Proceedings of International Conference on Advances in Computer Technology and Management (ICACTM)
In Association with Novateur Publications IJRPET-ISSN No: 2454-7875
ISBN No. 978-81-921768-9- 5
February, 23rd and 24th, 2018

A LOOK INTO THE ARTIFICAL INTELLIGENCE AND ITS APPLICATIONS IN VARIOUS FIELDS OF LIFE

PROF. DEEPAK SINGH,
Assistant professor at Suryadatta College of Management Information Research and Technology.
This institution is 18 year old institution in different streams of computer science, Computer application and Commerce at Pune, Maharashtra.Email- deevin27717@gmail.com & deepak.singh@suryadatta.edu.in

PROF. ANKIT JAIN,
Assistant professor at Suryadatta College of Management Information Research and Technology.
Over 9 years of teaching and industrial experience. Have worked in some of the premium institutes of India and hands on experience in national and international projects. Email- a12345.ankit@gmail.com & ankit.jain@suryadatta.edu.in Phone- 9408869315

ABSTRACT:
Artificial intelligence, defined as intelligence exhibited by machines, has many applications in today's society. More specifically, it is Weak AI, the form of AI where programs are developed to perform specific tasks, that is being utilized for a wide range of activities including medical diagnosis, electronic trading, robot control, and remote sensing. AI has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, and more.
The scope of AI is disputed: as machines become increasingly capable, tasks considered as requiring "intelligence" are often removed from the definition, a phenomenon known as the AI effect, leading to the quip "AI is whatever hasn't been done yet."[3] For instance, optical character recognition is frequently excluded from "artificial intelligence", having become a routine technology.[4] Capabilities generally classified as AI as of 2017 include successfully understanding human speech,[5] competing at a high level in strategic game systems (such as chess and Go[6]), autonomous cars, intelligent routing in content delivery networks, military simulations, and interpreting complex data, including images and videos.

Introduction:
Artificial intelligence (AI, also machine intelligence, MI) is intelligence displayed by machines, in contrast with the natural intelligence (NI) displayed by humans and other animals. In computer science AI research is defined as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal.[1] Colloquially, the term "artificial intelligence" is applied when a machine mimics "cognitive" functions that humans associate with other human minds, such as "learning" and "problem solving".[2] See glossary of artificial intelligence.

The scope of AI is disputed: as machines become increasingly capable, tasks considered as requiring "intelligence" are often removed from the definition, a phenomenon known as the AI effect, leading to the quip "AI is whatever hasn't been done yet."[3] For instance, optical character recognition is frequently excluded from "artificial intelligence", having become a routine technology.[4] Capabilities generally classified as AI as of 2017 include successfully understanding human speech,[5] competing at a high level in strategic game systems (such as chess and Go[6]), autonomous cars, intelligent routing in content delivery networks, military simulations, and interpreting complex data, including images and videos.
Artificial intelligence was founded as an academic discipline in 1956, and in the years since has experienced several waves of optimism,[7][8]followed by disappointment and the loss of funding (known as an "AI winter"),[9][10] followed by new approaches, success and renewed funding.[citation needed] For most of its history, AI research has been divided into subfields that often fail to communicate with each other.[11]
The traditional problems (or goals) of AI research include reasoning, knowledge, planning, learning, natura l language processing, perception and the ability to move and manipulate objects.[12] General intelligence is among the field's long-term goals.[13] Approaches include statistical methods, computational intelligence, and traditional symbolic AI. Many tools are used in AI, including versions of search and mathematical optimization, neural networks and methods based on statistics, probability and economics. The AI field draws upon computer
science, mathematics, psychology, linguistics, philosophy , neuroscience, artificial psychology and many others.
The field was founded on the claim that human intelligence "can be so precisely described that a machine can be made to simulate it".[14] This raises philosophical arguments about the nature of the mind and the ethics of creating artificial beings endowed with human-like intelligence, issues which have been explored
by myth, fiction and philosophy since antiquity.[15] Som e people also consider AI a danger to humanity if it progresses unabatedly.[16]
In the twenty-first century, AI techniques have experienced a resurgence following concurrent advances

in computer power, large amounts of data, and theoretical understanding; and AI techniques have become an essential part of the technology industry, helping to solve many challenging problems in computer science.[17]

HOW IMPORTANT IS AI?

