ISSN 2278-9723
DOI:10.31838/ijccts/06.01.04

Research Article

The Current State of Artificial Intelligence (AI) and Implications for Computer Technologies

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Received: 25.10.17, Revised: 27.11.17, Accepted: 15.01.18

ABSTRACT
Overall, CiteSeerX has been accessed about two million times per day. This outcome implies that about 10 articles are accessed in every second. Document-specific analyses suggest further that about 50,000 to 100,000 PDFs are analyzed per day. Some of the AI components that CiteSeerX utilizes include search indexing, author name disambiguation, metadata extraction, duplicate detection, and document classification. Hence, the effective protection of systems from cyber attacks requires active and passive methods; including the case of state-managed facilities.
Keywords: CiteSeerX disambiguation, metadata extraction, duplicate detection.

INTRODUCTION

For computer security experts, it has been documented that the manner in which the mainstream media picks up stories gets the majority by surprise. In relation to cyber intelligence, Chad (2011) documented that some of the common issues that these experts face include worms, vulnerability, and data breaches. Indeed, Stuxnet forms one of the renowned controversies that the computer experts are likely to highlight into the far future. In the majority of the literature, it has been inferred that Stuxnet worm was spearheaded by Israel and the U.S. As avowed by David, Paul and Christina (2010), the chief motivation was to attack Iran's nuclear power plant, Bushehr. Additional documentation suggests that the failure of early detection and reporting was informed by the affirmation that Stuxnet combines country expertise, spy agencies, nuclear power plant, and computer attacks. Overall, the events surrounding Stuxnet demonstrates that computer security remains delicate and that the need to remain active in intelligence monitoring and detection or early warnings or warning signs cannot be overemphasized.

METHODOLOGY

The study sought to determine the recent trends in artificial intelligence (AI). Particularly, it was noted that AI gains application in customer, government, and industrial purposes. It was also noted that the breadth of AI has expanded. Therefore, the central aim was to examine the specific changes that have occurred in three decades of the computing world.

Another objective of the study was to predict the future of AI, based on the changes that the computing world had witnessed in the preceding three decades; with the implications poised to be beneficial to application builders. Based on the aim and objective of the study, some of the research questions that arose include:

- What AI trends account for the recent industrial and consumer consciousness?
- What computing changes characterize the past three decades?
- What is the implication for future application builders?

Regarding the previous and current AI applications, a dramatic increase in scientific achievements was noted. These achievements were also observed to provide room for solving new problems. Hence, it could be inferred that the authors also strived to determine the real problems and exchange information on milestones that characterize the recent past operations in the computer world. In the 1980s, the study affirmed that expert systems were successful, and this success was associated with the ability to incorporate task- and domain-specific knowledge.

Similarly, expert systems were successful in the 1980s due to relatively simple reasoning engines that were used, as well as the ease with which the systems were deployed on computer hardware

(Smith and Eckroth, 2017). Today, AI applications have gained application in specific contexts. For example, robots have gained widespread use in service and industrial applications such as framing and factory automation.

Therefore, it is evident that the use of robots as AI applications is growing. Similar to robots, neural networks have been embraced. Their use is evident in contexts such as text-processing, speech, and vision systems. However, it is imperative to highlight that by 1989, AI companies were very few. Also, the current computer world has witnessed a significant increase in the AI firms. These firms range from mature enterprises to early stage startups. This study employed a content analysis technique, gaining insights from previous data outcomes concerning the subject under investigation.

RESULTS AND DISCUSSION

The early phases of the 30-year period on focus witnessed the reception of AI applications with suspicion, with most of the target groups perceiving them as the latest hype. However, the current world has witnessed an increase in AI technology implementation. Some of the areas exhibiting this trend include scheduling and planning, fraud detection and recruiting, and customer support and market forecasting.

Consumer-oriented applications have also embraced AI technologies. Examples include automatic check deposits involved in mobile banking, automatic photo tagging on Facebook, Amazon's Echo, and Microsoft's Bing and Cortana. Others include Apple's Siri and Google Now, self-driving cars, Google's search engine, and Netflix's movie recommendations.

The three decades on focused were also documented to have experienced high-impact AI applications. For example, Process Diagnosis System (PDS) emerged in 1983 and aimed at achieving rule-based monitoring. Also, PDS targeted generators, steam turbines, and gas turbines. Another application was the Authorizer's Assistant, which emerged in 1989. its role entailed the analysis of standard credit card transactions.

