by using AI automation similar to what is found in household smart speakers, like Alexa, Siri or Google Assistant. Gordon Moore, the former CEO of Intel surmised in 1965 that the number of transistors on a microchip would double about every 18-months [13].

What Journalism Schools Should Do

Journalism educators are now challenged to figure out what journalism functions are replaceable by intricate software and algorithms and which job functions cannot be replaced by software. The journalism skills that cannot be done by a robot, bot or algorithm are the type of skills the academy needs to buttress in the classrooms. Honing in on skill sets that are not vulnerable to AI will give students a stronger career foundation and should keep them viable and employed as future journalists. This is not to imply that students should get less training in the latest technologies or software tools, such as Augmented Reality, Virtual Reality, data-driven journalism or video/audio editing platforms. High competency in the latest technologies should be paramount in instruction. As journalism schools begin to expand budgets to inculcate students with the numerous digital techniques that are supposed to keep them competitive, it must be remembered that some of those

techniques may become or likely will become robotized and thus will fall under the umbrella of Moore's Law.

The information produced by a robot or a series of algorithms is as competent as the person or persons who created the commands or the software programming. The technology tools should be used to augment abilities that are possessed only by humans and in some instances remain unique to journalists. The creativity, critical thinking and emotional writing that only reporters can produce will never be mastered by robots, as long as machines continue to fail the Lovelace test and many experts believe machines will never pass the Lovelace test [14].

The Lovelace Test

Artificial Intelligence would have to pass the so-called Lovelace Test in order to pose a serious challenge to journalism. In the mid-19th Century Ada Lovelace developed what some called the first idea of programming a machine to operate on its own without human influence. She envisioned a day when a machine could originate music without the input of a person [14]. If AI reaches the level of creativity where it can originate music and ideas independent of any human assistance, then journalism will truly be in peril. For 16-years Douglas Eck of the Google Magenta project has sought ways to make computers become self-creative enough to make music and art. He sought to turn computers or robots into original thinkers. He is doubtful that will ever happen. He said, "I think we're just so, so, so far from this AI having a sense of what the world is really like. Like it's just so, so far away." As of today, no automation system has passed the Lovelace Test [15].

The AI, 5G, and IOT Tsunami

Significant numbers of American workers will face unemployment or will be unemployable if they are not trained for the profound changes that are taking place in the U.S. and world economies within the next five-to-15 years. The inevitable introduction of Artificial Intelligence and high speed 5G wireless into the mainstream will lead to the elimination or diminution of any job that can be replicated, in the slightest way, with sophisticated software. Automation is predicted to eliminate or disrupt between 50% to 70% of jobs in 32 countries. The large variance is due to some countries being less vulnerable to automation disruptions [6].

In the U.S. there will be large pockets of the American population experiencing very high unemployment. The assault on once secure jobs will be in full force, first in parts of the financial services sector, for instance. Presently, computers perform 36% of the work hours in financial services. By 2022 AI software programs will take over 61% of the work hours. The demand for data entry clerks, secretarial staff and accounting staffs will be hit the hardest initially [16].

The great American educational system always taught pupils the skills needed at a particular time in history in order to help drive the nation's economy. For instance, mandatory elementary and secondary education were instituted to support America's industrial revolution. Students over time have had to develop newer skills in order to stay abreast of the latest changes in technology and to increase their earning potential. Nations where students fall behind technological improvements tend to suffer considerable social pain [17].

The Pace of Technological Change

An extrapolation of Moore's Law should be an indication that the academy needs to constantly upgrade its instructions in order to keep students aware of the latest and quickly changing digital technologies needed to run the nation's economic engine. The reality today is that, since Moore first developed his principle, technology's improvements have come at a faster pace than every 18-months.

Today, there are just glimpses of the technologies that will drive the future U.S. job force. Some indicators of the near future economy have been seen often in Hollywood sci-fi movies. An example would be the self-driving taxi in the 1990 mega-hit movie *Total Recall* starring Arnold Schwarzenegger. Life is now imitating art as Uber and Lyft ride-sharing services are preparing to one day command fleets of self-driving ride-sharing vehicles and commercial fleet vehicles that will not only replace most taxi drivers and some truckers, but also will replace many Uber and Lyft drivers [18]. Long distant trucking and deliver vehicles are slated for reductions in human labor because of a combination of AI and 5G wireless technologies. By 2020 there will be 10 million self-driving vehicles on roads around the world. Practically every occupation will be changed, influenced or eliminated when infiltrated by automation that is supported mainly by the AI and 5G one-two punch.

Millions of jobs will be negatively affected and unemployment will increase in many job sectors as a result of these rising technologies. Many journalism jobs, such as some types of sports reporting and financial reporting jobs for example, will be eliminated as well. Journalism schools should place added emphasis on skills that cannot be replicated by software programs and high-speed wireless technologies. Skills such as face-to-face interviewing, writing, feature writing, critical thinking and investigative reporting should be taught more as a buffer against the intrusion of AI into critical segments of journalism. Digital skills, such as data research for instance, should support the writing, reporting, critical thinking and other non-curation skills. The most secure journalism jobs will be those which cannot be replicated by software programs, 5G streaming or Artificial Intelligence.

Florida A&M University's New Approach

Digital technologist Michelle Ferrier is Dean of the Florida A&M School of Journalism and Graphic Communication, which is the first of the nation's Historically Black Colleges and Universities to open an accredited journalism school. Ferrier's accomplished digital background is the driving force behind efforts to make FAMU a leading educator of journalism students who master the basics of journalism, like writing, reporting and ethics (non-curation,) while pushing a robust competency in the latest digital brands and techniques (curation) needed to compete in the modern media landscape.