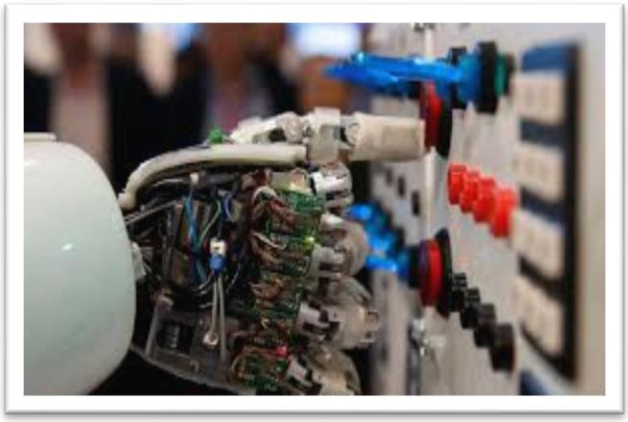
Several U.S. academic institutions are employing AI to tackle some of the world's greatest economic and social challenges. For example, the University of Southern California launched the Center for Artificial Intelligence in Society, with the goal of using AI to address socially relevant problems such as homelessness. At Stanford, researchers are using AI to analyze satellite images to identify which areas have the highest poverty levels.[1]

The above study of artificial intelligence and its importance mentioned in the perious section,hence clarifies its use in the daily life of common man and its environment in the sectors of finace, health, defence, eductioan etc.

The following sections deals with the application of the Artifical intelligence

Aviation

The Air Operations Division (AOD) uses AI for the rule based expert systems. The AOD has use for artificial intelligence for surrogate operators for combat and training simulators, mission management aids, support systems for tactical decision making, and post processing of the simulator data into symbolic summaries.[2]



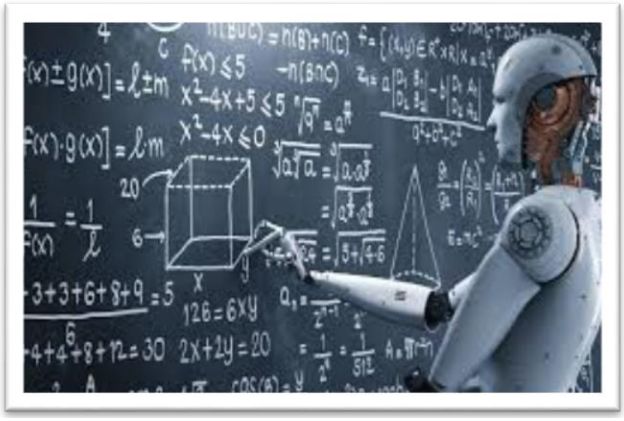
The use of artificial intelligence in simulators is proving to be very useful for the AOD. Airplane simulators are using artificial intelligence in order to process the data taken from simulated flights. Other than simulated flying, there is also simulated aircraft warfare. The computers are able to come up with the best success scenarios in these situations. The computers can also create strategies based on the placement, size, speed and strength of the forces and counter forces. Pilots may be given assistance in the air during combat by computers. The artificial intelligent programs can sort the information and provide the pilot with the best possible maneuvers, not to mention getting rid of certain maneuvers that would be impossible for a human being to perform. Multiple aircraft are needed to get good approximations for some calculations so computer simulated pilots are used to gather data.[3] These computer simulated pilots are also used to train future air traffic controllers.

COMPUTER SCIENCE

AI researchers have created many tools to solve the most difficult problems in computer science. Many of their inventions have been adopted by mainstream computer science and are no longer considered a part of AI. (See AI effect). According to Russell & Norvig (2003, p. 15), all of the following were originally developed in AI laboratories: time sharing, interactive interpreters, graphical user interfaces and the computer mouse, rapid development environments, the linked list data structure, automatic storage management, symbolic programming, functional programming, dynamic programming and object-oriented programming.

EDUCATION

There are a number of companies that create robots to teach subjects to children ranging from biology to computer science, though such tools have not become widespread yet. There have also been a rise of intelligent tutoring systems, or ITS, in higher education. For example, an ITS called SHERLOCK teaches Air Force technicians to diagnose electrical systems problems in aircraft. Another example is DARPA, Defense Advanced Research Projects Agency, which used AI to develop a digital tutor to train its Navy recruits in technical skills in a shorter amount of time.[1]Universities have been slow in adopting AI technologies due to either a lack of funding or skepticism of the effectiveness of these tools, but in the coming years more classrooms will be utilizing technologies such as ITS to complement teachers.



