



## Taking Artificial Intelligence into the Media Studies Classroom

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### Abstract:

As artificial intelligence (AI) alters social life, the journalists of the present and the journalists of the future — our students — must comprehend its potential and threat. How can journalism instructors, who often lack knowledge in computer science, equip students not just to report on the impending change of artificial intelligence, but also to help shape this transition for society and journalism? The described approach is not obvious. It entails incorporating AI into a potentially improbable venue: the introductory media and society course for freshmen. The aims are to determine how AI may be included into the journalism curriculum early on and the advantages and disadvantages of such education

### Introduction

This research examines the curricular design of a small Indian journalism school to teach Artificial Intelligence (AI) in a mass communication and society course for university freshmen. In certain times, our intentions may be readily clear.

AI is set to revolutionize several areas of endeavor and facets of human existence (JAIR, 2018; Delgado, 2018). According to a December 2018 Pew Research Center study of almost one thousand developers, business executives, academics, and activists, many foresee networked artificial intelligence rapidly transforming education, health care, transportation, agriculture, and other industries (Anderson, Rainie and Luchsinger, 2018). In addition, the study reveals widespread anxiety that AI would result in the loss of human control and agency, the misuse of data and monitoring, an increase in unemployment and economic disparity, cybercrime, and the potential for autonomous military weaponry to cause world war.

"Artificial Intelligence and the Future of Humans" is the title of a study by the Pew Research Center that journalists of today and the journalists of tomorrow — our students — must comprehend and be acquainted with.

However, there are further, discipline-specific justifications for incorporating AI into the journalism curriculum. AI is already fundamentally reshaping journalism, from the authoring of tiny pieces on sports, elections, and company profits to quick fact-checking and the analysis of vast data sets (Fillion, 2017; Hall, 2018; Marconi, 2018; Schmidt, 2018). The World Economic Forum has highlighted seven issues posed by AI to newsrooms, including AI's lack of self-awareness, inability to verify authenticity, and difficulty to comprehend unstructured data (Hall, 2018).

How can media and mass communication instructors, who often lack a background in computer science, not only train their students to report on the impending change of artificial intelligence, but also equip them to help shape this transition for society and journalism?

The described approach is not obvious. It entails incorporating AI into a perhaps improbable venue: the beginning, freshman-level media and society course, rather than an advanced or graduate course. In particular, this article describes the thought, theory, instruction, and early results of the class module dedicated to the first introduction of AI in journalism education.

The goals are to determine how AI may be introduced early in the journalism curriculum, the advantages and disadvantages of such training, and, more generally, the contributions that journalism educators could

make to AI itself. Evaluations, questionnaires, and interviews are used to assess students' initial comprehension and acceptance of the strategy.

### Introduction of AI

The standard beginning journalism and mass communication course is taught under a variety of names, including Mass Communication and Society, Media and Society, Introduction to Mass Communication, and others. The course typically gives students with an overview of the topic of mass communication, but also provides room and time for thought about the field's future direction. It is this aspect of the class that this study seeks to undermine. Our program emphasizes the future reflection to AI-related reporting and analysis.

The class, with its customary historical examination of media technologies, may offer a good transition into a discussion about artificial intelligence. The media evolution of the late 20th century, from television to cable to the Internet to digital and social media, leads naturally into a module on the development of artificial intelligence.

However, we must first convince students why the study of AI is vital to them. Students comprehend the function of television and digital and social media in their lives. However, they must be shown the expanding role of AI. We present examples not just from digital and social media platforms, such as Google, Facebook, Amazon, and Netflix, but also from other media platforms, such as voice assistants, Pandora, Spotify, and others.

Then, we contextualize AI historically. We begin with Socrates, Aristotle, and the rationality of ancient Greece. It is essential to position AI within the liberal arts since, at its core, AI is both a humanistic and a technical activity. It encourages study and knowledge. Also accepted are mathematical ideas, such as the Bayes theory of probability and Boolean logic. Alan Turing's work and the "Turing Test" are discussed, and the 1956 Dartmouth AI conference is also mentioned. The Dartmouth meeting, organized by Marvin Minsky, John McCarthy, Claude Shannon, and Nathan Rochester, is when the term AI was coined.

