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***AI BASED PHARMACY MONITORING SYSTEM*** *Mr. C M. Arjun Mrs. Dr . A. Kanimozhi*

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#  ABSTRACT

The AI-Based Pharmacy Monitoring System is a cutting-edge solution designed to optimize pharmacy operations, improve patient safety, and ensure regulatory compliance. Leveraging artificial intelligence (AI) and machine learning (ML) algorithms, this system provides real-time monitoring and analytics to enhance pharmacymanagement.

##  1. INTRODUCTION

AI technologies in medicine take numerous forms, ranging from the entirely virtual (e.g., deep learning-based health information management systems and active physician support in treatment decisions) to the cyber physical (e.g., robots used to assist the attending surgeon and targeted nano robots for drug delivery). Because of AI technologies’ ability to perceive sophisticated patterns and hidden structures, many image based detection and diagnostic systems in healthcare can now perform on par with clinicians or a little better in some circumstances.

 AI powered clinical decision support systems may reduce diagnostic errors, add intelligence to support decision making, and assist physicians with electronic health record data extraction and documentation duties. Several researches are being conducted to investigate the potential of artificial intelligence in the timely and exact identification of diseases. Many illnesses can now be diagnosed early by enhancing clinical insight extraction and feeding such insight into a well-trained and validated machine learning algorithm.

Machine learning algorithms today are quite close to real-world settings. Because of increasing technology breakthroughs, algorithms will take over duties that were previously human intensive. The power of machine learning to learn and grasp the data will have an impact on medicine, displacing much of the work of radiologists and anatomical pathologists.

# 2. Benefits in AI Pharmacy Monitoring

## 2.1 Benefits in AI

A pharmacy inventory management system is a software system that automatically tracks medicine stocks, expired items, drug deliveries, and e-prescriptions, thereby enhancing operational productivity and multi-location support, as well as reducing the risk of overstocking and missed opportunities. It monitors drug availability at every point of your supply chain from purchasing to dispensing to restocking, and the cycle continues.

**Benefits in AI Pharmacy** :

**1. Manage Stocks Effectively**

Inventory management in pharmacy gives you a real-time view of your stock levels. Synchronizing your PMR system with an EPOS system or other inventory software automatically updates inventory levels as medications leave your shelves. This helps you analyze sale rates and adjust your stock levels so that popular items are always available.

**2. Identify and Reduce Expired Items**

Expired items, otherwise known as dead stock, are generated to a large extent by uncollected repeat prescriptions. Using a pharmacy drug inventory management system helps to return items to your system before they expire.

**3. Streamline Lot Tracking of Prescription and Over-the-Counter Medicines**

Keeping track of the inventory’s production and expiry date is a must for pharmacies that want to profit while benefiting their customers and comply with all the regulations. Essential components of a pharmacy inventory management system are identifying, locating, and even removing batches of medications.

**4. Identify Sale Trends and Patterns**

Similar to other businesses, pharmacies worth their onion can predict future sales projections based on past trends. This is possible thanks to the various tracking and analytical functions of an efficient pharmacy inventory management system. For instance, it’s wise to stock up before the seasonal demand spikes for cold, flu, and respiratory infection medications in winter and autumn.

**5. Easily Spot Shrinkage**

Gone are the days of spotting shrinkage only after a thorough manual stocktake. Modern pharmacy information systems automate the audit process by comparing inventory reports and sold/prescribed items with physical stock.

## 3. Technology Stack

HARDWARE REQUIREMENTS:

Processor - Intel Pentium 4

RAM- 512 MB

Hardware capacity : 80GB

CD Drive type : 52xmax

Mouse

Microphone

Personal computer/Laptop

SOFTWARE REQUIREMENTS:

|  |  |  |
| --- | --- | --- |
| Front end | : | Python |
| Back end | : | Dataset |
| Operating system | : | Windows 10 |
| Tools | : | python IDLE, Sublime |

### 4. Diagram

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### 5 Features

 **1. Electronic Prescription**

Prescription errors are one of the top 5 healthcare errors, with the FDA reporting [more than 100,000 cases](https://www.fda.gov/drugs/information-consumers-and-patients-drugs/working-reduce-medication-errors) yearly. The e-prescription pharmacy inventory management system functionality can eliminate this problem by providing a user-friendly option for patients and healthcare providers. Based on Electronic Health Records (EHRs), this feature eliminates confusing paperwork and facilitates rapid dispensing of the right drug. Plus, it allows pharma stores to manage medications, improve productivity, and ensure patients’ satisfaction.

**2. Automated SMS Messages and Alerts**

The automated inventory system pharmacy operates in a way that allows pharmacies to schedule reminders and send alerts to patients before their prescribed medications run out. This feature helps pharmacists to get feedback from patients and fosters a personalized engagement between them.

**3. Expiry Control**

As a leading inventory problem pharmacies face, expiry control is one of the key features of automated pharmacy inventory control systems. Pharmacies no longer have to shoulder huge losses from expired medicines and medical products. With the expiry control feature, they can keep track of expiry dates and only sell items based on a first-in, first-out strategy.

**4. Stock Re-Order Management**

Striking a balance between re-order and supply is critical to keeping important medications in stock. This is where the stock re-order management feature of pharmacy inventory management software comes into play. It provides a clear picture of how products are selling, which are in low demand, and which will be out of stock soon. Knowing this helps pharmacies to set a minimum stock level, indicating when it’s time to place an order for new supplies.

**5. Centralized Database and Backup**

Organizing patient data in a central database makes retrieval as easy as pie. The backup and restore feature of pharmacy inventory management schedules automate data backup to prevent sudden data loss.

**6. Data Reporting and Analytics**

The pharmaceutical inventory management software functionality is incomplete without its data reporting and analytics feature that subserves the following:

* Generates data-driven reports about the standard prerequisite of drugs and their wholesale performance.
* Automatically manages drug inventory with details about ROI, sales, and other business metrics.
* Takes full stock of products and calculates re-order points based on product and category.
* Customizes reports to identify marketing insights, budgeting roadmaps, and suspicious patterns.

**7. Real-Time Multi-Store and Multi-Location Synchronization**

Pharmacies with more than one storefront or location can take advantage of the synchronization feature of pharmacy retail software to manage data and stocks across all sales points. This works by prompting electronic transmission and data exchange on returns, sales, supplies, and revenue. Pharmacy dispense software that flaunts this feature usually provides comprehensive reports in a central database.

**8. Data Integration with Third-Party Software at Scale**

Integrating the pharmacy inventory management software with third-party software is especially important for mid-to-enterprise pharmacies operating at scale. It’s possible to integrate the software with an EHR/EMR system, prescription drug monitoring programs, point of sale software, interactive voice response, DHL, and even medical insurance verification software.

**9. Compliance and Regulatory Feature**

Unless you are running a pill mill, your pharmacy should be operated in accordance with both federal and state laws. Some specific regulations pharmacies should consider are: Health Insurance Portability and Accountability Act (HIPAA), General Data Protection Regulation (GDPR), Inventory, Drug Enforcement Administration (DEA) regulations, and others. Inventory management helps pharmacies play by the books, with the latest security measures and compliance in place, while ensuring the smooth handling of business activities.

**10. Customer Support System**

The primary goal of every pharmacy should be patient satisfaction. Integrating a customer support system (CMS) is one of the core requirements of pharmacy inventory management software. This user-friendly feature records and manages patient data, responses, and feedback. It also automatically updates patients’ lists and is ideal for controlling patient treatment.

### 6. Implications for pharmacists and their practice

### AI can strongly influence and shift pharmacists’ focus from the dispensing of medications toward providing a broader range of patient-care services. The pharmacist can leverage AI to help people get the most from their medicines and keep them healthier.

### Most importantly, AI provides pharmacy an opportunity for more collaboration across many different entities serving the same patient. For the patient, in addition to potentially better healthcare services offered by their professionals, AI may be a useful tool for providing guidance on how and where to obtain the most cost-effective healthcare and how best to communicate with healthcare professionals; optimizing the value of data from wearable; providing everyday lifestyle guidance; integrating diet and exercise; and supporting treatment compliance and adherence.

Improvements in the technical performance of natural language processing, understanding, and creation have helped automated speech analytics. Automated speech analytics may reveal markers for early-stage dementia, modest cognitive impairment, Parkinson’s disease, and other mental diseases. Attempts have also been made to identify changes in mental health using smart phone sensors

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### 7. Conclusion

Pharmacy inventory management software is an essential part of running a pharmacy anywhere in the world. Expiry control, stock management, and other key features help you keep track of your pharmaceutical inventory and stay ahead of the curve. However, getting suitable software for your pharmacy will require research and technical know-how. The good news is that we at Langate have the necessary knowledge and expertise on how to create such solutions, and we will gladly share it with you. Let’s build your custom pharmacy software together.

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