Advancements in natural language processing, combined with machine learning, have also enabled automatic grading of assignments as well as a data-driven understanding of individual students' learning needs. This led to an explosion in popularity of MOOCs, or Massive Open Online Courses, which allows students from around the world to take classes online. Data sets collected from these large scale online learning systems have also enabled learning analytics, which will be used to improve the quality of learning at scale. Examples of how learning analytics can be used to improve the quality of learning include predicting which students are at risk of failure and analyzing student engagement.[8]

FINANCE

Market Analysis and Data Mining

Several large financial institutions have invested in AI engines to assist with their investment practices. BlackRock's AI engine, Aladdin, is used both within the company and to clients to help with investment decisions. Its wide range of functionalities includes the use of natural language processing to read text such as news, broker reports, and social media feeds. It then gauges the sentiment on the companies mentioned and assigns a score. Banks such as UBS and Deutsche Bank use an AI engine called Sqreem (Sequential Quantum Reduction and Extraction Model) which can mine data to develop consumer profiles and match them with the wealth management products they'd most likely want.[10] Goldman Sachs uses Kensho, a market analytics platform that combines statistical computing with big data and natural language processing. Its machine learning systems mine through hoards of data on the web and assess correlations between world events and their impact on asset prices.[11] Information Extraction, part of artificial intelligence, is used to extract information from live news feed and to assist with investment decisions.[12]

Personal Finance

Several products are emerging that utilize AI to assist people with their personal finances. For example, Digit is an app powered by artificial intelligence that automatically helps consumers optimize their spending and savings based on their own personal habits and goals. The app can analyze factors such as monthly income, current balance, and spending habits, then make its own decisions and transfer money to the savings account.[13] Wallet.AI, an upcoming startup in San Francisco, builds agents that analyze data that a consumer would leave behind, from Smartphone check-ins to tweets, to inform the consumer about their spending behavior.[14]

Portfolio Management

Robo-advisors are becoming more widely used in the investment management industry. Robo-advisors provide financial advice and portfolio management with minimal human intervention. This class of financial advisers work based on algorithms built to automatically develop a financial portfolio according to the investment goals and risk tolerance of the clients. It can adjust to real-time changes in the market and accordingly calibrate the portfolio.[15]

HEAVY INDUSTRY

Robots have become common in many industries and are often given jobs that are considered dangerous to humans. Robots have proven effective in jobs that are very repetitive which may lead to mistakes or accidents due to a lapse in concentration and other jobs which humans may find degrading.

In 2014, China, Japan, the United States, the Republic of Korea and Germany together amounted to 70% of the total sales volume of robots. In the automotive industry, a sector with particularly high degree of automation, Japan had the highest density of industrial robots in the world: 1,414 per 10,000 employees.[18]

HOSPITALS AND MEDICINE

- Computer-aided interpretation of medical images. Such systems help scan digital images, *e.g.* from computed tomography, for typical appearances and to highlight conspicuous sections, such as possible diseases. A typical application is the detection of a tumor.
- Heart sound analysis[19]
- Watson project is another use of AI in this field, a Q/A program that suggest for doctor's of cancer patients.
- Companion robots for the care of the elderly[20]

- Mining medical records to provide more useful information
- Design treatment plans
- Assist in repetitive jobs including medication management
- Provide consultations
- Drug creation[21]
- Using avatars in place of patients for clinical training[22]

HUMAN RESOURCES & RECRUITING

Another application of AI is in the human resources and recruiting space. There are three ways AI is being used by human resources and recruiting professionals. AI is used to screen resumes and rank candidates according to their level of qualification. Ai is also used to predict candidate success in given roles through job matching

platforms. And now, AI is rolling out recruiting chat bots that can automate repetitive communication tasks.

Typically, resume screening involves a recruiter or other HR professional scanning through a database of resumes. Now startups like Pomato, are creating machine learning algorithms to automate resume screening processes. Pomato's resume screening AI focuses on automating validating technical applicants for technical staffing firms. Pomato' s AI performs over 200,000 computations on each resume in seconds then designs a custom technical interview based on the mined skills.

Music

While the evolution of music has always been affected by technology, artificial intelligence has enabled, through scientific advances, to emulate, at some extent, human-like composition.

Among notable early efforts, David Cope created an AI called Emily Howell that managed to become well known in the field of Algorithmic Computer Music.[24] The algorithm behind Emily Howell is registered as a US patent.[25]

The AI Iamus created 2012 the first complete classical album fully composed by a computer.