As journalists and humanists, we are allowed to criticise the ridiculousness and ramifications of the term "artificial intelligence." And we emphasize that the words are adaptable, interpretable, and open to criticism. Herbert Simon had a much different

understanding of artificial intelligence than Jeff Bezos has.

We continue our historical analysis of artificial intelligence and introduce students to a new intriguing term: AI "winter," a period in which the field fails to live up to the enthusiasm, optimism, and hype, and research funding is cut off, eventually to be replaced by more periods of innovation and optimism.

### What is Intelligence?

Following this introduction, we believe that students are now equipped to study AI. Today, in reference to our study of AI as an interpretative notion, we provide our own definition of AI: The word "intelligent" is often reserved for people; hence, "artificial" intelligence is human-made and mimicked, or an imitation. However, what is the intelligence being simulated? Again, we emphasize the humanistic nature of the AI endeavor. Intelligence is often defined as the capacity to acquire and use information and skills. However, pupils see instantly that machines can do this task. Possibly a better question is: what is human intelligence?

Memory, thought, learning, and awareness are the most common indicators of human intelligence for us. We seek these four conditions. Students quickly begin to draw parallels between humans and robots. For instance, they know quickly that computers are better to humans in terms of memory. Memory-wise, robots outperform humans in every measurable aspects, including capacity and recall speed.

However, thinking causes its own language difficulties. What does it mean to "think"? Computers receive data and information and, using algorithms typically, recommend the next logical move. Is this reasoning? Numerous instances of inaccurate responses offered by machine intelligence, such as the scouting of baseball players and misdirected drones, cloud the subject. We recognize the potentially high risks associated with thinking. A person made the choice to drop atomic weapons in the past. Would a computer have agreed? Students are left to consider whether or not robots can think.

Obviously, students have spent the most of their lives studying. Although many students have heard of machine learning and think that machines can learn, few comprehend its meaning and operation. We examine how deep learning and neural networks are far more sophisticated than machine learning only a few years ago. We recognize the urgency surrounding this development, as well as the fact that prominent

personalities such as Stephen Hawking and Elon Musk have expressed concern that AI is expanding too rapidly and poses a threat to humans. Here, we instill in our students the notion that professionals from a variety of professions, including philosophy, psychology, law, ethics, and media, may help shape and control AI to reduce its danger. AI specialists whose expertise is in software and hardware are often unprepared to understand the social, psychological, and cultural consequences of AI.

The fourth element is then considered: awareness. We propose that this specific aspect of human intelligence may ensure that machine intelligence will always be artificial intelligence. How would one educate a computer about love, faith, fear, and other qualities of consciousness that do not seem to be capable of being represented by an algorithm?

### Forms of Intelligence

After establishing a description of intelligence, we describe the three forms of artificial intelligence being studied by scientists.

Narrow intelligence is a natural place of departure. According to Peter Thiel and Mark Cuban, limited artificial intelligence will have an instant influence on society. As its name implies, narrow AI has well-defined objectives. There are two models developing from the main technology businesses. The Apple approach aims to simplify and streamline human-initiated interactions. For instance, it aims to provide a streamlined method for making restaurant reservations. The Google model, which is based on deep learning or deep mind, aims to do activities for people, such as calling and reserving a table at a restaurant.

General AI (or Super or Strong AI) refers to robots and androids capable of interacting with humans in a variety of domains. According to some experts, we are on the verge of such a breakthrough. We introduce students to the author, futurist, and inventor Ray Kurzweil, as well as his views on "singularity," the merging of human intellect and artificial intelligence, as well as biology and technology. In addition, we warn pupils that Hawking and Musk believe that this generation of AI might lead to the extinction of the human species.

Students are informed that there are alternative ways to think about intelligence. Computer scientists also comprehend AI in terms of its functions (Christopher, 2019), which are commonly categorized as Types I, II, III, and IV:

I. Reactive Machines: A basic kind of artificial intelligence with limited memory or historical data, whose purpose is to do a current job, such as the chess-playing IBM computer that defeated Garry Kasparov and voice assistants like Amazon's Alexa.

AI systems that rely on data and prior experiences to make judgments and take action. This is the AI found in autonomous vehicles.

