Do the Machines Understand Real Human Emotions: A Theoretical Perspective?

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Abstract

The present and future business needs the merged operation of human intelligence and machine intelligence and also the human emotions and artificial emotions to maintain the speed, pace, accuracy and critical thinking with innovation and creativity. The human strength includes leadership skills, creative minds, teamwork efficiency, planning perfection, social skills with blend of technology management proficiency. The machine strengths are speed, scalability, quantitative skills, analytical and problem solving efficiency and personalization. The artificial intelligence by 2022 can know human's mental state far better than their own family. The machine will react and response to the every emotions of the human in coming future. The machine intelligence will gain competitive edge in every sector. The fact says that so far introduction of Artificial intelligence application has eliminated 1.8 million jobs and also the facts evident that the same AI application in coming future will deploy 2.3 million jobs.
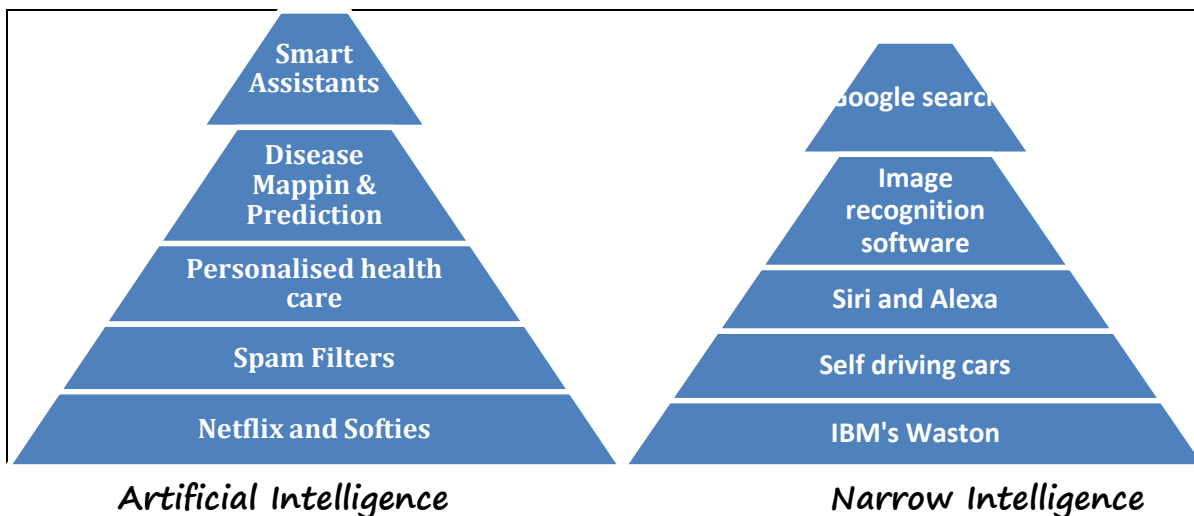
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Introduction

