iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IV **Month of publication:** April 2020

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

Application of AI in Project Management

Sanskar Jethi[1], Nikunj Jethi[2]
[1]*Student,* [2]*Guide, Department of Electrical Engineering, Delhi Technological University, Advisory Manager, KPMG LLP*

Abstract: ***In the previous decade, AI has, without a doubt, been one of the most persuasive innovations. AI has changed how individuals live and work, and undertaking the executives isn't a special case. There is consistently debate about the utilization of AI innovation. This paper initially explains the requirement for the organization to utilize AI innovation and studies why AI is brimming with debate. In the wake of thinking about the focal points and dangers of AI, this paper gives a present diagram of AI draws near and available apparatuses that can be utilized for mechanizing assignments in the business venture of the board.***
Keywords: Artificial intelligence, project management, automation, machine learning, bots.

I. INTRODUCTION

Artificial Intelligence is the ability of a system to perform tasks through intelligent deduction when provided with an abstract set of information.

Around 200 years back, the current unrest changed society in inconceivable manners for the time. Today another upheaval is in progress, with considerably more distant arriving at results. Artificial Intelligence (AI), specialists are predicting, will significantly alter how we produce, make and deliver. From assembling to utilities and transport to budgetary administrations, AI is available in almost every industry.

AI will likewise change the course of project management practice. Despite the fact that the utilization of AI programming to project management goes back similar to 19872, it is just since it is truly taking off. Past information coordination and procedure robotization, self-propelled project management never again look like unimportant sci-fi. In any case, as we have recently observed with the Internet, vast information and the various innovative insurgencies of late occasions, there are hindrances to be defeated before we arrive at this perfect mechanical world.

II. APPLICATIONS

AI is the designing and building of intelligent agents that receive precepts from the environment and take actions that affect the environment. These are some general use cases of Artificial Intelligence in the industry.

A. Automation

AI performs repetitive, monotonous tasks

Enables a more efficient, cost- active business and a more productive workforce

B. Natural Language Processing

Splits the of text into words, sentences/phrases and paragraphs

Identifies keywords in the text and how they relate to each other to determine the message

C. Machine Learning

Takes high dimensional data and classifies it based on a hyperplane

D. Deep Learning

Each node is a function or decision point. Performs multiple layers of calculations and classifies based on final output.

III.ANTICIPATED APPLICATION OF AI IN PRODUCT MANAGEMENT

A. Integration & Automation

Reduce operational costs and enhance the quality of standardized project management processes

1) Potential Uses

a) Upgrade strength of task arranging by executing auto-booking with pre-modified rationale and rules Integrate issue following instrument into venture intending to distinguish delays in streams dependent on the number of issues.

2) Current Uses

a) Inclusion of MS Office Online into Wunderlist for task creation and scheduling via Wicresoft
b) Use online templates in Slack or MS Sharepoint to produce project documentation
c) Sending alerts when potential budgeting or scheduling issues are identified for the project
d) nextup.ai provides integrations with Jira and Slack to improve the employee workflow.

In our view, the pattern towards mix and computerization will proceed in the following couple of years, mainly concentrating on progressively viable project management forms. Improved instruments for streamlining institutionalized project management will in this manner rise up out of both existing project management programming suppliers, work process management merchants and new businesses. This will build the nature of standard project management forms and decrease the exertion and work costs engaged with fundamental PMO tasks. The subsequent computerized project management will diminish costs and simultaneously free up project chiefs to concentrate on progressively complex project exercises and deal with the world outside the project (for example, partner management).

IV. CHATBOT ASSISTANTS

Interaction into the automated and integrated project management practice

A. Potential Uses

Take over basic project management tasks, like reminding team members of pending status updates.

B. Current Uses

1) Intelligent bots for Slack can process discussions and perceive and prescribe task assignments Chatbots that send suggestions to groups and tracks their exhibition
2) Fireflies.ai is an AI bot for Slack that forms discussions inside Slack and perceives tasks and assignments on this premise.
3) Stratejos.ai sends colleagues updates, tracks their exhibition and empowers the project supervisor to perceive top benefactor's dependent on measurables.
4) Chatbots can assume control over humble tasks, for example, sorting out gatherings, plan versus progress checks, helping project colleagues to remember booked exercises, and so on. Chatbots can even incorporate beginning bits of knowledge into the current information. For instance, project aides could respond to questions like "what is my group taking a shot at today?" or put these inquiries to colleagues.
5) In our view, comparable to the principal period of project task mix and mechanization, project colleagues will keep on assuming control over fundamental project management tasks and soothe project groups of dreary work making little worth. Right now hope to see the nearby reconciliation and module of existing and up and coming advancements identifying with the human-computer association in project management.