III. Theory of Mind: Artificial intelligence whose purpose is to think and behave like humans. This sort of AI, which is still under research and seen by some as hypothetical, will display human emotions, thoughts, and social interaction.

Self-Aware AI: In this sort of artificial intelligence, which is still yet speculative, machines – robots – are self-aware and operate similarly to humans and in tandem with them.

The purpose of this part is to challenge students' understanding of the idea of intelligence behind artificial intelligence.

### How is artificial intelligence created?

The last segment of our introduction to AI, before examining AI's link to journalism specifically, will answer a question we've heard from several students: "How Do You Make AI?"

Artificial Intelligence?" The question's simplicity provides a means to make AI accessible and clear to folks with no training in computer science or programming.

We first refer students to introductory works on AI, such as Russell and Norvig's *Artificial Intelligence: A Modern Approach* (Russell and Norvig, 2009) and Stanford's "One Hundred Year Study on Artificial Intelligence" (AI100, 2014), as well as the work of Ray Kurzweil, dubbed "The Smartest (or Nuttiest) Futurist on Earth" by *Fortune* (O'Keefe, 2007). We recommend that students monitor the work of Google's Deep Mind, which seeks leadership in artificial intelligence.

Then, we try to humanize the AI process by bringing in a professor of computer science and his students. The fact that young people their age are "creating" artificial intelligence intrigues students quickly. We guide students through a few of the phases that may comprise an AI project. What issue is the project attempting to address or what goal is it attempting to complete, such as identifying a manipulated image? The computer scientist and students may then design



or choose a suitable algorithm and install it on a specialized processing device.

We devote effort to what we consider to be a vital stage: the "training corpus" or training data - the material that will be used to "teach" the processing system. The algorithm must be provided with data (such as doctored and un-doctored photographs) and run thousands of times in order to identify a valid result – the detection of a doctored photo. Students may understand that this stage is machine learning in its purest form. (We emphasize that bias and mistake may be introduced at this step.) Later in the module, we underline that this phase requires the engagement of critical observers such as journalists.)

Creating a Generative Adversarial Network (GAN) by pitting two networks against each other in order for them to "learn" from each other is a further step of the AI development process that is subject to criticism. For instance, one network is built to generate "fakes" in order to test another network and teach it to identify fakes. Both networks improve as a result of the process, with better forgeries resulting in more accurate identification. Currently, machines are in fact learning. Students comprehend that it is crucial for these initial phases to be led by relevant and evaluated facts.

### **AI-driven journalism**

After this admittedly brief introduction to artificial intelligence, we will discuss how AI is starting to revolutionize journalism. New advancements appear to arrive weekly: "Artificial intelligence and machine learning are already altering news operations in ways inconceivable even few months ago, most of it transformational and positive" (Flink, 2019). (Flink, 2019). We present students with a sample to consider:

Students' curiosity (and apprehension) is piqued by the fact that AI is being used to compose short tales ranging from sports to business. We browse some example stories: "Did a Robot Write This?" from Forbes (2019) and "The Rise of the Robot Reporter," from The New York Times (2019). (2019). The articles describe how artificial intelligence is used to write hundreds of company earnings reports for Bloomberg, articles on minor league baseball for the Associated Press, articles on high school football and the Olympics for The Washington Post, and reports on earthquakes for The Los Angeles Times. The news media assert that AI does not pose a danger to human workers. Instead, the

The objective is to enable journalists to devote more time to substantial work" (The New York Times, 2019). Students analyze the argument at length.

Creating personalized narratives. Jeremy Gilbert, director of strategic projects at The Washington Post, sees much more promise in the paper's AI program, Heliograf. According to Gilbert, AI will develop and offer tales to individual readers based on their own preferences. "Can we make a tale more personally meaningful to a user, to the reader, spectator or listener?" he wonders. "If we are able to do so, people will develop trust. Not simply that the information is credible, but the information is believable AND it matters to ME" (Flink, 2019). (Flink, 2019). Gilbert states elsewhere, "Automated storytelling has the potential to revolutionize the Post's coverage. More content backed by data and machine learning will result in a far more personalized and tailored news experience (WPost PR, 2019). In a similar vein, The New York Times utilizes AI to tailor newsletters for subscribers.

