3.3.2 The number of books and chapters in edited volumes, as well as the number of papers published in national and international conference proceedings per teacher during the last five years.

Sl. No.	Name of the teacher	Title of the paper/ Title of the book/ chapter published	Title of the proceedings of the conference	National / International	Calendar Year of publication	Page Number
1	Prof R R Bhuvad	Efficient data storage Management and reducing duplication in cloud computing	International Research Journal of Modernization in Engineering Technology and Science	International	2023-24	3-4
2	Prof Dhanashree Gore	Unlocking the brains potential: A journey through neuro-technologies innovations	Iconic Research And Engineering Journals, Volume 7 Issue 9	International	2023-24	5-6
3	Prof Punam Shinde	Neuroevolution in artificial intelligence	Iconic Research And Engineering Journals,Volume 7 Issue 8	International	2023-24	7-8
4	Punam Shinde	Cyber AI: Empowering cyber security through artificial intelligence	Pramana Research Journal,Volume 14, Issue 7	International	2023-24	9-10
5	Punam Shinde	Journymate System for Enhanced Visitor Services at Tourist Place	International Journal of Innovative Research in Science, Engineering and Technology, Volume 13, Issue 5	International	2023-24	11-12
6	Prof S V Tawade	Macnum Wheel: An Emerging trend for material handling equipment in industries	International Advanced Research Journal in Science, Engineering and Technology	International	2023-24	13

7	Prof S V Tawade	Investigations on Suspension system of shock absorber by finite element method	International Advanced Research Journal in Science, Engineering and Technology, vol. 10, no. 12, pp. 78-89,	Internatio nal	2023-24	14
8	Prof S V Tawade	Design and manufacturing of material handling robot having XY gantry mechanism	International Journal of Advanced Research in Science, Communication and Technology	Internatio nal	2023-24	15
9	Dr.Laxman Narayanra Renapure	Management of Shirmp Farming in Ratnagiri and Sindhudurg District https://redshine.co.in/product/9789358796940/	NA	Internatio nal	2023-24	16
10	Dr.Laxman Narayanrao Renapure	Profitability Assessment of Shirmp Culture in India	34th Annual National Conference	National	2023-24	17
11	Dr.Laxman	Effect of Recapitalization and Corporate Governance on banking performance with respect to selected public sector banks in India.	INTERNATIONAL CONFERENCE ON BUSINESS INTERVENTIONS & TECHNOLOGY	Internatio nal	2021-22	18
12	Dr.K S Charak	Covid 19: The Preventive Protocol for Educational Institutions	NA	NA	2021-22	19
13	Dr. Laxman	OPTIMAL HEDGING STRATEGIES USING CURRENCY FUTURES AND OPTIONS	International Management Conference on Re-inventing the future of work and bussiness	NA	2021-22	20

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EFFICIENT DATA STORAGE MANAGEMENT AND REDUCING DEDUPLICATION IN CLOUD COMPUTING

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ABSTRACT

Cloud storage providers can save a significant amount of storage and bandwidth by using data deduplication, a technique that eliminates duplicated data by maintaining only one duplicate of a file. Cloud storage services allow individuals and organisations to outsource data storage to distant servers. In cloud data centres, deduplication is now a commonly used technology to increase the effectiveness of IT resources. An attacker can see if a file (such a pay stub with a name and salary amount) has already been stored (by someone else) by using the duplicate check, which exposes the user's sensitive data. Due to factors including high computational cost, low attack resistance, information leakage, and others, the majority of earlier methods that depend on the support of a trusted key server (KS) are insecure and constrained. A single point of failure results from the breakdown of the entire system due to the failure of the trustworthy KS. Data duplication in the current system has security problems. Therefore, we are using double encryption and hash code creation to help us solve these problems. It combines access control with cloud data deduplication. Because only authorized data holders have access to the symmetric keys needed for data decryption, encrypted data can be safely accessed. Our technique is efficient and safe under the specified security model, and it is highly appropriate for massive data deduplication, according to a thorough performance study and test. We use computer simulations and in-depth analysis to assess its performance. The outcomes demonstrate the scheme's higher efficacy and efficiency for a possible real-world implementation, particularly for huge data deduplication in cloud storage.

Keywords: Storage Management, Cloud Computing, Deduplication, Manage Storage.