Ferrier's plan is meant to envelope the students, from freshman year to graduation, in an atmosphere that is balanced between the traditional basic skills of analog journalism and the state-of-the-art digital skills. It is widely agreed that automation will never command critical thinking, so Ferrier will be placing additional resources and energy towards developing critical thinking skills that, as she said will teach the student, "how to learn and will lead to better face-to-face reporting interactions and to community engagements that will lead to community action." These automation-proof skills will be taught in the first two-years with a greater emphasis than the attention placed on digital learning. Also, in the first two-years, writing programs will be taught across various digital platforms [19].

By the third and fourth years she expects her journalism students to have a stronger foundation in the basics of journalism that cannot be replaced by software or automation. In the last two-years various digital programs and suites will become part of deep-dives into digital instruction. Data journalism, AI, AR, VR and sophisticated info-graphics will be part of the core upper division curriculum. The core journalism subjects from years one and two will still be taught in years three and four, but to a lesser degree.

Ferrier said journalism schools have to better prepare students to play their role in furthering democracy. She said student journalists need to be able to move audiences to action. She thinks students are less culturally competent today and are not well equipped to command the various contexts and nuances needed for excellent reporting. Cultural competency is key to properly using the many digital tools that students learn and will have at their disposal as journalists [19].

Ferrier's plans for her journalism students would prepare them for the hyperlocal newsrooms, which are expected to dominate news coverage in the very near future. Reporters will have to be technologically sophisticated, but they must also be culturally competent and in touch with the pulse of communities. Northeastern's School of Journalism's Storybench online report is already researching and chronicling the efforts of one local broadcaster to create a team of reporters who can effectively tell stories while using the most sophisticated technology, including 5G wireless. Storybench News [20].

Storybench explains how a Bethlehem, Pennsylvania TV station is attempting to improve its local audience viewership by embedding 10 reporters in 10 counties in the Greater Lehigh Valley of the state. PBS39, WLTV, is a 50-year-old station that came up with the idea of the PBS39 Reporting Corps, which involves putting the reporters into places far from the station headquarters. They intend to cover more stories in-depth that typically receive no coverage or little coverage. PBS39 thinks that drilling deeper into important local stories, like school procedures on snow days, will help them engage with their audiences more. The reporters will be publishing on various social media platforms like YouTube as they gather information, according to Yoni Greenbaum the Chief Content Officer for PBS39. Greenbaum said, traffic, weather, crime and sports will not be the target of their coverage, instead they will focus on the "why" of many events occurring in the community Storybench [21].

Greenbaum said, that when his 10 reporters use a 5G wireless backbone they will be feeding video and audio content that has the quality of a national network. His newly minted reporters are focusing on newsgathering that will include their doing three-to-five news stories a day.

The 10 counties that PBS39' reporters will be working from include mostly Pennsylvania and a couple of New Jersey counties. Greenbaum said that such remote outpost will give the PBS39 news operation the sense of community coverage (hyperlocal) that once was experienced, for the most part by local newspapers.

The long-term plan calls for his reporters to use immersive technologies, like AR and VR to reach new audiences. Greenbaum notes that 40 percent of the school age children in PBS39's viewing area are not reading at their grade-level. Immersive reporting could be used to further engage younger audiences and inform them better. The station will be doing one Town Hall event each month. The goal of the grassroots reporting and future expansion is to focus on community-oriented results and increase community engagement in order to make a difference in the region, Greenbaum said. He said that, "We believe in the notion that we are providing the news and information that you need to be a better parent, neighbor and community leader." Greenbaum [22]. Greenbaum expects that the results of embedding reporters in communities will encourage other broadcasters to adopt his model.

Back to the Non-Digital Future

The basics of good journalism will always lie in the human mind. Filtering, analyzing, editing, verification, nuance and face-to-face newsgathering remain the core of journalism in a digital or automated world [23]. Artificial Intelligence for journalism will only be as competent and accurate as the journalists who create information for online news platforms, which in turn, may be assisted by AI and bots. Garbage in, garbage out. Or, genius in, genius out. If automation ever reaches a point where it can display creativity on its own, without the input of a person then at that point the basic roles of a journalist will be challenged.

The one non-curation skill that needs the most attention in the academy is the writing skill. Writing must be stressed more for all college and college-bound students, since nuanced and creative writing are the talents that a computer cannot command. The writing performances of American college students are woefully behind the skill levels needed for viable employment. About 45% of American college freshmen attend Community Colleges and

far too many of them are poor writers, according to the National Center on Education and the Economy [24].

Whenever broadcast TV news recruiters speak to this author about students they are interested in hiring, all of their questions are about non-curation skills that are out of reach of automation. "What is the student's news judgement like? Is the student aggressive in pursuing story ideas to report? Does the student have a sense of news ethics?" Usually, the first and most important question is, "How well do they write?" The answers to the above questions are the areas that journalism schools should place additional and reinforced classroom instruction [25].

Conclusion

What was once old, less flashy and based on analog techniques is now part of the very skill sets that must be accentuated in journalism schools, in order for future journalists to thrive in a digital world dominated by AI and 5G. Investment in technology is important, but the technology training could be, or likely will be compromised by a Moore's Law scenario. For instance, is it wise to place too much emphasis on teaching data driven journalism and deep-dive researching when one day soon automation will relegate such research to simple voice commands into a smartphone? Instead, the emphasis should be placed on teaching how journalists can manipulate and nuance data by using critical thinking, good writing skills, intuition and other non-curation skills. The reporter's uniqueness brings a style to news stories to which audiences can relate a human style.

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