As a result, the job of the exemplary project chief driving a PMO and its staff will progressively be supplanted by insightful project associates (chatbots).

V. MACHINE LEARNING-BASED PROJECT MANAGEMENT:

1) AI gives knowledge into the present project dependent on what worked in past projects
2) Management gets prescient experiences on the project plan and the normal money out/benefits from the earliest starting point.
3) Potential employments
4) Convert mind maps into semantic systems and determine tasks and their connections from it
5) Survey proposed project plans dependent on authentic information and past group exhibitions and feature potential planning clashes

A. Current Uses

1) Distinguish and associate colleagues dependent on their aptitudes, availability, limit and area to arrange the best group for a work bundle incl. forecast on execution/result.
2) Modifying booking sees as indicated by client consents and inclinations.
3) Utilizing social labelling to recognize and associate clients dependent on their presented remarks and distinguish the best group for an errand.
4) AI-based project investigation device foreseeing the normal net advertiser score (NPS), anticipated customer fulfilment and expected discount for PwC-inside projects.

5) In our view, a prescient project examination will be the most troublesome advancement in project management in the following ten years. It will give project chiefs expanded perceivability into what the future may hold for a project, and will make an incentive by upgrading the nature of decision making. It will likewise help interface information to successful activities by drawing reliable conclusions about conditions and future occasions and empowering decisionmakers to distinguish potential dangers and openings before they happen. An AI furnished with AI could even be allowed to make choices without anyone else, which will introduce the fourth period of AI-based project oversee development. Nonetheless, this stage will require considerable speculation to fabricate abilities in information examination and AI as a reason for demonstrating exceptionally complex social and financial project situations.

6) Sooner rather than later, AI could change over brain maps made by project experts into a semantic system and infer tasks and their connections from it. For example, AI-based project planning could incorporate exercises gained from previous projects and propose different potential timetables dependent on the specific situation and conditions. Besides, project plans could be adjusted and re-baselined in close ongoing dependent on authentic group execution and project progress. An AI framework could even make the project supervisor aware of potential dangers and openings by utilizing ongoing

VI. AUTONOMOUS PROJECT MANAGEMENT

AI performs necessary day-to-day operations in the project reducing the involvement of a human project manager.

1) *Potential Uses*

a) Survey all the given information focuses during the project continuously and infer the most ideal activities/choices.

b) Sentimental analysis to crawl through partner correspondence to comprehend fulfilment at some random point in time and respond likewise

2) *Current Uses*

a) There are as of now no genuine use cases supporting completely self-ruling project management.

b) Other than specialized project management forms – which are what the past three stages center around – a self-ruling project management framework will moreover need to exhaustively consider and ace the project condition and related partners. These AI frameworks would hence have the option to apply nostalgic investigation calculations to creep through client correspondences and comprehend partner fulfilment and duty at some random point in time.

c) In our view, there may be devoted regions where autonomous project management could fill in as an augmentation of AI-based project management later on, particularly in little, non-complex projects. In any case, searching ahead for the following 10 to 20 years, we accept there are probably not going to be simply self-propelled artificial project managers. In addition to other things, this is on the grounds that project spending plans and portfolios will, at last, be constrained by people to deal with the danger of self-ruling venture choices.

A. AI Applications in The Domain of Project Management

Since the time the start of the development of AI frameworks, the critical inquiry that has remained inalienable to date was: Can a human-created specialized framework have human insight? Alan Turing previously explored this inquiry in 1950 with the still significant Turing test. Because of the cozy connection between AI, information and information preparing, the limitations of AI have consistently been characterized by the intensity of Information Technology(IT)in terms of information volume and handling speed. Rich (1983) put it more or less as ahead of schedule as 1983 with her AI definition: "Man-made brainpower is the investigation of how to cause PCs to get things done at which, right now, individuals are better". In the accompanying, three classifications are introduced, which were distinguished as substance-related central focuses within the aftereffects of our examination on the present territory of AI development in project management. The progression of the classes results from an expanding extent of 'strong' AI.

B. Data-Driven Project Management

The core thought of data-driven project management (DdPM) is notable. Basically, the more significant information about a choice issue is available; the more solid the best choice option can be chosen (Sullivan III, 2016). Since information depends on data, any PM choice ought to be established on a strong data premise (L and George, 2004). In the DdPM idea, this database should be joined with the experience and intuition of a human project chief to decide. DdPM's emphasis is initially on the exemplary issue of asset constrained project booking and along these lines the arranging and controlling capacities as far as time, costs, dangers and quality

(Vanhoucke, 2012). The repertoire of strategies incorporates referred to numerical factual techniques, for example, Program Evaluation and Review Technique (PERT), Critical Path or Chain, Earned Value Management (EVM), Analytical Hierarchy Process (AHP), and (Lean) Six Sigma.