The business transformation happened with superhuman power to achieve the competitive edge through the application of artificial intelligence. Artificial intelligence is defined by many authors as the machine thinking with fast, ease and intelligence programmed, monitored and administered by the sustainers and explainers. The artificial emotional intelligence can be depicted as:
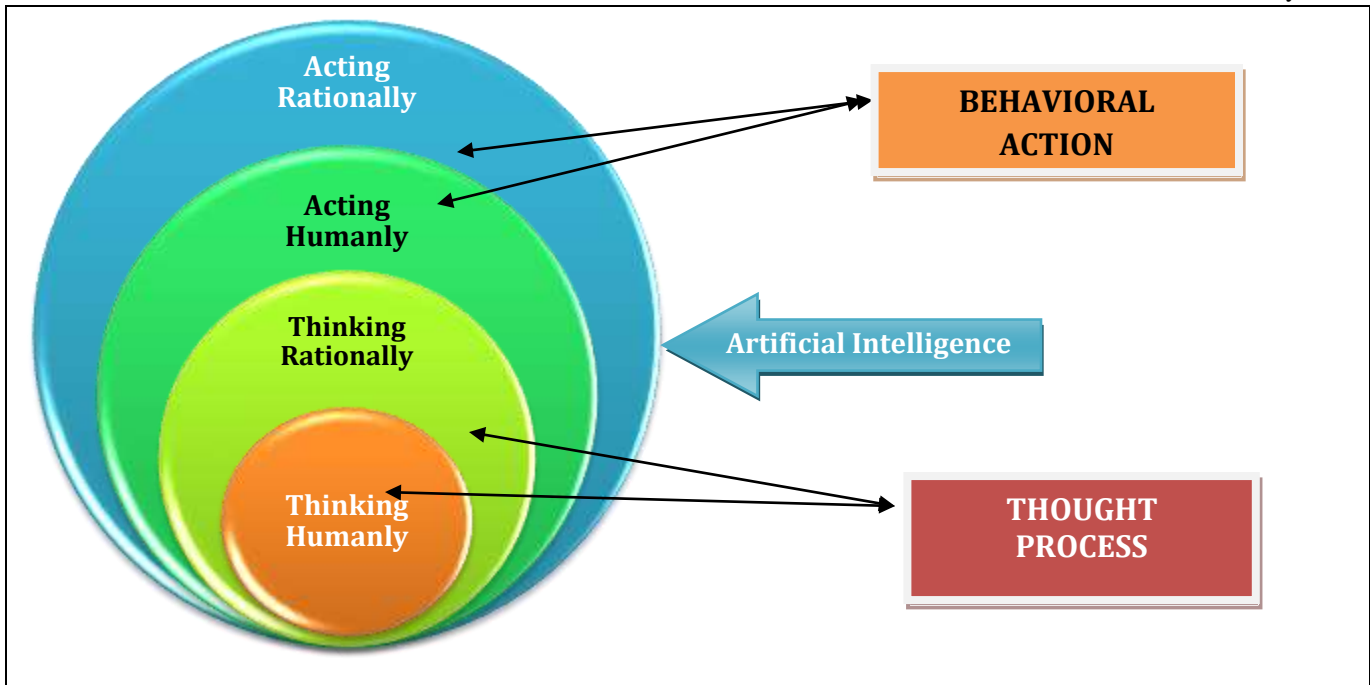
The human emotional intelligence handles the emotions of self awareness, self management, social skills, empathy, passion, motivation which helps the human to think, create process, develop and make decision for success and sustainable life. The artificial emotional intelligence tries to replace few of the human emotional intelligence and achieve greater heights of success in the applied areas and sectors. The artificial intelligence can be broadly categorized as Narrow Intelligence (NI) and Artificial General Intelligence (AGM) otherwise popularly known as weak intelligence and strong intelligence. Weak intelligence stimulates human intelligence and the strong intelligence thinks analytically and handles the given situation by applying the rational thinking and problem solving programmes.
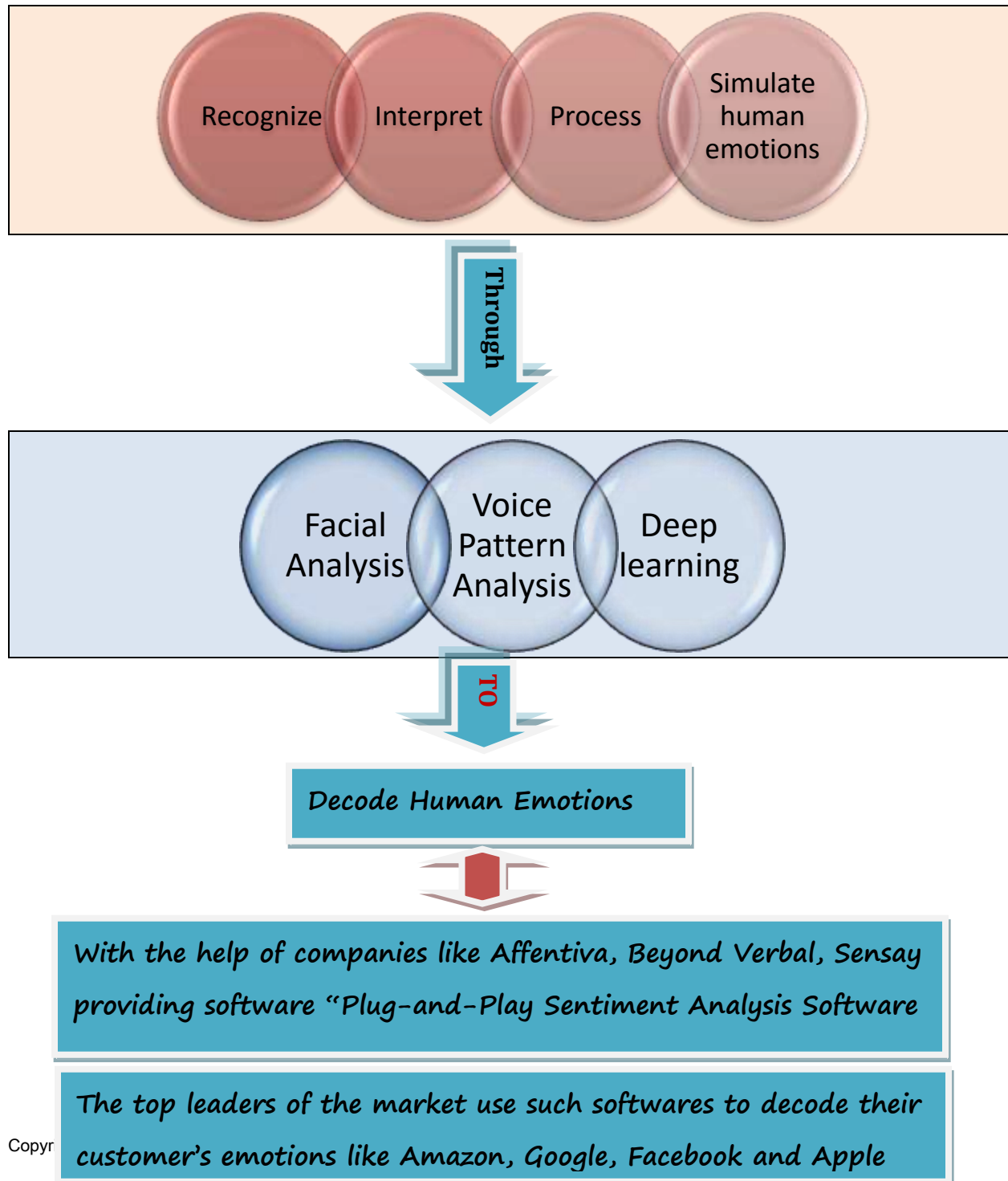
Year	Introduction
1943	Warren McCullough and Walter Pitts publish "ALogical Calculus of ideas immanent in Nervous Activity."
1949	Hebbian learning continues to be an important model in AI.
1950	Claude Shannon publishes the paper "Programming a Computer for Playing Chess."
1952	Isaac Asimov publishes the "Three Laws of Robotics." Arthur Samuel develops a self-learning program to play checkers.
1954	The Georgetown-IBM machine translation experiment automatically translates 60 carefully selected Russian sentences into English.
1956	The phrase artificial intelligence is coined at the "Dartmouth Summer Research Project on Artificial Intelligence." Led by John McCarthy, the conference, which defined the scope and goals of AI, is widely considered to be the birth of artificial intelligence as we know it today. Allen Newell and Herbert Simon demonstrate Logic Theorist (LT), the first reasoning program.
1958	John McCarthy develops the AI programming language Lisp and publishes the paper "Programs with Common Sense." The paper proposed the hypothetical Advice Taker, a complete AI system with the ability to learn from experience as effectively as humans do.
1959	Allen Newell, Herbert Simon and J.C. Shaw develop the General Problem Solver (GPS), a program designed to imitate human problem-solving. Herbert Gelernter develops the Geometry Theorem Prover program. Arthur Samuel coins the term machine learning while at IBM. John McCarthy and Marvin Minsky found the MIT Artificial Intelligence Project.
1963	John McCarthy starts the AI Lab at Stanford.
1966	The Automatic Language Processing Advisory Committee (ALPAC) report by the U.S. government details the lack of progress in machine translations research, a major Cold War initiative with the promise of automatic and instantaneous translation of Russian. The ALPAC report leads to the cancellation of all government-funded MT projects.
1969	The first successful expert systems are developed in DENDRAL, a XX program, and MYCIN, designed to diagnose blood infections, are created at Stanford.
1972	The logic programming language PROLOG is created.
1973	The "Lighthill Report," detailing the disappointments in AI research, is released by the British government and leads to severe cuts in funding for artificial intelligence projects.
1974 – 1980	Frustration with the progress of AI development leads to major DARPA cutbacks in academic grants. Combined with the earlier ALPAC report and the previous year's "Lighthill Report," artificial intelligence funding dries up and research stalls. This period is known as the "First AI Winter."
1980	igital Equipment Corporations develops R1 (also known as XCON), the first successful commercial expert system. Designed to configure orders for new computer systems, R1 kicks off an investment boom in expert systems that will last for much of the decade, effectively ending the first "AI Winter."
1982	Japan's Ministry of International Trade and Industry launches the ambitious Fifth