I. INTRODUCTION

Cloud computing reorganises different Internet resources to provide a new manner of offering services. Data storage is one of the key and most often used cloud services. Usually, data is stored encrypted to protect the privacy of the data subjects. Encrypted data, however, poses significant difficulties for cloud data deduplication, which is essential for processing and preserving vast amounts of data. Conventional deduplication techniques cannot be applied to encrypted data. Data deduplication suffers from inadequate security in current encryption techniques. They are not resilient to being in charge of and denying access to data. Consequently, a few of them. They are simple to put into practise. In this paper, we suggest rewriting the proxy and using challenge features to deduplicate encrypted data that is stored in the cloud. Access control and cloud data deduplication integrated. We use computer simulations and in-depth analytics to determine how well they performed. The results demonstrate the best possible efficiency and efficiency scheme distribution in practise, particularly for large-scale cloud data deduplication storage.

II. LITERATURE SURVEY

1. Information One method for lowering the quantity of storage space required by an organisation to store its data is de-duplication. Many data items are duplicate copies in the storage systems of the majority of organisations. For instance, a same file might be saved by multiple users in various locations, or a large amount of the same information could be present in two or more non-identical files. By preserving only one copy of the data and substituting pointers that point back to the original copy for the other copies, de-duplication gets rid of these superfluous copies. De-duplication is often used by businesses for disaster recovery and backup purposes, but it can also be utilised to free up space in primary storage [1].

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Unlocking the Brain's Potential: A Journey through Neurotechnology's Innovations

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[1, 2] *Department of computer science and engineering*

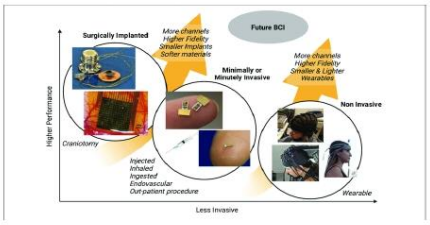
Abstract- ***At the nexus of computer science, engineering, and neurology, the dynamic, transdisciplinary rules of neurotechnology provide a revolutionary knowledge of the intricate workings of the human brain. This abstract explores the wide area of neurotechnology and evaluates the significance of comprehending the finer points of behavior, mental processes, and neural circuitry. Neurotechnology makes previously unachievable studies into the inner workings and function of the brain possible by utilizing cutting-edge techniques including optics, brain imaging, and electrophysiological methodologies. Furthermore, by providing deep brain stimulation, brain-computer interfaces, and neuroscience as cutting-edge methods of neurological ailment diagnosis and treatment, it catalyzes revolutionary advances in healthcare. However, given how quickly neuroscience is advancing, there are significant ethical concerns, including those with mental health, privacy, and mental improvement and neuroenhancement***

Indexed Terms- ***Neurotechnology, Neuroscience, Brain Research, Innovation, Neuroimaging, Brain-computer interfaces, Ethical considerations.***

I. INTRODUCTION

The main concept behind the 1990 founding of neurotechnology in Vilnius, Lithuania, was the use of neural networks for biometric person identification, computer vision, robotics, and artificial intelligence applications. To our great satisfaction, we were able to weather the "neural networks winter" by applying and developing this knowledge throughout 2012, the year that saw tremendous advancements in the theory and framework of deep neural networks. This opened up a wide range of new initiatives in object identification and other applications, and it enabled us to swiftly capitalize on the opportunities that arose with the new wave of deep learning. There are currently over 100 people working for us, with 15% of them having a Ph.D. and half of them being actively involved in the company.

With millions of linked neuronal cells, the human brain continues to be 1 of the body's most intricate and little understood organs. A great deal of brain activity and malfunction remain beyond our understanding even after decades of research. In this search for knowledge, neurotechnology shows to be an effective ally, offering techniques and tools to monitor, control, and analyze brain activity with previously unattainable accuracy. Clarifying the fundamental concepts underlying how the brain works is one of the primary goals of neurotechnology. With the use of techniques like EEG, single-cell recording, and functional MRI (fMRI), researchers can map brain activity in real-time and discover various neurological correlates of perception, thoughts, feelings, and actions.