Analyzing Data. This AI application is not unexpected. Machines can evaluate vast volumes of data with greater speed and accuracy than any human intellect. The Washington Post states, "This technology will also be able to process a combination of different data sources, such as crime and real estate statistics, customize stories based on the actions of individual users, and help journalists look for anomalies in data to alert them to potential stories" (WPost PR, 2019).

This application of AI is seen by some as a clear cooperation between people and robots. Hilary Mason, general manager for machine learning at Cloudera, a data management software business, says, "I hope that AI technologies will become a productivity aid in the practice of reporting and identifying evidence." AI enables the identification of abnormalities and trends during data processing. And a human journalist is the ideal one to comprehend and determine" (2019, The New York Times) Nick Monaco, a disinformation analyst at Graphika who uses AI to identify "deep fakes" on social media, asserts that AI may help journalists produce more accurate reports. "This is a difficulty that journalists have faced from the beginning of their profession," Monaco explains. "There has always been more information than (journalists) can process. You merely need to know how to ask the correct questions of the data and the records in order to uncover the relevant narrative (Flink, 2019).

### Advertising Placement

Journalism is still reliant on advertising, and AI may be used to improve the effectiveness of advertising by directing marketers to readers based on their prior behavior. AI has enabled Conde Nast magazines to better arrange ad spending based on a thorough knowledge of its consumers, according to the director of content operations at WIRED, Jahna Berry. She states, "It's a great approach to examine the signals inside the data." It enables us to use machine learning technologies and, with any luck, establish a closer connection with our readers. (Flink, 2019)

**Comment moderation and Frequently Asked Questions:** An early use of artificial intelligence was to relieve newsroom staffs of the responsibility of continuously monitoring and moderating comment sections. Even while these areas are seen as a tool for client participation, they may sometimes feature sexist, racist, or vulgar remarks. Artificial intelligence, such as Modbot at The Washington Post, was programmed to identify and flag objectionable language before forwarding it to a human or removing it. Numerous news organizations and others have utilized AI to answer basic queries over the phone or online.

**Identification and archiving of images** The power of artificial intelligence to recognize and find photographs is evident in the Photos apps of Google, Apple, and others, which use face and image recognition. As it digitizes its archives, The New York Times uses comparable algorithms to identify photographs, people, places, and other identifiers (The New York Times, 2019). Similarly, broadcast corporations use AI to arrange their videotape archives (Media Distillery, 2019).

**Improving Accessibility of Content:** Some media organizations use AI's voice recognition skills to automate the labor-intensive process of adding captions, subtitles, and other accessibility elements to video files. In the future, AI may potentially provide film and video translations.

This part is intended to conclude on a pleasant note. AI does not seem to be displacing journalists at this time, but it is liberating them from monotonous work and enabling them to do more and achieve more. Marc Fischer, CEO and co-founder of Dogtown Media, asserts that if journalists make AI work for them, they will be able to work better, quicker, and more effectively. It will free up more time for knowledge workers to engage in creative problem-solving and do what they do best (Flink, 2019).

### Journalists Reporting and Shaping AI

Our last portion asks students to consider how journalists, particularly those with no training or competence in math or programming, may report about AI and potentially influence its development. Students are encouraged to appreciate the importance of the first sections: A journalist's first approach to an AI project is to comprehend its early phases. Concerns might be raised about the project's underlying concept and the issue it solves. In "A Journalist's Guide to Demystify A.I.: Better to Light a Candle Than Curse the Algorithm," computer scientist Alan Kotok (2019) discusses how journalists can determine what is included in machine learning algorithms. By inquiring about the issue the algorithm is intended to tackle, the method utilized to create the algorithm, and its track record in practice. Upon reflection, journalists often pose the same questions to politicians, corporate leaders, celebrities, and sports figures. We must now ask the same questions of those who design AI systems."

Students are then returned to the important phase of "training" the algorithm. Journalists may inquire, "What data were used?" What potential biases may the data contain? How exactly did the algorithm "learn" the data? Kotok notes that this following stage will bring the majority of journalists into uncharted territory: the quality and dependability of the algorithm. But is this really so different from journalists asking scientists to explain black holes or historians to explain ancient rites? Journalists have always been responsible for explaining and assessing difficult concepts.