AI application was also witnessed in 1989 in the form of Space Shuttle Mission Control, which was real-time and rule-based. Notably, its role was to monitor space shuttle telemetry data and advise flight controls on potential faults; as well as necessary diagnosis. In the years 1989 and 1999, the Ford motor company established the Direct Labor Management System, an AI application responsible for generating work instructions directly. Indeed, the application targeted vehicle assembly. It also provided accurate estimations of indirect versus direct labor time and supported planning for line balancing and mix/volume changes.

Additional AI applications that have been developed include NASD Regulation Advanced-Detection System (ADS) in 1999 and FinCEN Artificial Intelligence System in 1995. The role of these systems concerned the analysis of large transaction reports to detect possible money laundering. Notably, FinCEN Artificial Intelligence System relied on link diagrams while NASD Regulation ADS relied on temporal sequences.

Additional AI applications emerging in the 30-year period include Expressive Commerce in 2006, the plastic color formulation tool in 1994 and 2004, and engineering works scheduling for Hong Kong's rail network (in 2005 and 2014). From the documentation, two major lessons arise. One of the lessons is that task and domain-specific knowledge is likely to yield high performance and accurate reasoning. Another lesson is that when appropriate representation is achieved, benefits include maintainability, flexibility, efficiency, and adequacy. The following figures demonstrate the secondary data outcomes that were obtained concerning the current trends and state of AI, as well as the implications it poses for the field of computer technologies.

