A

Mini Project Report on

## Management Tool Using ML

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

IN

### Computer Science & Engineering

### Artificial Intelligence & Machine Learning

by

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**2024-2025**

## A. P. SHAH INSTITUTE OF TECHNOLOGY

## CERTIFICATE

This is to certify that the project entitled “**Management Tool Using ML”** is a bonafide work of Aditya Rawat (22106022), Akash Singh (22106065), Mohit Rajput (22106126), Raj Patil (22106135) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering** in **Computer Science & Engineering (Artificial Intelligence & Machine Learning).**

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## Project Report Approval

This Mini project report entitled “**Management Tool Using ML*”*** by **Akash Singh ,Aditya Rawat, Mohit Rajput, Raj Patil** is approved for the degree of ***Bachelor of Engineering*** in ***Computer Science &Engineering***, (AIML) ***2022-23***.

##### External Examiner:

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Place: APSIT, Thane

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**Declaration**

##### We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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#### ABSTRACT

In today’s fast-paced industrial environment, effective task management is essential for maintaining efficiency and achieving strategic goals. Traditional management tools often struggle with scalability, adaptability, and real-time responsiveness, leading to inefficiencies in project execution. This paper explores the potential of Machine Learning (ML) to transform task management by introducing predictive analytics, automating routine processes, and enhancing decision-making. ML can significantly improve task prioritization, resource allocation, and risk management, making project management tools more adaptive and responsive to changing conditions.

The paper also delves into the human factors that are crucial for the successful adoption of ML-driven management tools, such as user interface design and the integration of Natural Language Processing (NLP) to enhance communication and documentation. While ML offers promising advancements, challenges like data quality, algorithmic transparency, and system integration must be addressed to fully realize its potential. Through case studies, the paper highlights both the benefits and obstacles encountered in the implementation of ML-powered tools, ultimately advocating for a holistic approach that combines ML with existing methodologies to optimize task management practices across various industries.

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# CHAPTER 1 INTRODUCTION

### INTRODUCTION

Management tools powered by Machine Learning (ML) represent a significant evolution in how organizations plan, execute, and monitor tasks and projects. These tools leverage the capabilities of ML to analyze large volumes of data, identify patterns, and make data-driven predictions that enhance decision-making processes. Unlike traditional management tools, which often rely on static inputs and predefined rules, ML-driven tools can adapt dynamically to changing circumstances, offering more accurate forecasts, automated task assignments, and optimized resource allocation.

The integration of ML into management tools not only improves efficiency and accuracy but also enables more personalized and intelligent user experiences. Features such as predictive analytics, anomaly detection, and natural language processing (NLP) allow these tools to anticipate potential issues, suggest actionable insights, and streamline communication within teams. As businesses continue to embrace digital transformation, ML-driven management tools are becoming increasingly vital for maintaining competitiveness, enabling organizations to manage complex projects with greater agility and effectiveness.

As tasks progress, regular tracking and monitoring become essential. This allows for the early identification of any issues or deviations from the plan, enabling proactive problem-solving and adjustments. Task management tools, such as project management software, play a significant role here, offering features like task lists, calendars, progress tracking, and real-time collaboration. These tools facilitate communication among team members, keep everyone updated on the status of their tasks, and help in maintaining momentum throughout the project lifecycle.

In addition to improving efficiency and decision-making, ML-driven tools are also enhancing collaboration and communication within teams. Through features like intelligent scheduling, real-time progress tracking, and contextualized reporting, these tools help ensure that all team members are aligned and informed, thereby fostering a more cohesive and productive work environment. As organizations continue to navigate increasingly complex project landscapes, the adoption of ML-driven management tools is poised to play a critical role in achieving operational excellence and sustaining long-term growth.

# CHAPTER 2 LITERATURE SURVEY

#### LITERATURE SURVEY

###### 2.1-HISTORY

The evolution of task and note management tools has a long history, beginning with basic, paper-based methods like to-do lists and journals, which have been used for centuries to help individuals organize their personal and professional lives. These analog systems were simple but effective, laying the foundation for more complex methods of organization. With the advent of computers and digital technology in the late 20th century, these manual methods transitioned into software applications such as Microsoft Outlook, Lotus Notes, and later, Evernote. These tools introduced features like digital note-taking, task lists, reminders, and calendar integration, significantly enhancing the ability to organize and retrieve information. However, these early digital tools were still heavily dependent on manual input, with limited automation or intelligence.

As cloud computing and mobile technology became widespread in the 2000s, task and note management tools evolved to include features like real-time synchronization across devices, collaborative functionalities, and more intuitive user interfaces. Despite these advancements, the core functionality of these tools remained focused on organization rather than leveraging automation or AI. The emergence of Artificial Intelligence (AI) and Machine Learning (ML) in the last decade has presented new opportunities to transform task and note management. These technologies have enabled the development of sophisticated algorithms capable of natural language understanding, content summarization, and intelligent task prioritization based on user behavior and contextual data. However, the integration of these cutting-edge technologies into mainstream tools has been limited, highlighting a gap in the market for advanced, AI-driven task and note management systems that can provide greater efficiency and personalization. This project aims to bridge that gap by incorporating AI and ML techniques to create a more intelligent, automated, and user-friendly management tool.

**2.2-LITERATURE REVIEW**

**A. I. Belaya, I. V. Tchancev and M. A. Kossukhina, "The selection of the corporate information system for innovative project management tasks," *2017 IEEE Conference of Russian Young Researchers in Electrical and Electronic Engineering (EIConRus)*, St. Petersburg and Moscow, Russia, 2017, pp. 1307-1310, doi: 10.1109/EIConRus.2017.7910807.**

The usage of modern methods in innovation project management is a driving force of innovation system development. To maintain cognitive economy systematic development in Russian Federation it is necessary to select the management type for innovative project: process management, project management or traditional management. The usage of enterprise information systems solves many problems that occurs in every type of management. The aim of the article is to consider and analyze the classes of enterprise information systems, their functionality in the area of innovative project management using the comparative analysis method and method of expert assessment and to suggest the software products of particular class that could be used for innovative projects management tasks.