Kotok proposes inquiring, "Was the algorithm independently examined, or are the code and datasets used to train the algorithm accessible to independent reviewers?" On verify the first results, was the algorithm applied to data sets other from those used for training? How has the algorithm performed with actual data?" (Kotok, 2019).

Steve Rosenbush, the enterprise technology editor for the Wall Street Journal, adds, "We can ask the same questions of an algorithm as we would in a more normal reporting setting. Hold the algorithm accountable...we may discuss what the technology will accomplish or what it will bring, but the question is, "Did it work?" (Flink, 2019).

And if journalists are comfortable with understanding and reporting on AI, we recommend to our students that they may become valuable AI industry partners,



bringing the inquisitive character of their profession to the development of AI. Journalists may assist computer scientists in the work of scrutinizing their training data and algorithms. Journalists are adept at asking the proper questions and seeking information via inquiry; hence, they should be encouraged to collaborate with AI developers.

It is not unusual for academics from four diverse schools — Arts and Sciences, Business, Education, and Engineering — to collaborate on projects at our university, which has a rich tradition of interdisciplinary research. We request that our Engineering colleagues communicate with students and demonstrate opportunities for them to participate. Assistant professor of computer science and engineering Eric Baumer has recently won funding from the National Science Foundation (NSF) to create participatory approaches for human-centered design of algorithmic systems. Baumer has strong links to Lehigh's Journalism department.

Baumer said, "I want technology to be more empathetic." "And for this to occur, a more varied group of individuals must be involved into the design of algorithmically-based interactive systems — non-technologists must be incorporated throughout the design process" (Resolve, 2019).

### **Student Reaction: Preliminary Results**

After introducing AI in this manner for three semesters in our beginning mass communication course, we surveyed and interviewed students after each semester. 95 percent agree or strongly agree that knowing about AI has been beneficial; 95 percent say that journalists should learn about AI; and 85 percent agree or strongly agree that they will seek to learn more about AI throughout their college years.

For us, true outcomes will be studying the work and interests of these kids, the majority of whom are in their second year of college, while they are still in school and after they graduate. We expect that some students would explore AI-related projects and, following graduation, either pursue AI-related reporting or graduate work that will enable them to continue their education.

### **Conclusion**

Important ethical standards for AI may have been proposed in a 1942 paper by Isaac Asimov. In his science fiction novel "Robots," he adheres to three laws:

A robot may not damage a person or enable a human to be injured by inactivity.

The second rule: A robot must accept the commands provided to it by humans, unless such commands contradict the first law.

A robot must safeguard its own existence so long as doing so does not clash with the first or second laws.

Our goal is to teach students to report on the impending change of artificial intelligence and to provide them with the tools necessary to influence this transition for society and media. The objectives are consistent with international efforts to ensure that AI systems are ethical, responsible, explicable, and impartial.

In its "AI Ethics Rules Global Inventory," for instance, the German NGO AlgorithmWatch seeks to document AI guidelines globally. Its purpose is to "review and shed light on algorithmic decision making processes that have social significance, in the sense that they are used to forecast or prescribe human behavior or to make choices automatically."

In this field, the European Union has been a leader. Early in 2019, the EU issued new "ethical AI" development criteria (Vincent, 2019). Three of these principles fit closely with our class's trajectory:

Human autonomy and supervision. Humans should have the ability to supervise and interfere in any decision made by software. Such human agency should be taken from a variety of industries and specialties, including journalism.

Transparency. The algorithms and data used to train them should be open to scrutiny, and the software's choices should be comprehensible and available to humans.

Accountability. AI systems might be compared to accounting systems, which should be auditable, and these systems should be protected by current whistleblower protections.

However, we ask students who will be accountable for algorithms and their developers. The same group that holds other powerful individuals and organizations accountable: journalists.

We consider it our duty as educators to train future journalists for this function. Journalism education must continue to prepare students to examine, challenge, and shape AI, and journalism students must feel empowered to question and influence the development and application of AI tools for news organizations and society.

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