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Ai-Powered Asset Tracking Agent Using Agentic Artificial Intelligence

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Abstract: Effective organization asset management enhances operational accuracy and accountability. Most institutions still rely on manual means, like spreadsheets and registers, to track assets. This often results in dissonance in data, loss of assets, and time-consuming audits. The following paper discusses an AI-powered Asset Tracking Agent proposed to automate and also simplify Enterprise Asset Management. This proposed system will be integrating a FastAPI-based backend, SQLite database, and an agentic AI layer using Google Gemini so as to enable natural language interaction. Users can add, assign, update, and retrieve asset information through conversational queries without technical complexity. In a structured development methodology, the paper includes requirement analysis, system design, implementation, and testing. Experimental evaluation shows improved accuracy, real-time visibility, reduced manual workload, and efficient audit readiness compared to traditional asset tracking approaches. The proposed solution offers an intelligent framework that is scalable for managing the complete lifecycle of corporate assets.

Index Terms - Asset Management, Agentic AI, FastAPI, Natural Language Processing, Enterprise Automation, Artificial Intelligence

I. INTRODUCTION

In modern organizations, asset management plays a crucial role in ensuring that company owned resources are properly recorded, allocated, utilized, and maintained throughout their lifecycle. Assets such as laptops, desktops, mobile devices, servers, and related equipment represent a significant operational investment. As organizations expand in size and complexity, the number of assets and employees increases, making manual asset tracking methods inefficient, error prone, and difficult to scale. Conventional asset management practices rely on spreadsheets, physical registers, or department specific documentation maintained independently by different teams. These approaches frequently lead to data inconsistencies, duplicate records, misplaced assets, and delayed updates. Asset assignments and returns are not always captured in real time, which creates confusion during employee onboarding, role changes, and clearance processes. Audit activities under such systems require manual collection, verification, and reconciliation of information, resulting in increased administrative workload and time consumption. The absence of centralized storage and real time visibility limits transparency and accountability across departments. Manual systems also lack automated monitoring

and standardized asset status tracking, increasing the likelihood of human error. With advancements in software automation and artificial intelligence, organizations are increasingly adopting intelligent systems to address these challenges. AI assisted systems support structured data management and simplified interaction through natural language interfaces. This work presents a Software based Asset Tracking Agent that provides centralized asset management for enterprise environments, supporting asset registration, assignment, status monitoring operations.

II.PROBLEM STATEMENT

In many organizations, asset tracking is performed manually using spreadsheets, registers, or separate departmental files. This fragmented and outdated approach creates several challenges. Manual entries are prone to human errors, such as incorrect asset IDs, wrong assignment details, outdated status updates, and missing return records. During employee onboarding or offboarding, HR and IT teams often lack clarity on which assets are assigned to whom, leading to delays, confusion, and in some cases, loss of valuable hardware.

During audit cycles, administrators must manually compile records, cross-check assets physically, and reconcile discrepancies, which is time-consuming and inefficient.

Additionally, traditional systems do not provide real-time visibility or automated notifications, making it difficult to track overdue returns or identify missing equipment promptly. Employees may misuse or retain company property during job transitions due to lack of centralized monitoring. IT teams may also find it challenging to detect damaged or inactive assets because status updates are not standardized. In summary, the existing manual system lacks scalability, security, transparency, and accuracy making it unsuitable for the asset management demands of modern organizations. Therefore, there is a need for a centralized, automated, AI-assisted solution that ensures accuracy, enhances workflow efficiency, and supports real-time tracking of organizational assets.

III.EXISTING SYSTEM

The proposed Asset Tracking Agent provides a centralized, automated solution for managing organizational assets efficiently. The system is designed as a Software based platform that integrates a structured backend, database storage, and an AI assisted interaction layer. Asset details are stored in a centralized database, ensuring consistency, accuracy, and real time availability of information. The system allows administrators to register assets, assign them to employees, update asset status, track returns, and generate audit related reports through a unified interface. Natural language interaction enables users to query and update asset records without requiring technical expertise. By automating routine administrative tasks and reducing manual intervention, the proposed system improves transparency, minimizes errors, and supports scalable asset management aligned with enterprise workflows.

IV.PROPOSED SYSTEM AND METHODOLOGY

The Asset Tracking Agent has a structured and iterative process for its implementation. The system has a web-based interface, a FastAPI backend, an SQLite database, and finally, an AI Interaction Layer built utilizing the Google Gemini service. The requirement analysis was used to understand where there are inefficiencies in current processes for asset tracking and what are the minimum system requirements.

System design encompasses the design and modeling processes that consider user and system interactions to ensure data flow and scalability. The AI agent interprets natural language inputs and structures the inputs to the backend system, ensuring that the system allows users to interact freely. The backend system handles asset registration, assignment, status, and the generation of reports, while the database stores asset information.

V. RESULTS AND DISCUSSION

This system was tested on functional correctness, user-friendliness, and efficiency. The AI agent performed correctly on natural language inputs like retrieving assets, status update, and writing reports. Records of assets were updated immediately to maintain system integrity. Again, this proposed system took less administrative work compared to current approaches when considering administrative tasks related to audits. This experiment verifies that combining AI agent capabilities with an asset-management system promotes efficiency, accuracy, and user-friendliness.

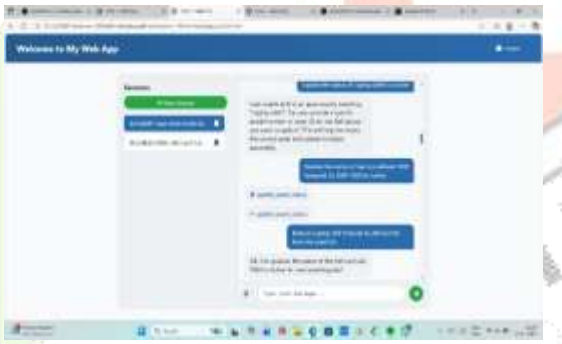

Figure 5.1: Updating Asset Status

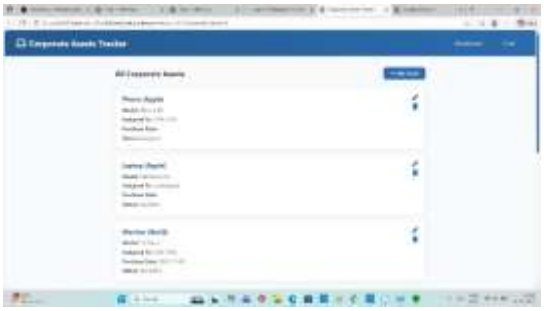

Figure 5.2: Dashboard View

VI. CONCLUSION AND FUTURE WORK

This paper introduced an Asset Tracking Agent powered by AI technology to automate and optimize asset management in an enterprise. The method is very effective in minimizing labor effort, enhancing accuracy, and enabling dialogue interaction with respect to asset management. The experiment has proven that the proposed approach is more efficient and reliable than conventional tracking techniques.

Future improvements might include mobile app functionality, asset identification by scanning a QR code or an RFID chip, role-based security, analytics dashboards, and predictive maintenance made possible by AI analysis.

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