- History –

We introduced our first fingerprint identification system for criminal investigations in 1991, one year after the foundation was established. The corporation established its robotics branch in 2004 to better handle the increasing amounts of artificial intelligence research. The division started working on mobile autonomous robots. We founded Biometric Supply in 2009 to help our clients choose the right hardware for

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Neuroevolution in Artificial Intelligence

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Abstract- ***Neuroevolution, the amalgamation of neural networks with evolutionary algorithms, stands as a transformative force in advancing Artificial Intelligence (AI). This paper unfolds with the purpose of elucidating the fundamental concepts and applications of Neuroevolution, aiming to provide a nuanced understanding of its significance in propelling the field of AI. Beginning with an exploration of the synergies between evolutionary algorithms and neural networks, the paper emphasizes the overarching objective of showcasing the real-world applicability of Neuroevolution in solving intricate problems across diverse domains. Evolving architectures of neural networks, including the adaptability in Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks, are examined to elucidate the adaptability intrinsic to Neuroevolution. The paper delves into scalability and efficiency strategies, shedding light on handling larger neural network architectures and enhancing computational efficiency. Integration into multi-agent systems is explored, emphasizing Neuroevolution's role in optimizing cooperative and competitive behaviors within complex interactions. Robustness and adaptability analysis of Neuroevolved networks form a critical aspect, evaluating their resilience in varied conditions and their generalization capabilities. Conclusively, the paper outlines the contributions of Neuroevolution to the broader AI landscape, providing insights for researchers and practitioners and fostering developments at the intersection of neural networks and evolutionary algorithms.***

Indexed Terms- ***Neuroevolution, Artificial Intelligence, Evolutionary Algorithms, Neural Networks, Genetic Algorithms, Learning Algorithms, Optimization Techniques, Machine Learning, Reinforcement Learning, Evolutionary Strategies***

I. INTRODUCTION

Neuroevolution, within the expansive domain of artificial intelligence (AI), marks a significant departure from conventional approaches to training artificial neural networks (ANNs)[10]. Instead of relying on standard optimization methods, neuroevolution draws inspiration from the intricate processes of biological evolution. This not only refines the parameters of neural networks but also dynamically shapes their architectural structures, offering a promising paradigm for addressing complex problems where traditional optimization methods often encounter challenges. This adaptive and exploratory framework aims to enhance the capabilities of AI systems.

The NeuroEvolution of Augmenting Topologies (NEAT) algorithm, conceived by Kenneth O. Stanley and Risto Miikkulainen, is a pivotal advancement in the evolutionary path of neuroevolution. NEAT is a sophisticated approach that dynamically adjusts neural network architectures throughout the evolutionary process. This allows for the discovery of more efficient and specialized structures tailored to specific tasks, showcasing dynamic adaptability that improves the algorithm's ability to find optimal solutions in complex and evolving problem spaces.

Neuroevolution's applications in AI are diverse and impactful. In the realm of robotics, neuroevolution plays a crucial role in evolving neural controllers for robotic agents, enabling them to autonomously adapt and navigate intricate and unpredictable environments. In gaming, neuroevolutionary algorithms prove effective in training intelligent agents, enhancing their strategic decision-making abilities and overall gameplay performance.

The inherent strength of neuroevolution lies in its ability to navigate a vast and nuanced solution space, particularly beneficial in scenarios where the optimal solution is elusive, or problem spaces are

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Cyber AI: Empowering Cybersecurity through Artificial Intelligence

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Abstract

This research paper, titled "Cyber AI: Empowering Cybersecurity through Artificial Intelligence," has a dual purpose. Firstly, it aims to explore and showcase the transformative potential of incorporating Artificial Intelligence (AI) into cybersecurity. In response to the evolving and sophisticated nature of cyber threats, the study intends to demonstrate how Cyber AI can significantly enhance the effectiveness of cybersecurity defenses. The primary focus is on leveraging AI to identify anomalies, anticipate dangers, and respond rapidly to cyberattacks, ultimately leading to a more robust defense mechanism.

the research seeks to address challenges associated with the integration of Cyber AI, including complexities and ethical considerations. By examining both advantages, such as improved threat detection and automation, and challenges, such as integration issues and moral dilemmas, the paper strives to provide comprehensive insights. The overarching purpose is to contribute to the responsible and effective implementation of Cyber AI in fortifying cybersecurity defenses. The study also aims to offer a forward-looking perspective on the potential future directions of Cyber AI, thereby aiding in the creation of a safer digital landscape