Other endeavours, like AIVA (Artificial Intelligence Virtual Artist), focus on composing symphonic music, mainly classical music for film scores.[26] It achieved a world first by becoming the first virtual composer to be recognized by a musical professional association.[27]

Artificial intelligences can even produce music usable in a medical setting, with Melomics's effort to use computer-generated music for stress and pain relief.[28]

Moreover, initiatives such as Google Magenta, conducted by the Google Brain team, want to find out if an artificial intelligence can be capable of creating compelling art.[29]

At Sony CSL Research Laboratory, their Flow Machines software has created pop songs by learning music styles from a huge database of songs. By analyzing unique combinations of styles and optimizing techniques, it can compose in any style.

News, publishing and writing

The company Narrative Science makes computer generated news and reports commercially available, including summarizing team sporting events based on statistical data from the game in English. It also creates financial reports and real estate analyses.[30] Similarly, the company Automated Insights generates personalized recaps and previews for Yahoo Sports Fantasy Football.[31] The company is projected to generate one billion stories in 2014, up from 350 million in 2013.[32]

Echobox is a software company that helps publishers increase traffic by 'intelligently' posting articles on social media platforms such as Facebook and Twitter.[33] By analysing large amounts of data, it learns how specific audiences respond to different articles at different times of the day. It then chooses the best stories to post and the best times to post them. It uses both historical and real-time data to understand to what has worked well in the past as well as what is currently trending on the web.[34]

Another company, called Yseop, uses artificial intelligence to turn structured data into intelligent comments and recommendations in natural language. Yseop is able to write financial reports, executive summaries, personalized sales or marketing documents and more at a speed of thousands of pages per second and in multiple languages including English, Spanish, French & German.[35]

Boomtrain's is another example of AI that is designed to learn how to best engage each individual reader with the exact articles — sent through the right channel at the right time — that will be most relevant to the reader. It's like hiring a personal editor for each individual reader to curate the perfect reading experience.

There is also the possibility that AI will write work in the future. In 2016, a Japanese AI co-wrote a short story and almost won a literary prize.[36]

Online and telephone customer service

Artificial intelligence is implemented in automated online assistants that can be seen as avatars on web pages.[37] It can avail for enterprises to reduce their operation and training cost.[37] A major underlying technology to such systems is natural language processing.[37] Pypestream uses automated customer service for its mobile application designed to streamline communication with customers.[38]

Currently, major companies are investing in AI to handle difficult customer in the future. Google's most recent development analyzes language and converts speech into text. The platform can identify angry customers through their language and respond appropriately.[39]

Companies have been working on different aspects of customer service to improve this aspect of a company.

Digital Genius, an AI start-up, researches the database of information (from past conversations and frequently asked questions) more efficiently and provide prompts to agents to help them resolve queries more efficiently.

IPSoft is creating technology with emotional intelligence to adapt the customer's interaction. The response is linked to the customer's tone, with the objective of being able to show empathy. Another element IPSoft is developing is the ability to adapt to different tones or languages.

Inbenta's is focused on developing natural language. In other words, on understanding the meaning behind what someone is asking and not just looking at the words used, using context and natural language processing. One customer service element Ibenta has already achieved is its ability to respond in bulk to email queries.

Transportation

Fuzzy logic controllers have been developed for automatic gearboxes in automobiles. For example, the 2006 Audi TT, VW Touareg and VW Caravell feature the DSP transmission which utilizes Fuzzy Logic. A number of Škoda variants (Škoda Fabia) also currently include a Fuzzy Logic-based controller.

Today's cars now have AI-based driver assist features such as self-parking and advanced cruise controls. AI has been used to optimize traffic management applications,

which in turn reduces wait times, energy use, and emissions by as much as 25 percent.[1] In the future, fully autonomous cars will be developed. AI in transportation is expected to provide safe, efficient, and reliable transportation while minimizing the impact on the environment and communities. The major challenge to developing this AI is the fact that transportation systems are inherently complex systems involving a very large number of components and different parties, each having different and often conflicting objectives.[42]

Other

Various tools of artificial intelligence are also being widely deployed in homeland security, speech and text recognition, data mining, and e-mail spam filtering. Applications are also being developed for gesture recognition (understanding of sign language by machines), individual voice recognition, global voice recognition (from a variety of people in a noisy room), facial expression recognition for interpretation of emotion and non verbal cues. Other applications are robot navigation, obstacle avoidance, and object recognition.