	Generation Computer Systems project. The goal of FGCS is to develop supercomputer-like performance and a platform for AI development.
1983	In response to Japan's FGCS, the U.S. government launches the Strategic Computing Initiative to provide DARPA funded research in advanced computing and artificial intelligence.
1985	Companies are spending more than a billion dollars a year on expert systems and an entire industry known as the Lisp machine market springs up to support them. Companies like Symbolics and Lisp Machines Inc. build specialized computers to run on the AI programming language Lisp.
1987 – 1993	As computing technology improved, cheaper alternatives emerged and the Lisp machine market collapsed in 1987, ushering in the "Second AI Winter." During this period, expert systems proved too expensive to maintain and update, eventually falling out of favor. Japan terminates the FGCS project in 1992, citing failure in meeting the ambitious goals outlined a decade earlier. DARPA ends the Strategic Computing Initiative in 1993 after spending nearly $1 billion and falling far short of expectations.
1991	U.S. forces deploy DART, an automated logistics planning and scheduling tool, during the Gulf War.
1997	IBM's Deep Blue beats world chess champion Gary Kasparov
2005	STANLEY, a self-driving car, wins the DARPA Grand Challenge. The U.S. military begins investing in autonomous robots like Boston Dynamic's "Big Dog" and iRobot's "PackBot."
2008	Google makes breakthroughs in speech recognition and introduces the feature in its iPhone app.
2011	IBM's Watson trounces the competition on *Jeopardy!*.
2012	Andrew Ng, founder of the Google Brain Deep Learning project, feeds a neural network using deep learning algorithms 10 million YouTube videos as a training set. The neural network learned to recognize a cat without being told what a cat is, ushering in breakthrough era for neural networks and deep learning funding.
2014	Google makes first self-driving car to pass a state driving test.
2016	Google DeepMind's AlphaGo defeats world champion Go player Lee Sedol. The complexity of the ancient Chinese game was seen as a major hurdle to clear in AI.
2017	A propositional logic boolean satisfiability problem (SAT) solver proves a long-standing mathematical conjecture on Pythagorean triples over the set of integers. The initial proof, 200TB long, was checked by two independent certified automatic proof checkers. An OpenAI-machined learned bot played at The International 2017 Dota 2 tournament in August 2017. It won during a 1v1 demonstration game against professional Dota 2 player Dendi.
2018	Alibaba language processing AI outscores top humans at a Stanford University reading and comprehension test, scoring 82.44 against 82.304 on a set of 100,000 questions. Announcement of Google Duplex, a service to allow an AI assistant to book appointments over the phone. The LA Times judges the AI's voice to be a "nearly flawless" imitation of human-sounding speech.

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Future Emotions of AI

The artificial intelligence by 2022 can know human's mental state far better than their own family. The machine will react and response to the every emotions of the human in coming future. The machine intelligence will gain competitive edge in every sector. Artificial intelligence projection of 2022 and the type of change it's going to bring in the applied areas are depicted as:

Recognize | Interpret | Process | Simulate human emotions

Through

Facial Analysis | Voice Pattern Analysis | Deep learning

TO

Decode Human Emotions

With the help of companies like Affentiva, Beyond Verbal, Sensay providing software "Plug-and-Play Sentiment Analysis Software

The top leaders of the market use such softwares to decode their customer's emotions like Amazon, Google, Facebook and Apple

Systems Adjust their Response

Emotions are factored accurately and promise for faster service flow to the customers routed through chatbots and conversational IVRs (Interactive Voice response). Automotive is racing to get emotional car software for the purpose of detecting human moods and emotions like lack of attention, anger etc. The software is expected to recognize the emotions of the human and take control over the vehicle preventing road accidents and act of rage.

Emotions for learning purpose

The people in power and having authority to design and operate such targeted emotional learning systems to be trained and equipped with abundant expertise psychological training. The situation of handling the emotions of students for teachers and employees for companies involve lots of concerns about creativity, privacy, confidentiality, individuality and ethical acceptance with proper artificial intelligence governance.

Replacing human to human interaction possibilities and impossibilities
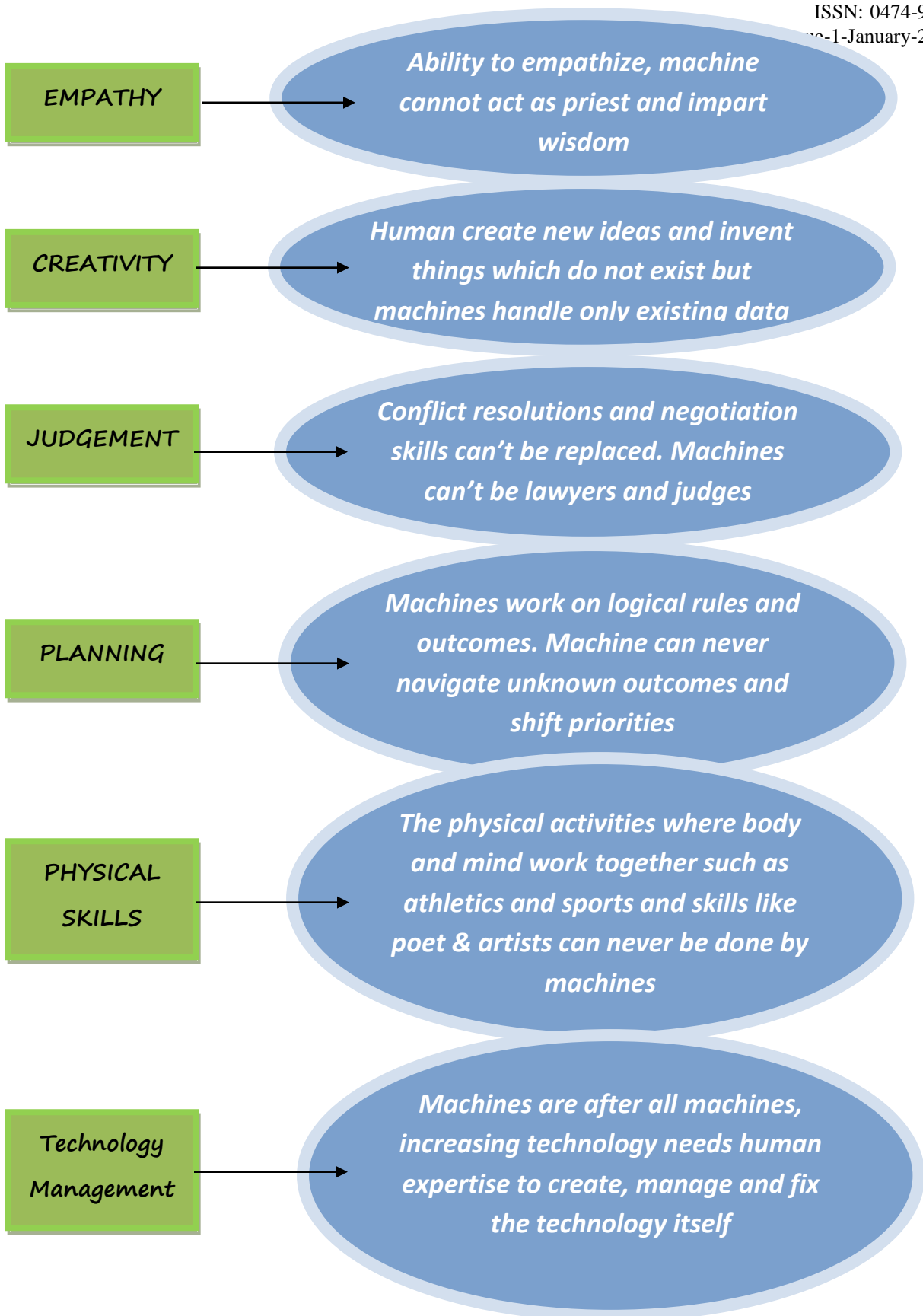
The machine intelligence applied for decoding the human emotions are successful in simulating human emotions and gained momentum in certain specialized areas to be named as:

- ✓ Speech Recognition
- ✓ Visual classification and perception
- ✓ Conversation or dialog
- ✓ Mobile and home virtual assistants
- ✓ Right customer service
- ✓ Focusing on perfect human and machine intelligence

The researchers and the experts of using the applications of artificial intelligence have strongly felt that there are some very important emotions which never can be replaced or programmed and merged both human and machine intelligence. The machine cannot give its comment on our judgments, hence let's wait and watch the future transformations to prove this statement right. The six emotions which are felt never can be replaced are depicted below:

EMPATHY	*Ability to empathize, machine cannot act as priest and impart wisdom*
CREATIVITY	*Human create new ideas and invent things which do not exist but machines handle only existing data*
JUDGEMENT	*Conflict resolutions and negotiation skills can't be replaced. Machines can't be lawyers and judges*
PLANNING	*Machines work on logical rules and outcomes. Machine can never navigate unknown outcomes and shift priorities*
PHYSICAL SKILLS	*The physical activities where body and mind work together such as athletics and sports and skills like poet & artists can never be done by machines*
Technology Management	*Machines are after all machines, increasing technology needs human expertise to create, manage and fix the technology itself*

Combination of Human and Machine for Leveraged Performance

The present and future business needs the merged operation of human intelligence and machine intelligence and also the human emotions and artificial emotions to maintain the speed, pace, accuracy and critical thinking with innovation and creativity. The human strength such as leadership skills, creative minds, teamwork efficiency, planning perfection, social skills with blend of technology management proficiency. The machine strengths are speed, scalability, quantitative skills, analytical and problem solving efficiency and personalization. The combination of both makes the competitive leverage for the companies and corporate. The collaboration of making the capabilities of human and machine work together results in:

- ❖ Reimaging business processes
- ❖ Embrace employee involvement
- ❖ Direct AI strategy
- ❖ Responsibly collect data
- ❖ Redesign work to

Incorporate artificial emotional intelligence and cultivate required employee skills. The better way to understand the collaboration of human intelligence and artificial intelligence is by considering the Microsoft's Cortana, Apple's Siri and Amazon's Alexa. Microsoft's Cortana was extensively trained to just get the right and accurate personality with right attributes of human: caring, confident and helpful rather than simply being bossy. It took countless hours of hardwork and attention of a team consisting of a novelist, a poet and a playwright. Similarly to develop Apple's Siri personality human trainers were deployed to make it right and perfect to use as per the requirement of the Apple and its customers. Human expertise was extensively used to accurately leverage and reflect Amazon's Alexa in reflecting its brand.

The mix of human and machine interaction is live with the start-up KOKO designed by MIT media lab which has helped human to view their stress and sadness as positive emotions through AI applications. The start-up koko recommends the sad person or stressed individual to act positively and channel them with appropriate action.

AI as Employment Generator

The lot number of human experts is required in the field of managing and explaining the usage and behavior of Artificial intelligence to non experts and non-users. These types of "Explainers" are mostly required in high number in medicine and law based companies using artificial intelligence applications. The European Union has a new law enforced as "General Data Protection Regulation (GDPR)", which emphasis on the right to explanation for any machine involved decisions. There is a huge scope of generating increased employment in this area. To maintain GDPR requirement the AI companies need atleast 75000 new jobs.

The next most important human requirement is in the form of "Sustainers" which all the AI companies need to explain the AI outcomes. The sustainers are the experts who will continuously work to make sure that the artificial intelligence machines are operating properly, safely and responsibly.
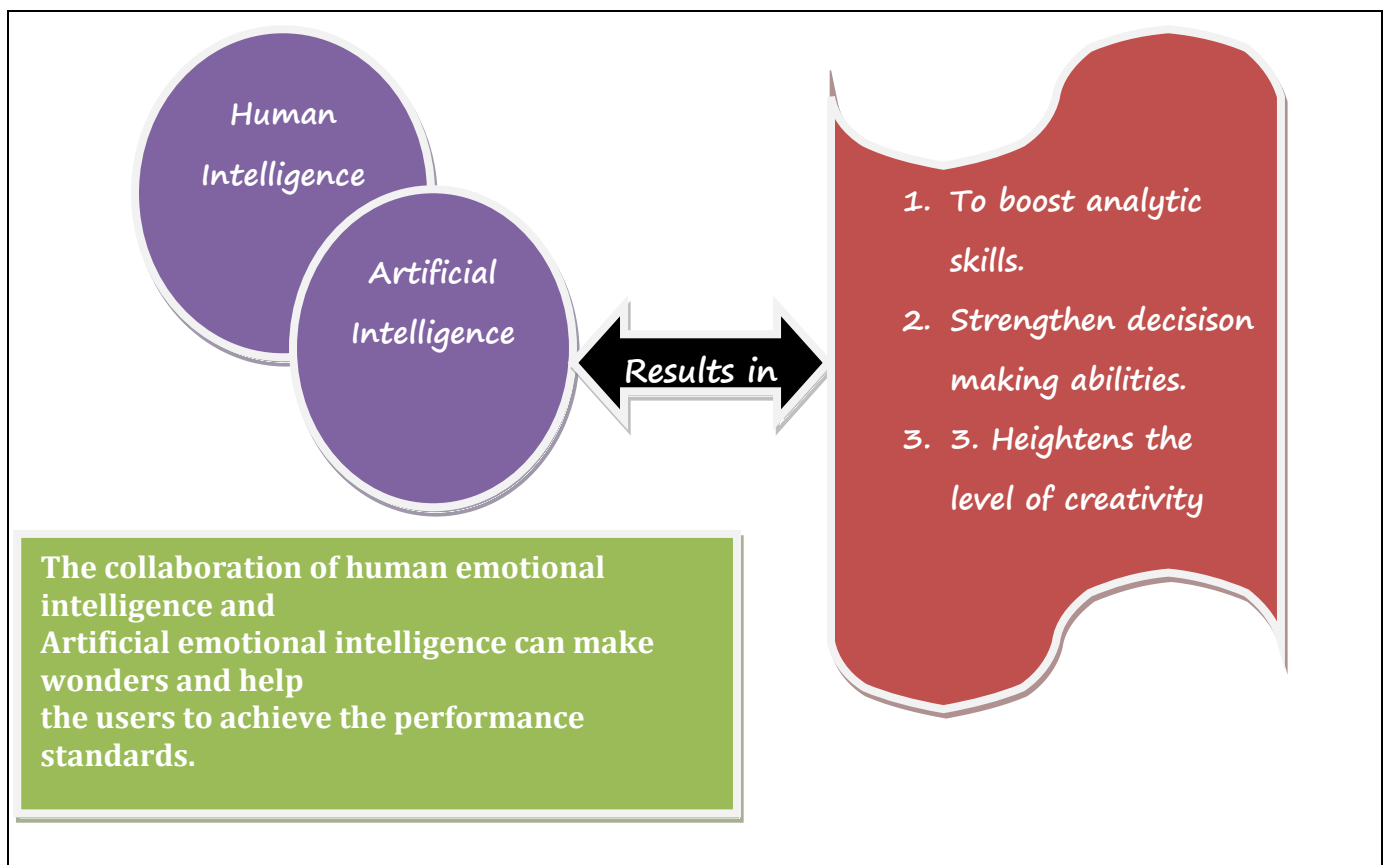
Discussions and opinions on AI Emotions

Artificial intelligence is considered to be superhuman in the future. All the sector of business are one or other way going to use AI applications. In AI business Analytics is seen as the rising star. There are various platforms available to provide software for exclusive business focused artificial intelligence. The few leading platform providers are AWS, GOOGLE, MICROSOFT AND IBM. The right choice of artificial intelligence software defines the success or failure of a business. Few business houses revealed that the skill set required to be invested by the companies planning to get started with AI are:

The future controversies developed on AI such as: kind of future we want, are we expecting to see jobless society where the people look happy and peaceful and lead their life leisurely and enjoy with the wealth provided by machines? The other big controversy in the minds of millennial is to find out whether really AI is going to replace human or its going to coexist with us or merge and mix with human? The other dilemma found was whether to accept AI and live with them or create a space for AI machine dominated and technologically administered and managed by human. Elon Musk said once in his article that when AI is said to be more dangerous and threat to human, why is it so that till today we don't see any regulatory framework for AI services.

In some research it has been forecasted that a positive impact can be expected in coming years, exclusively in fuel innovation models for business like Machine learning, transportation AIs, Predictive Analytics of AI will impact huge on global political landscape and also believed that AI will double the number of jobs which it eliminated. The fact says that so far introduction of Artificial intelligence

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application has eliminated 1.8 million jobs and also the facts evident that the same AI application in coming future will deploy 2.3 million jobs. Artificial intelligence governance will gain momentum iin 2020. The talent shortage problem of companies will be solved through artificial intelligence applications, programs and software platforms.

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