Over the span of the digitalization, notwithstanding, more and more data, just as superior IT framework, is available for processing. Against this foundation, DdPM progressively utilizes analytical techniques. These get the aftereffects of old style, past or present-oriented techniques to infer forecasts about future developments (subsequently prescient investigation).

For instance, Singh (2015) depicted processes and application models dependent on straight relapse for the forecast of cost changes through expansion of project degree and span for the PM region. Since the informational value of prescient examination results relies intensely upon the measure of data and the quantity of factors, specific data investigation apparatuses are key for commonsense application.

A few authors (Duggal, 2018; Ou, 2007; Rechenthin, 2013) abridged this new development under the term Project Intelligence (in light of Business Intelligence), which has not yet been broadly acknowledged.

C. AI Platforms for Project Management

AI stages for PM can be comprehended as an advancement phase of DdPM, directed to opening new potential through AI with regards to big data and investigation. As a result of the blend of high execution exertion for a solitary organization from one perspective and high client desires then again, certain sellers have created cloud-based assistance stages that give AI-based administrations.

As a notable organization, for instance, the counselling firm Deloitte offers a counselling administration under the name Predictive Project Analytics, which depends on an exceptional examination motor joined with a complete database, which was obtained from in excess of 2,000 ventures. Besides, neural systems and hereditary calculations are utilized, expanding the regular DdPM approach. Key territories of use incorporate multifaceted nature and achievement examinations, hazard appraisals and representative choice for venture groups.

Colleague determination is additionally highlighted by other application models dependent on the stage approach. E.g., startup Cloverleaf creates programming for the assemblage of undertaking groups utilizing representative data, which, notwithstanding attributes, for example, experience and capabilities, likewise considers "imperceptible aspects of an individual", e.g., the capacity to adjust to the ideal working model or the concurrence with (work) social qualities.

A progressively exhaustive methodology is sought after by the Californian merchant TARA with its eponymous stage. Initially intended to mechanize the enrolling procedure for outer programming designers, the centre has now significantly extended towards venture arranging and checking (TARA, 2018).

TARA utilizes AI to mechanize the underlying meaning of the venture centre, errand and time arranging, making the undertaking group just as checking and anticipating for the present task.

D. Project Management Bots

The term Project Management Bots (PMB) was instituted in 2017 by counselling firm Gartner in the Hype Cycle for Project and Portfolio Management (Schoen, 2017), which means a class of keen programming operators having some expertise in project management.

Rather than RPA bots, be that as it may, the emphasis on graphical user interfaces is absent. PMBs are more prone to be outfitted with discourse or content interfaces for speaking with humans, and in this manner have highlights of chatbots (Gaton, 2017). While a bot remotely introduces itself as one actor through one or more focal correspondence interfaces, on account of bots with expanded capabilities, it is generally multi-operator frameworks.

These are portrayed by the way that the related specialists connect with one another so as to accomplish a shared objective (Olfati-Saber, Fax, and Murray, 2007).

For instance, collaboration can appear as exchange and depends on correspondence between the operators. Contemplations to apply multi-specialist frameworks in project management are as of now a lot more established than the new term creation PMB (de Medeiros Baia, 2015; Petrie, Goldmann, and Raquet, 1999; Yan, Kuphal, and Bode, 2000). What's going on, in any case, is that today examine models, as well as business items, are available for down to earth use, because of the mechanical developments of ongoing years. PMB arrangements are frequently founded on an exclusive cloud platform that empowers server-side storing and processing of data just as correspondence with and between customer side bot segments. The present item extend for PMB can be partitioned into three categories:

1) Autonomous items spent significant time in PM, for example, PMOtto, which is offered by a Danish startup of a similar name and is likewise alluded to as the "Individual Project Management Assistant" (PMOtto, 2018). PMOtto helps human users in working with traditional PM programming (Currently, just Microsoft Project on the web, which is a piece of the Office365 cloud programming bundle, is supported). For this reason, the bot understands natural language, which it transforms into working strides for the PM programming and executes it. The framework keeps on learning with AI and is in this manner ready to improve suggestions.
2) Vendor-side extensions of established products to support project teams. Currently, these are mainly found in the field of present-day collaboration and communication tools, for example, Microsoft Teams. This product was propelled in 2017 and is a communications administration for teams integrated into the Office365 product family. Teams incorporate two preinstalled chatbots, T[each]-bot and Who-bot (McDonald, 2016). T-bot supports new users in learning system operations. Who-bot can respond to questions of the type "Who thinks about x" and investigate communication through teams. Past the relatively basic functionality, the two bots demonstrate the integrated functionality for creating custom bots.
3) Extensions for third-party items. Particularly for the Atlassian items Jira, Confluence and HipChat/Stride a bigger scope of bot extensions have been created. For instance, the organization Stratejos offers a Project Assistant Bot for Atlassian items that support venture groups in the data section and altering, chance examination and task checking (Baldassarre, 2018).

VII. FURTHER AI-RELATED ASPECTS IN PROJECT MANAGEMENT

In addition to the past AI models in the domain of project management, a couple of affectionate territories of development can be identified, for example, Intelligent Information Management (IIM), which stresses the integration of current AI processes and technology into information management (e.g., Bailin and Truszkowski, 2001). The potential of IIM is firmly connected to project management information systems (PMIS) (PMI, 2017). Furthermore, Robotic Process Automation (RPA) is suited for very much structured, less intricate routine tasks, in which the term "robotic" alludes to software agents ("robots") that can learn manual activities and then perform them automatically (van der Aalst, Bichler, and Heinzl, 2018). PM can't the essential centre, but RPA may incorporate monitoring and controlling of projects (e.g., to keep thresholds) (Sharma, 2017), reporting and documentation (which is like IIM) or in any event, arranging and optimization (Branscombe, 2018).