References :

The intelligent agent paradigm:

1. The intelligent agent paradigm:
   - Russell & Norvig 2003, pp. 27, 32–58, 968–972
   - Poole, Mackworth & Goebel 1998, pp. 7–21
   - Luger & Stubblefield 2004, pp. 235–240
   - Hutter 2005, pp. 125–126

   The definition used in this article, in terms of goals, actions, perception and environment, is due to Russell & Norvig (2003). Other definitions also include knowledge and learning as additional criteria.
2. Russell & Norvig 2009, p. 2.
3. Hofstadter (1980, p. 601)
4. *Schank, Roger C. (1991). "Where's the AI". AI magazine. Vol. 12 no. 4. p. 38.*
5. Russell & Norvig 2009.
6. *"AlphaGo - Google DeepMind". Archived from the original on 10 March 2016.*
7. Optimism of early AI:
   - Herbert Simon quote: Simon 1965, p. 96 quoted in Crevier 1993, p. 109.
   - Marvin Minsky quote: Minsky 1967, p. 2 quoted in Crevier 1993, p. 109.
8. Boom of the 1980s: rise of expert systems, Fifth Generation Project, Alvey, MCC, SCI:
   - McCorduck 2004, pp. 426–441
   - Crevier 1993, pp. 161–162,197–203, 211, 240
   - Russell & Norvig 2003, p. 24
   - NRC 1999, pp. 210–211
9. First AI Winter, Mansfield Amendment, Lighthill report
   - Crevier 1993, pp. 115–117
   - Russell & Norvig 2003, p. 22
   - NRC 1999, pp. 212–213
   - Howe 1994
10. Second AI winter:
    - McCorduck 2004, pp. 430–435
    - Crevier 1993, pp. 209–210
    - NRC 1999, pp. 214–216
11. Pamela McCorduck (2004, pp. 424)
    - Russell & Norvig 2003
    - Luger & Stubblefield 2004
    - Poole, Mackworth & Goebel 1998
    - Nilsson 1998
12. General intelligence (strong AI) is discussed in popular introductions to AI:
    - Kurzweil 1999 and Kurzweil 2005
13. *"Stephen Hawking believes AI could be mankind's last accomplishment". BetaNews. 21 October 2016. Archivedfrom the original on 28 August 2017.*
14. AI applications widely used behind the scenes:
    - Russell & Norvig 2003, p. 28
    - Kurzweil 2005, p. 265
    - NRC 1999, pp. 216–222

1. United States, National Science and Technology Council – Committee on Technology. Executive Office of the President. (2016). Preparing for the future of artificial intelligence.
2. *"AI bests Air Force combat tactics experts in simulated dogfights". Ars Technica. Retrieved 2016-11-18.*
3. *Jones, Randolph M.; Laird, John E.; Nielsen, Paul E.; Coulter, Karen J.; Kenny, Patrick; Koss, Frank V. (1999-03-15). "Automated Intelligent Pilots for Combat Flight Simulation". AI Magazine.* ***20*** *(1): 27. ISSN 0738-4602.*
4. AIDA Homepage. Kbs.twi.tudelft.nl (April 17, 1997). Retrieved on 2013-07-21.
5. The Story of Self-Repairing Flight Control Systems.NASA Dryden. (April 2003). Retrieved on 2016-08-25.
6. *Adams, Eric (March 28, 2017). "AI Wields the Power to Make Flying Safer—and Maybe Even Pleasant". Wired.com. Retrieved October 7, 2017.*
7. *Baomar, Haitham and Bentley, Peter J. (2016). "An Intelligent Autopilot System that learns flight emergency procedures by imitating human pilots". Computational Intelligence (SSCI) 2016 IEEE Symposium Series: 1–9 – via IEEE.org.*
8. *"Education | One Hundred Year Study on Artificial Intelligence (AI100)". ai100.stanford.edu. Retrieved 2016-11-18.*[*dead link*]
9. *"Algorithmic Trading". Investopedia.*
10. *"Beyond Robo-Advisers: How AI Could Rewire Wealth Management".*
11. *"Kensho's AI For Investors Just Got Valued At Over $500 Million In Funding Round From Wall Street".*