Keywords: *Cyber AI, Cybersecurity, Sophisticated cyber threats, Artificial Intelligence, Machine Learning, Proactive Approach, Anomaly Detection, Behavior Analysis, Real-time Threat Intelligence, Responsible AI Governance, Future Trajectory*

1. INTRODUCTION

The crowd evaluates actual Cyber AI applications like IBM Watson and Darktrace's Autonomous Cyber AI. The prospective future course of Cyber AI is addressed as well in the report, including AI-driven threat hunting and the use of quantum computing for cybersecurity. Cyber AI emphasizes ethical considerations, data privacy, and human oversight. In the end, Cyber AI enables businesses to bolster their cybersecurity defenses and build a more secure digital environment. Malware and cyber-arms are becoming more sophisticated, necessitating smart technologies and original solutions. To strengthen cyber defenses and successfully counteract cyber threats, Artificial Intelligence (AI) approaches and knowledge-intensive technologies become essential enablers [2].

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JourneyMate: System for Enhanced Visitor Services at Tourist Place

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Professor, Department of Computer Engineering, Navsahyadri Group of Institutions, Faculty of Engineering, Pune, India[5]

ABSTRACT: The advent of mobile technology has revolutionized visitor experience in tourist destination, extending beyond ticketing to provide a comprehensive suite of services. This study introduces 'JourneyMate' an innovative Android application developed using Flutter, a leading open-source framework. JourneyMate goes beyond conventional ticketing systems, offering a holistic approach to enhance visitor services at tourist places. The app features cutting-edges ticketless entry system, allowing seamless access for users. It serves as a visitor Guides, providing detailed insights into attraction, amenities, and important guideline. With time slot to visit, visitors can plan their trips efficiently, ensuring a balanced and enjoyable experience. Journey Mate also outlines Rule and Regulation, promoting responsible tourism. Real tome notification keep user informed about events promotions, and essential updates. The app includes comprehensive information about the place, Highlighting the rich history, conservation efforts, and significance of the tourist destination. 'How to reach' offers detailed direction and transportation options. The system integrates QR code technology to provide users with instant access to comprehensive information about available places. A robust feedback system encourages users to share their experience, contributing to ongoing improvements. 'Contact us' provides directed communication channels for user inquiries. User can effortlessly book tickets, explore various amenities, and navigate designated areas through the intuitive interface. The integration of QR code optimizes the user experience, ensuring efficient access control and enhancing overall operational efficiency. This research not only showcases the power of Flutter in mobile app development but also demonstrates its practical application in elevating the entire visitor journey mate an indispensable companion for tourists for to explore. simplifying the ticketing process and improving visitor engagement in public destination.
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KEYWORDS: e-ticket, Crowd Management, QR code technology, Secure Payment Transaction, Visitors Guide, User satisfaction, Digitalization.

I. INTRODUCTION

In the ever-evolving digital landscape, mobile application stands as indispensable tools, redefining daily tasks and elevating user experiences. Among these innovations emerges the JorneyMate app, a trailblazing android application built on flutter, an acclaimed open-source UI software development toolkit. JourneyMate transcends conventional boundaries, not merely as a ticketing system for tourist place but as a comprehensive solution aimed at transforming the way visitors engage with and appreciate their favourite tourist destination. JourneyMate seamlessly integrates Flutter's cross-platform capabilities, making it compatible with a diverse range of android devices and ensuring accessibility for a broader audience Furthermore, this project embraces the emerging trend of digitalization in the realm of tourism. Beyond traditional ticketing, this app revolutionizes the visitor experience by offering suite of features. The innovative ticketless entry system ensures swift and contactless access, setting the stage for a hassle-free exploration of the destination. Time slots option empower users with efficient trip planning, optimizing their time and enhancing overall satisfaction. By incorporating QR based interaction, it provides convenient means for visitors to access place-related information. The app serves as a visitor's guide, providing not only information about ticket booking but also detailed insights into attractions, amenities, and essential rules and regulations. Real-time notifications keep users abreast of events, promotions and crucial updates. The 'About the Place' section highlights the cultural, historical and conservation significance of the destination, enriching the visitor's knowledge and spreads awareness. The purposed system extends beyond conventional boundaries, offering insights into sustainable tourism through the 'Vocal for Local' feature. By promoting local businesses and products, the app contributes to the economic well-being of the society. QR code technology further optimizes user experience, enabling efficient access control and information retrieval at various spots of that place. This project, aim to showcase the immense potential of Flutter in developing efficient and user-

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Macnum Wheel: An Emerging Trend for Material Handling Equipment in Industries

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Abstract: The present automobile industries need execution of industrial robots due to standard in mass and batch size production of the vehicles. Design of omnidirectional vehicles is now a traditional way in automobiles sectors. The operating advantage of this kind of vehicle is on any kind of surface such as a rough, smooth, flat, and curved surface. A vehicle has the potential to get omnidirectional, if it operated on mecum wheel. By providing the omnidirectional ability vehicle has moving flexibility that such type of vehicle can work in any internal and external application. In present paper design and different applications of mecnum wheel for omnidirectional vehicle has been presented. Different design and fabrication and manufacturing steps are discussed.

Keywords: Omni-Directional Mobile Robot, Mecanum Wheel & Autonomous System

I. INTRODUCTION

The mecanum wheel was originated by Bengt in 1975 from Sweden. It I based on the theory that canter wheel is placed in between the number of rollers around its periphery at an angle. A normal force is translated in the direction of the wheel by the peripheral roller. The resultant force is developed by the individual elements of the roller, which in turn move freely without changing the direction of the wheel. In the present automation world, the demand for industrial robots are increasing. Many processes service industries are using mobile or movable robots for transmitting of raw material of finished product from one place to another place. It is observed that uses of industrial robots are common due to the reason of saving in time and money in transportation. The advantage of the omnidirectional robot is that it can move independently as well as work in three degrees of freedom. An omnidirectional vehicle can increase its movability in an effective manner. Although, it is a challenging task to apply mobile robots in many industrial sectors like cement industry, automobile industry, aerospace industry and defence organization. This industry required high skills and high movability at the same time. Manufacturing of different parts in such type of industries requires high labour cost as well as complexibility in operation. They designed the mecanum wheel with the set of standard formulas. The wheels were designed for educational purposes and as a prototype for a possible larger model [1]. They developed an omnidirectional robot o which consists of nine rollers. The robot is operated using direct current motors and they are directly coupled to the chassis [2]. This paper proposed an improved design for a mecanum wheel for Omni-directional robots.

This design improved the efficiency of mobile robots by reducing frictional forces and thereby improving performance theoretically. Paper theorized that surface plays an important part in the creation of force vectors of individual wheels [3]. The paper shows results for four-wheeled Omni-drive transport systems and certain ranges for trajectories and starting conditions, a curved path can be traversed faster than a straight-line path [4]. This paper shows the results of an electrical design of a robot that uses mecanum wheels. It shows the different variations in its tests [5]. The paper was an overview of the design of Omni-directional mobile robot using mecanum wheel [6]. The main advantage of this type of wheel was represented by the omnidirectional property that it provided, allowing extreme maneuvrability and mobility in congested environments [7]. In this paper, they introduced the new design of the Omni-directional mobile robot with mecanum wheel to overcome the weak points of their previous robots [8].

II. THE MECANUM WHEEL

Mecanum wheel was first developed by1)in 1972. Such wheels can rotate around an active wheel's axis. (i. e. the base wheel) and the rollers' axis at a 45° angle. The mecanum wheel has 3 DOFs consisting of a steering drive, roller motion and vertical axis turning slip at the point of interaction. The rollers on the mecanum wheel are positioned at an angle other than 90 degrees (typically ± 45 degrees) as shown in Fig. 7. The roller's contact point with the surface is discontinued, resulting in vibrations in the base frame of the robot specifically on uneven surfaces.

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Investigations on Magnetic Suspension System of Shock Absorber by Finite Element Method

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Abstract: The suspension system of two wheelers is depending upon spring type, hydraulic or pneumatic type of suspension systems. This present work gives deals with the magnetic suspension system and the magnetic suspension system is turning out to be the new option to the conventional suspension systems. The aim of this work is to study and investigate the response of two-wheeler suspension system, when it is subjected to road surface irregularities. This research work presents design, construction and working of magnetic suspension system. This system uses magnets and spring as passive dampers, which are used to reduce displacement and acceleration of spring mass in order to improve ride comfort. This type of Suspension has no problem of leakage of oil like hydraulic shock absorber. FEA analysis is carried out over the suspension spring with different materials such as Crome silicon, Carbon steel, NiCr, magnesium and Aluminium. With and without magnetic suspension is analysed for the stress and deformations. It is observed that the carbon steel has minimum deflection and the maximum stress induced in aluminium material.

Keywords: Magnetic, Suspension system, Spring, Spring Material, FEA

I. INTRODUCTION

In order to overcome the disadvantages of the conventional suspension system the magnetic suspension system can be used. The magnetic suspension system can be used in many applications of the suspension in automobile industries and in other industries too. The mechanical magnetic suspension system using permanent magnet also has some disadvantages of slow responsibility and difficult control. The present work is focused on developing the actively control mechanical magnetic suspension systems using a permanent magnet. Magnetic suspension system is mainly based on the property of magnets that like poles of magnets repel each other. This characteristic of magnets is used in suspension system. The suspension system also contains spring in between the two magnets to avoid direct contact of two magnets due to overloading. Such systems find large number of applications in automobile industry. In this modern world automobile sector has reached its peak. In two-wheeler suspensions systems the coil spring after utilizing for some time it becomes not only harder but also reduces cushioning effect. This limitation of the coil spring can be overcome by using magnetic suspension system. The cushioning effect provided by magnetic suspension will exist for long time. There is one magnet fixed at the top of the inner portion of the cylinder and the second magnet placed at bottom of the inner portion of cylinder that reciprocates up and down due to repulsion. The two magnets repel against each other to achieve the aspect of suspension. This system is having the tendency to eliminate the use of conventional suspension system due to its low cost and less maintenance capacity. The modern automobile has come a long way since the days when "just being self-propelled" was enough to satisfy the car owner. Improvement in suspension, increased strength & durability of components, and advances in tire design and construction has made large contributions to tiding comfort and driving safety. Basically, suspension refers to the use of front and rear springs to suspend a vehicles frame, body, engine, and power train above the wheels. These relatively heavy assemblies constitute what is known as sprung weight. Unspring weight, on the other hand, includes wheels and tire, break assemblies and other structural members not supported by the springs. The springs used in today's cars and trucks are engineered in a wide variety of types, shapes, sizes and capacities. Types include leaf springs, coil springs and torsion bars. The functions of suspension system are, preventing the vehicle body and frame from road shocks, giving stability of the vehicle, safeguards the passengers and goods from road shocks, gives the good road holding while driving, cornering and braking. gives cushioning effect, provides comfort, shock forces are reduced as much as possible, maintains the proper ride height of your car, maintain proper alignment of the wheels, serves as weight support for the vehicle, maintain tire contact with the road, controls the vehicle's travel direction. maintains a solid grip on the road while driving, cornering, or braking, maintains the correct steering geometry, torque and braking reflexes must be resisted, maintaining vehicle stability while traveling over uneven terrain or turning in order to reduce the tendency for rolling, pitching, or vertical movement, protects passengers from road shocks and give a comfortable ride. reduce the strains caused by road shocks on the motor vehicle's mechanism and offer a cushioning effect. protects the vehicle's structure from stress loading and vibration caused by road surface irregularities while maintaining its stability, achieve the necessary height for body structure, retain the right geometrical relationship between

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Design and Manufacturing of Material Handling Robot Having XY Gantry Mechanism

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Abstract: *In powder coating industry there will be heavy and large number of components for the process. For powder coating process the components need to be taken to three stages. For taking this component to these stages it needs to be lifted. This lifting is time consuming and difficult. We need labors for this and thus it can create accident. Thus, for this purpose we are creating a mechanism that would save our time. For horizontal and vertical movement, we use lead screw. The feed is supplied to the lead screw with DC motor. And for holding the component we use grippers. Today because of developments in technology various industries use robots in material handling to avoid accidents in hazardous chemical industries and for increasing efficiency, accuracy, and safety of workers. So, in this work we are developing XY gantry mechanism for material handling in powder coating. The main aim of our work is to manufacture a robot for material handling purpose. For the material handling operation, the robot will be consisting of rack and pinion arrangement in X and Y directions. While working in X direction rack will be fixed and pinion will be moving and for Y direction rack will be moving and pinion will be stationary. For pick and place operation there will be a gripper. The pick and place operation and all motion will be guided by DC motor.*

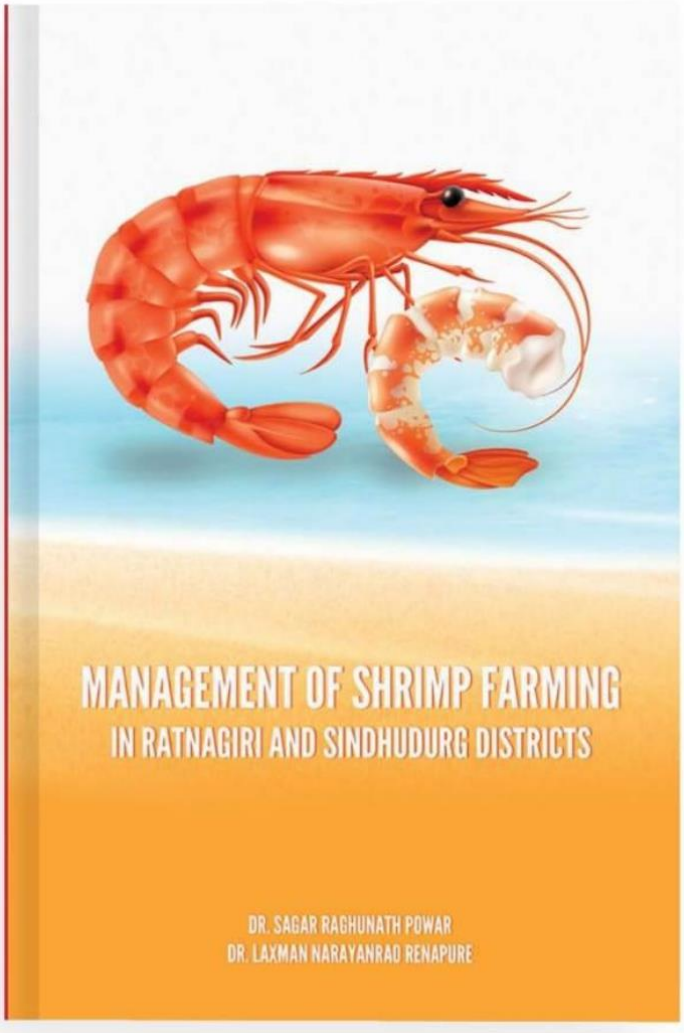
Keywords: Robot. Gripper, Gantry, Material Handling

I. INTRODUCTION

An easy way to comply with the conference in modern industries material handling plays an important role to increase the productivity and decrease the cost of product. The material handling can be defined as an integrated system involving such activities as moving, handling, storing, and controlling of materials by means of gravity, manual effort or power activated machinery. Efficient material handling is needed for timely delivery and reduced idle time of machines due to non-availability or accumulations of materials at workstations. Safe handling of materials is important in a plant as it reduces wastages, breakage, loss, and scraps. The last two decades have witnessed a significant advance in the field of robots application. Many more applications are expected to appear in space exploration, battle field and in various actives of daily life in the coming years. A robot is a mechanical device that performs automated tasks and movements, according to either pre-defined program or a set of general guidelines and direct human supervision. These tasks either replace or enhance human work. Robot is an integral part in automating the flexible manufacturing system that one greatly in demand these days. Robots are now more than a machine, as robots have become the solution of the future as cost labour wages and customer's demand. Even though the cost of acquiring robotic system is quite expensive but as today's rapid development and a very high demand in quality with standards human are no longer capable of such demands. Research and development of future robots is moving at a very rapid pace due to the constantly improving and upgrading of the quality standards of products.

II. LITERATURE SURVEY

The last two decades have witnessed a significant advanced in the field of robot applications. A robot is a mechanical device that performs automated tasks and movement according to their set of general guidelines and direct human super vision. The tasks either replace or enhance human work such as in manufacturing or manipulation of heavy and hazardous material handling [1]. In today's competitive global market, industries and manufacturing companies demand adjustable sizes, higher quality, flexibility, and shorter lead time types of products to be manufactured. Companies need to attain customer satisfaction and cost reduction in production operations [2]. A gantry mechanism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