**P. V. Yulianandra, S. Wibirama and P. I. Santosa, "Examining the effect of website complexity and task complexity in web-based learning management system," *2017 1st International Conference on Informatics and Computational Sciences (ICICoS)*, Semarang, Indonesia, 2017, pp. 119-124, doi: 10.1109/ICICOS.2017.8276348.**

Nowadays, e-learning has been used widely as an indispensable tool for teaching and learning. One of the most popular types of e-learning is learning management system (LMS). Interface design of LMS plays a big role when users are interacting with LMS environment. Beside the interface design, the type of tasks performed by users also affects users, especially the learning experiences. This study examines the effects of website complexity and task complexity in web-based learning management system on users, particularly the perceived usability and user experience. Using SUS and UEQ, the results show that there is an inverted U relationship between LMS complexity and perceived usability and user experience. A negative relationship is also found between task complexity and perceived usability and user experience. Our findings provide guidelines for LMS designers, LMS developers and teachers when designing a LMS or a course in LMS. This study proves that overall LMS with medium complexity is better in terms of perceived usability and user experience compared with LMS with low and high complexity.

**M. Xia, H. Liu, J. Li and M. Li, "Research on Task Scheduling Algorithm Based on Multi-Time Period Merging," *2021 4th World Conference on Mechanical Engineering and Intelligent Manufacturing (WCMEIM)*, Shanghai, China, 2021, pp. 389-394, doi: 10.1109/WCMEIM54377.2021.00085.**

Task scheduling algorithm is an important component of production task scheduling system. At present, the task scheduling system has some problems related to urgent task scheduling time and complex scheduling logic. Therefore, it is necessary for the task scheduling algorithm to consider the scheduling time and study the logic of the algorithm to ensure the efficient and orderly completion of the scheduling tasks. To solve these problems, this paper proposes a Time Merging Earliest Deadline First (TEDF) algorithm based on the integration of multiple time periods by merging the current time, execution time and task deadline time, which can improve the timeliness of the real-time task scheduling system. In the production task set, the tasks with high static priority are executed first, and in the same priority task queue, the task with the shortest waiting time is executed first as well. The simulation experiment results show that if the task deadline is sufficient, the total waiting time of the tasks processed by the TEDF algorithm is less than that of the ordinary queuing algorithm and the EDF algorithm; if the deadline is limited, the number of timeout tasks and important tasks generated by TEDF algorithm are less than that of ordinary queuing algorithm, which proves that TEDF algorithm can better solve the problems existing in the task scheduling system and has strong robustness.

**Meiling Zhou, Shilin Jiang and Lang Song, "Designing and developing lotus notes/domino-based information management system for power supply section," *2009 2nd International Conference on Power Electronics and Intelligent Transportation System (PEITS)*, Shenzhen, 2009, pp. 341-343, doi: 10.1109/PEITS.2009.5407000.**

The old information management system for power supply section has a serious managing defective, that is, with the rude Excel/Word-based managing methods, the information input has too much redundancy, and the operations of inquiry, statistics, summarizing are too difficult. This paper found that Lotus Notes/Domino-based Information Management Systems from IBM, used in Power Supply Section, can provide a better managing platform, to be detailed, it manages various equipments in power supply section effectively, the operation interface is user-friendly, and the information input is less redundant, the statistics and summarizing are simpler and speedier. Such a system has been put into use.

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# CHAPTER 3

# Problem Statement

# PROBLEM STATEMENT

In today’s competitive and fast-paced industrial landscape, effective task and tool management are crucial for maintaining operational efficiency, meeting project deadlines, and achieving strategic objectives. Despite the availability of advanced methodologies and technological innovations, many organizations continue to face significant challenges in optimizing these management processes. Traditional task management systems often struggle with scalability, real-time adaptability, and the ability to provide actionable insights, leading to inefficiencies that can impede productivity and increase operational costs.

One of the core issues with traditional management tools is their reliance on static inputs and predefined rules, which are often insufficient for handling the complexities of modern industrial projects. These tools lack the flexibility to dynamically adjust to changes in project scope, resource availability, or unexpected disruptions. As a result, project managers frequently encounter difficulties in prioritizing tasks, allocating resources efficiently, and mitigating risks effectively. This rigidity not only hampers project outcomes but also places additional strain on managerial staff, who must manually intervene to correct course or resolve conflicts.

Moreover, the integration of advanced manufacturing technologies such as Cyber-Physical Systems (CPS), Internet of Things (IoT), and Artificial Intelligence (AI) into the industrial workflow has introduced new layers of complexity. These technologies generate vast amounts of data, which, while valuable, can be overwhelming to process and analyze using traditional management tools. The inability to effectively harness this data further exacerbates inefficiencies, leading to missed opportunities for optimization and innovation.

The introduction of Machine Learning (ML) into task and tool management presents a promising solution to these challenges. ML algorithms have the potential to enhance decision-making by analyzing large datasets to identify patterns, predict outcomes, and automate routine processes. For example, ML can improve task prioritization by continuously learning from project data, enabling dynamic adjustments based on real-time conditions. It can also predict potential delays or resource shortages, allowing for proactive management that minimizes disruptions.

In summary, while traditional task and tool management approaches have significant limitations, the integration of Machine Learning offers a pathway to overcoming these challenges. This paper aims to explore the potential of ML in revolutionizing task and tool management, addressing both the opportunities it presents and the obstacles that must be overcome for successful implementation.