12. Marco Costantino, Paolo Coletti, Information Extraction in Finance, Wit Press, 2008. ISBN 978-1-84564-146-7
13. *"Five Best AI-Powered Chatbot Apps".*
14. *"Is Artificial Intelligence the Way Forward for Personal Finance?".*
15. *"Machine learning in finance applications".*
16. *"Machine Learning Is the Future of Underwriting, But Startups Won't be Driving It".*
17. *"ZestFinance Introduces Machine Learning Platform to Underwrite Millennials and Other Consumers with Limited Credit History".*
18. *"World Robotics 2015 Industrial Robots". International Federation of Robotics. Archived from the original on March 27, 2016. Retrieved 27 March 2016.*
19. *Reed, T. R.; Reed, N. E.; Fritzson, P. (2004). "Heart sound analysis for symptom detection and computer-aided diagnosis". Simulation Modelling Practice and Theory.* ***12*** *(2): 129. doi:10.1016/j.simpat.2003.11.005.*
20. *Yorita, A.; Kubota, N. (2011-03-01). "Cognitive Development in Partner Robots for Information Support to Elderly People". IEEE Transactions on Autonomous Mental Development.* ***3****(1): 64–73. doi:10.1109/TAMD.2011.2105868. ISSN 1943 -0604.*
21. *"Artificial Intelligence Will Redesign Healthcare – The Medical Futurist". The Medical Futurist. 2016-08-04. Retrieved 2016-11-18.*
22. *Luxton, David D. (2014). "Artificial Intelligence in Psychological Practice: Current and Future Applications and Implication". Professional Psychology: Research and Practice.* ***45*** *(5): 332. doi:10.1037/a0034559.*
23. *"From Virtual Nurses To Drug Discovery: 90+ Artificial Intelligence Startups In Healthcare". CB Insights – Blog. 2016-08-31. Retrieved 2016-11-18.*
24. *Cheng, Jacqui (30 September 2009). "Virtual composer makes beautiful music—and stirs controversy". Ars Technica.*
25. US Patent #7696426 https://www.google.com/patents/US7696426
26. *Hick, Thierry (11 October 2016). "La musique classique recomposée". Luxemburger Wort.*
27. SACEM Database, https://repertoire.sacem.fr/resultats?filters=parties&query=aiva&nbWorks=20)
28. *Requena, G; Sanchez, C; Corzo-Higueras, JL; Reyes-Alvarado, S; Rivas-Ruiz, F; Vico, F; Raglio, A (2014). "Melomics music medicine (M³) to lessen pain perception during pediatric prick test procedure". Pediatric Allergy and Immunology.* ***25*** *(7): 721. doi:10.1111/pai.12263. PMID 25115240.*
29. *Souppouris, Aaron (23 May 2016). "Google's 'Magenta' project will see if AIs can truly make art". Engadget.*
30. business intelligence solutions Archived November 3, 2011, at the Wayback Machine.. Narrative Science. Retrieved on 2013-07-21.
31. *Eule, Alexander. "Big Data and Yahoo's Quest for Mass Personalization". Barron's.*
32. *Kirkland, Sam. "'Robot' to write 1 billion stories in 2014 — but will you know it when you see it?". Poynter.*
33. *Williams, Henry (July 4, 2016). "AI online publishing service Echobox closes $3.4m in funding". Startups.co.uk. Retrieved July 21, 2016.*
34. *Smith, Mark (July 22, 2016). "So you think you chose to read this article?". BBC. Retrieved July 27, 2016.*
35. http://yseop.com/EN/solutions.html
36. *"A Japanese AI program just wrote a short novel, and it almost won a literary prize". Digital Trends. 2016-03-23. Retrieved 2016-11-18.*
37. ^ Jump up to:*a b c* Implementing an online help desk system based on conversational agent Authors: Alisa Kongthon, Chatchawal Sangkeettrakarn, Sarawoot Kongyoung and Choochart Haruechaiyasak. Published by ACM 2009 Article, Bibliometrics Data Bibliometrics. Published in: Proceeding, MEDES '09 Proceedings of the International Conference on Management of Emergent Digital EcoSystems, ACM New York, NY, USA. ISBN 978-1-60558-829-2, doi:10.1145/1643823.1643908
38. *Sara Ashley O'Brien (January 12, 2016). "Is this app the call center of the future?". CNN. Retrieved September 26, 2016.*
39. *jackclarkSF, Jack Clark (2016-07-20). "New Google AI Brings Automation to Customer Service". Bloomberg.com. Retrieved 2016-11-18.*
40. Success Stories Archived October 4, 2011, at the Wayback Machine..
41. *"How artificial intelligence is moving from the lab to your kid's playroom". Washington Post. Retrieved 2016-11-18.*
42. *Meyer, Michael D. (January 2007). "Artificial Intelligence in Transportation Information for Application" (PDF). Transportation Research Circular.*