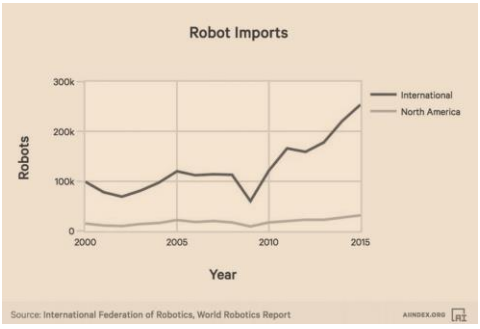

Fig:1

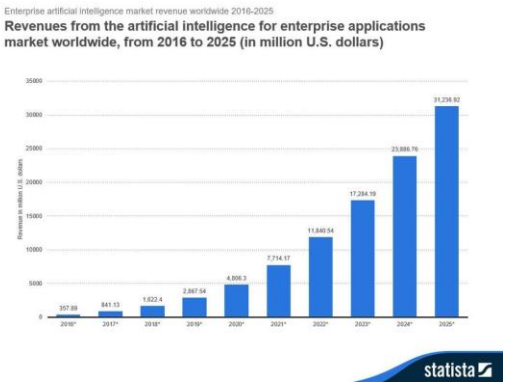

Fig:2

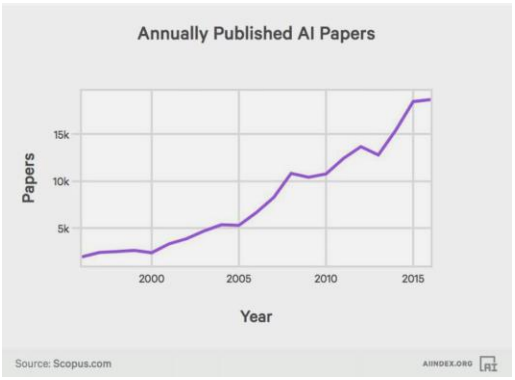

Fig:3

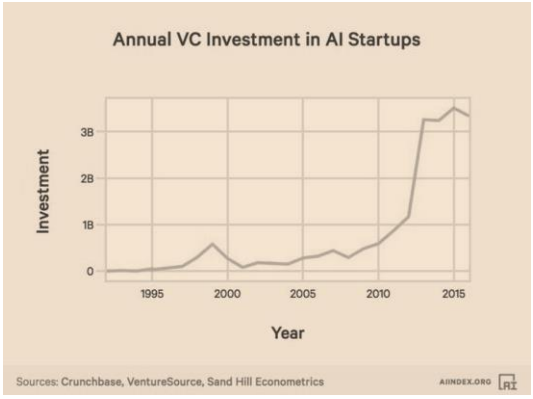

Fig:4

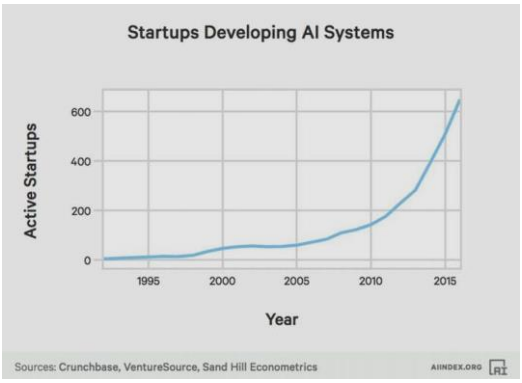

Fig:5

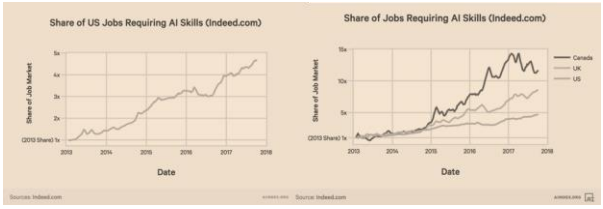

Fig:6

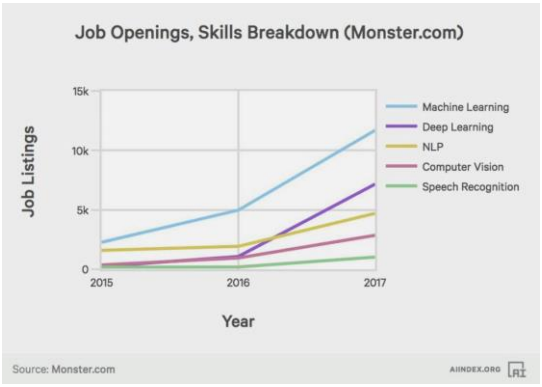

Fig:7

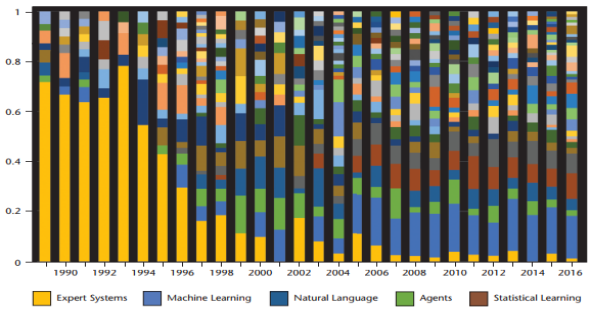

Fig:8

From the findings above, the future of AI application holds that success might be achieved by focusing on the customer and the business case and minimizing changes to the existing work flows. Also, it is evident that AI application expansion and diversification will constitute dominant trends in the computer landscape; with human knowledge guiding the apps. The eventuality is that AI applications that will be responsive to the changing user needs and industry demands will determine the degree of success of AI applications and their implementation.

One of the current AIs is Expressive Commerce. In addition, the associated application of Expressive Commerce to sourcing complements the current AI and it emerges as a renowned return on investment figure. Initially, the application was referred to as CombineNet or SciQuest. The main role is to improve procurement decisions by targeting spend categories. Thus, this AI deviates from the traditional eSourcing software.

Despite the promising nature, Expressive Commerce is disadvantageous due to its associated sophisticated tree search algorithms. This outcome makes it difficult to handle combinatorial explosions of possible allocations. An additional AI that characterizes the current world of technology involves CiteSeerX. Emerging as a search engine and database, the AI has been linked to more than four million articles, with the articles coming from various disciplines.

The role of CiteSeerX lies in the extraction and indexing of citations from certain documents. With the process achieved automatically, the AI has gained application in the extraction of metadata from individual paragraphs and sentences, as well as figures and tables. The implication is that CiteSeerX is beneficial to researchers who work on advanced information-retrieval algorithms. Particularly, it ensures that the original metadata and documents are available to researchers.

CONCLUSION

Despite the promising nature of the combined approach, the case of Stuxnet and its associated effects indicates that it is not guaranteed that total security will be achieved because new tricks continue to evolve daily. A specific example is the case in which Microsoft revoked Stuxnet's license but the next day witnessed the emergence of Stuxnet's different variant. The implication for the cybersecurity teams (whose role is to achieve system protection) is that to assure future preparedness, there is a need for active involvement in training and research to remain at par or keep abreast with the merging cyber situations.

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