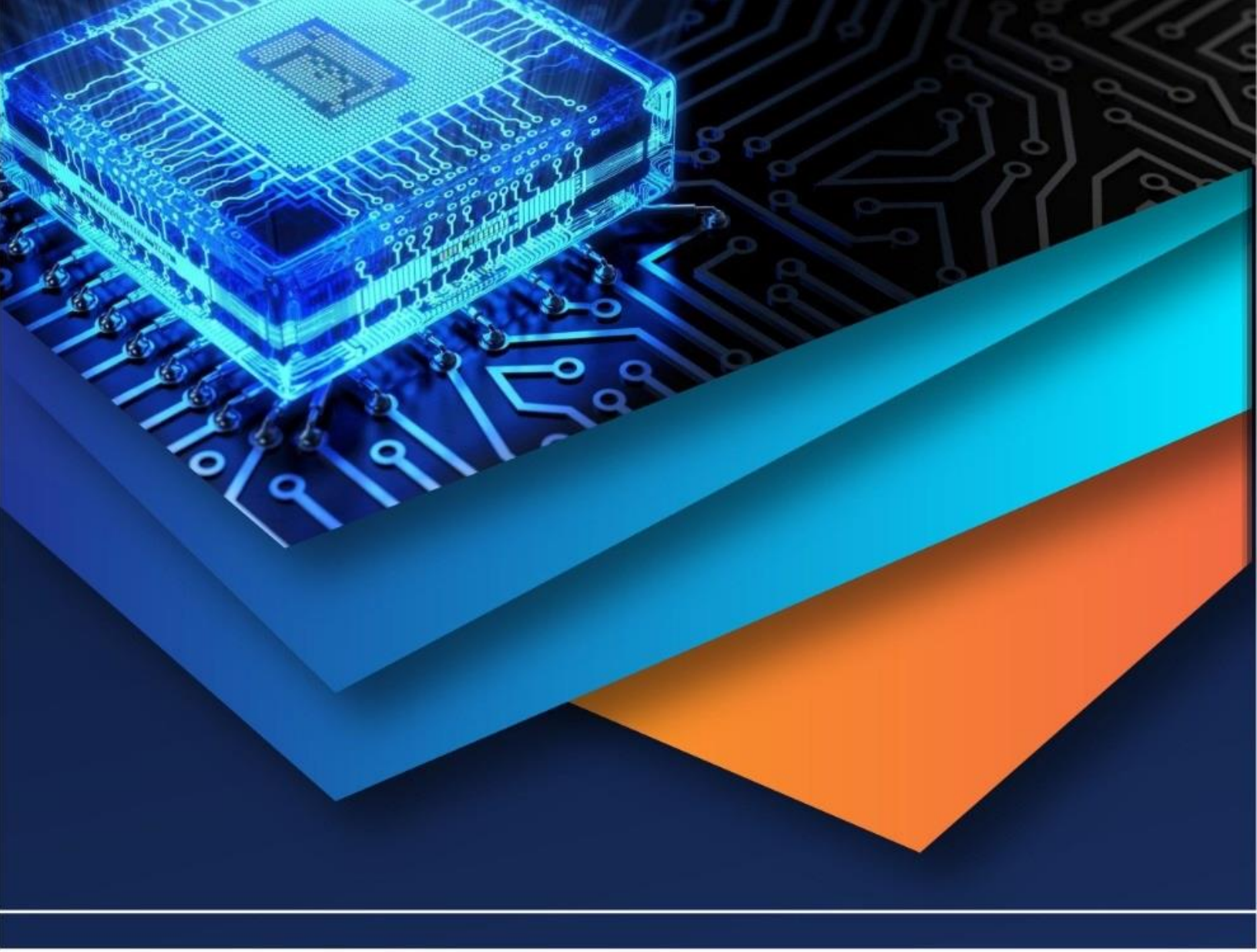
VIII. CONCLUSIONS

Concerning the initial question about the substitutability of the human project pioneer by AI, in light of our investigation of the current state of innovative work, the first all-unmistakable can be given. The expectations surpass (still) today's possibilities. In particular, the solutions available in practice barely meet the requirements of ambitious terms, for example, Automated Project.
Management or Project Management Bot. The expansive and dynamic field of tasks of a project director can currently just be automated in little, unmistakably characterized zones. In the metaphor of an autopilot, today's situation is more similar to a vehicle with early assistance systems, for example, ABS and ESP than a Tesla or Google Driverless Car. Be that as it may, the development is swift, and prototypes like Google Duplex give an impression of realistic potential. Much is now technically doable but still should be brought to product maturity. All in all, if the technical feasibility blurs into the foundation, is it just a matter of time until APM turns into a reality?
The results of our investigation guide the best methodology for further research. At the point when everything is said in done, we found a couple of energizing procedures and use cases for AI in PM. To comprehend the capability of AI for PM amazingly better, a business procedure viewpoint is apparently fitting. Nowadays, PM is comprehensively considered as a lot of unequivocal business forms; gauges like ISO and PMI depict regularizing process models. This thinks about assessing new strategies for process computerization and digitalization regardless of whether they could be adjusted for recognizing and abusing the capability of PM forms for AI-based mechanization.
Aside from execution questions, AI innovation, specifically, raises inquiries of acknowledgement, unwavering quality, straightforwardness and authentic similarly as a moral and good obligation. While these have been discussed in different regions of use, for instance, self-ruling driving for quite a while, the discussion in the venture the board is still in its beginning periods. Here, as well, the wheel shouldn't be re-imagined. Logically, for example, data morals oversee applicable inquiries and offer responses. Practically speaking, first associations have begun to make rules and structure conditions on this reason. For example, Deutsche Telekom has as of late given "Rules for the Use of Artificial Intelligence". Notwithstanding the further improvement of the specialized prospects, the individual ramifications for the morals of the task the executives must be persistently re-examined and assessed.

REFERENCES

[1] Russell, S. J., & Norvig, P. (2010), Artificial intelligence: A modern approach (3rd ed.). New Jersey: Pearson Education
[2] Atlassian. (2017, April 7). 3 ways AI will change project management for the better.
[3] How to apply AI Technology in Project Management, PM World Journal, Vol. VIII, Issue III (April).
[4] Krakovsky, M. (2018). Artificial (Emotional) Intelligence. Communications of the ACM, 61(4), 18-19.
[5] WILSON, J. (2018). Collaborative Intelligence: Humans and AI Are Joining Forces. Harvard Business Review, 96(4), 114-123.
[6] Burger, R. (2017, June 12). I, project manager: The rise of artificial intelligence in the workplace. Retrieved from https://blog.capterra.com/i-project-manager-the-rise-of- artificial-intelligence-in-the-workplace/
[7] Meulen, R. (2017, May 16). Smart machines to take over most routine PPM work. Retrieved from https://www.gartner.com/smarterwithgartner/smart-machines-to-take- over-most-routine-ppm-work/
[8] Davos. (2018, January 23). Infosys research: Business leaders adapt as enterprise AI moves beyond experimentation. Retrieved from https://www.infosys.com/newsroom/press-releases/Pages/enterprise-ai-beyond- experimentation.aspx
[9] "Germany : OLIVER Kaltner Selected to Executive Board Of Leica Camera AG." 2014. MENA Report, n/a.
[10] "Artificial Intelligence and Project Management: Beyond" – PMDAY 2018

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY