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## **The Future of Artificial Intelligence: Mankind Quest for Replicating Human Intelligence**

*Rosario F. Welle*<sup>18</sup>

### **Introduction**

### **Artificial Intelligence**

Artificial intelligence (AI) is defined as “the scientific study and engineering of intelligent machines” (Luxton, 2013). This technology allows devices and tools to behave in a human-like intelligent manner to “emulate reasoning and language processing” (2013). According to a Report to ARPA on Twenty-First Century Intelligent (n.d.), AI has emerged to answer researchers’ argument that computer systems are “rigid, complex, and incapable of rapid change”. By becoming “intelligent”, these systems can adapt to the fast-evolving technology and meet technological needs of major national areas in communication, military, healthcare, and education. As a result, in the past two decades, we have witnessed major advancements in the emerging and development of smart devices such as the smartphone. In fact, the Report to ARPA indicates that researchers already predicted a future in which people would have a single device integrated with telephone, Internet, television capabilities, news, and, electronic mail.

That future is today. Artificial Intelligence is making strides in finding innovative ways for machines and humans to interact with one another more efficiently and naturally. The technology affords researchers the techniques to figure out human intelligence and the means to integrate it into systems and devices.

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## **A 10-year Projection of AI in Healthcare, Education, Military, and Communication Advancements**

In the area of intelligence simulation, AI sees to develop technologies that “support the construction of programs that model complex situations, involving both complicated devices and significant numbers of intelligent simulated people” (Report to ARPA, [n.d.]). Such programs are currently emerging in the area of mental health with one particular application for training military personnel. As an article in the daily blog “Armed with Science” for the Department of Defense illustrates, researchers at University of Southern California (USC)’s Institute for Creative Technologies “are currently developing virtual mental health patients that converse with human trainees” (Luxton, 2013). This software concept simulates veterans with mental issues like depression and suicidal thoughts. Military clinicians can use these “virtual veterans” to “detect the risk of suicide” (2013). The application could be developed into a “humanoid” or virtual reality simulation—a “Super Clinician”. Thus, we should expect to see this technology taking off in the next ten years and truly revolutionize the healthcare, education, and military fields.

In the next decade, another area of AI development that will continue to thrive is content-based information retrieval, including improved visual and multimedia search capabilities. For example, the “Super Clinician” technology will be designed to integrate natural language processing, facial recognitions, and sensors to perceive odors, emotional, and temperature changes in patients (Luxton, 2013). The Super Clinician technology has been used by IBM in the memorization of all medical literature available, suggesting that it can be further developed into a “Super Librarian” integrated with all literature available by field and topic. Because these artificial intelligent systems can be designed into “virtual reality simulation” or “humanoid robot,” the healthcare industry can use AI to create other types of virtual patients with conditions such as hearing and vision impairment to develop a variety of training programs for their staff.

One intelligent system, and one of the oldest AI fields of research that incorporate human-like capabilities, is Machine Translation (MT). Machine Translation, defined by the Stanford Natural Language Processing Group as “the task of automatically converting one natural language into another, preserving the meaning of the input text, and producing fluent text in the output language”, is fast developing and being utilized broadly across industries, including communication, healthcare, and the military. In the field of written and verbal communication, organizations use the technology for aiding staff, including translators and interpreters, in rendering information with highly technical terminology in many languages. A popular use of machine translation software is to provide instant translation of online content. Moreover, a recent article by Karen D. Schwartz, “How Mobile Technology is Driving Language Translation”, explains how the State Department is using language translation in mobile technology for users around the world. For instance, the Department of Defense advocates for a mobile technology known as MATS (Medical Application of Speech Translation). The technology has been used in providing instant language translation for professionals in the medical field, helping them communicate and bridge cultural gaps with non-English speaking patients. The State Department is considering this technology as a solution since other Machine Translation applications have not been efficient or secure enough.

### **Pros and Cons of Artificial Intelligence**

As stated, one of the main purposes of AI is to develop and integrate human-like intelligence and behavior in the systems humans use to perform their jobs and fit their lifestyles. However, human translators are often hired to analyze the machine translation output, which 99% of the times reveals incoherence and syntactical errors. While Schwartz’s article may suggest that human translators will become legacy technology, artificial intelligence continues to face the challenge of replicating nuances and expressions only humans can discern and interpret contextually. A healthcare institution for instance would not want to run the risk of providing inaccurate information to patients and their families. While intelligent machines are a great aid to organizations, people, and translators for maximizing productivity, they

are not equipped with the human element of contextual and emotional discernment to guarantee accuracy. In addition, in the early 90s, as today, AI researchers faced the challenge of replicating accurately human capabilities of perceptual information in the areas of vision, language, touch, and gestures. These AI components in future creations of super humanoids and super intelligent machines will need further research and development. Thus, we should continue to see more research and advancement in these areas in the next ten years.

### **The Ethical Factor**

When it comes to technologies not yet fully developed or implemented people often question the good and evil of inventions. Nancy K. Baym suggests in her book *Personal Connections in the Digital Age* that People have the tendency “to think about new technologies deterministically, asking what they do to us, and whether that is good or bad” (Baym, 2010, p.152). People question intelligent systems and whether or not the technology and application driving them follow ethical principles. It is projected that in the next decades, AI researchers will discover and develop the artificial super-system capable of creating new technologies and commanding power. This super-intelligent machine would also have the potential of causing great destruction (Electronics News, 2013). Undoubtedly, ethics should be at the front of any technology that could be used for good and evil. Whether or not the creators of AI are ethical enough will reflect in how nations and governments define, enforce, and adhere to such ethics.

Baym’s remarks about cyberspace that “machines do have effects” remind us about this unescapable truth (2010, p.152). Despite concerns and fears that artificial intelligence poses a future threat to mankind’s livelihood, we are also reminded that people “are influential in determining what technology is and will become” (p.151). Artificial Intelligence will be developed to aid us and provide us with the technology, tools, and venues for improving the quality our lives. Research in intelligence systems will allow the exploration of new horizons and the stretching of curiosity and human potential, far outweighing the evil.

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