TECH OFFER

Computer Vision-Powered Tool Chest for Automated Tool Tracking and Inventory Management

KEY INFORMATION

TECHNOLOGY CATEGORY:

Infocomm - Artificial Intelligence

TECHNOLOGY READINESS LEVEL (TRL): **TRL5**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175249**

OVERVIEW

The Computer Vision-Powered Tool Chest is a cutting-edge solution designed to revolutionize inventory management across industries. Equipped with advanced cameras and computer vision algorithms, this system automates the process of tool tracking and placement verification in real time. Mounted at the top of tool chests or racks, the cameras monitor the presence, position, and organization of tools, instantly identifying missing, misplaced, or misaligned items.

This technology is a game changer for industries where efficient tool management is critical, such as aerospace, automotive, and manufacturing. By eliminating manual checks and reducing human error, it improves operational efficiency, minimizes downtime, and ensures optimal tool availability. The system can be easily integrated into existing workflows and is scalable to accommodate varying tool storage configurations.

Whether you're in maintenance, repair, and overhaul (MRO), or simply need better control over tool inventory, the Computer Vision-Powered Tool Chest provides a seamless and innovative solution. With its ability to connect to cloud platforms for data

analysis and reporting, the system delivers a comprehensive approach to tool management that saves time, cuts costs, and enhances productivity across various sectors.

TECHNOLOGY FEATURES & SPECIFICATIONS

The Computer Vision-Powered Tool Chest consists of several integrated components designed to automate and enhance tool tracking and inventory management. At its core, the system includes high-definition video cameras mounted above tool chests or racks to capture real-time visual data of the tools. The captured images are processed using advanced computer vision algorithms, which are capable of identifying, counting, and analyzing tool presence, placement, and organization.

The system also includes an intuitive software platform for monitoring, reporting, and alerting users in case of missing or misplaced items. Data is stored on cloud-based services, allowing for seamless integration with existing inventory management platforms and real-time access to tool usage analytics. The system is designed to support a wide range of tools and storage configurations, making it highly adaptable for various operational environments.

Ideal Collaboration Partners:

- Manufacturers: Tool manufacturers interested in integrating smart technology into their products to offer value-added services to customers.
- MRO Providers: Maintenance, Repair, and Overhaul companies looking for efficient, automated tool tracking and inventory solutions.
- Logistics Companies: To optimize tool distribution and reduce losses.
- Industrial Automation Providers: Companies specializing in smart factories and Industry 4.0 solutions to expand the range of automation systems.
- Cloud Service Providers: For seamless integration and data management.

This technology offers a comprehensive solution for industries that rely on accurate tool management, reducing manual intervention and improving operational efficiency

POTENTIAL APPLICATIONS

The Computer Vision-Powered Tool Chest has broad applications across multiple industries where efficient tool tracking and management are critical. Its primary deployment is within Maintenance, Repair, and Overhaul (MRO) operations, particularly in sectors like aerospace, automotive, and manufacturing, where misplaced tools can cause costly delays, safety issues, or regulatory non-compliance.

In the aerospace industry, this technology ensures that specialized tools are always available and correctly placed, preventing downtime and improving workflow efficiency. Similarly, in automotive manufacturing and assembly lines, the system can track tools, reducing production stoppages due to missing equipment.

Beyond MRO, warehousing and logistics companies can use this technology to streamline the organization of tools and equipment, optimizing their supply chain operations. The construction industry can also benefit from real-time monitoring of high-value tools on-site, minimizing theft and loss.

This technology can be adapted into a range of products, including smart tool chests, automated tool racks, and integrated inventory systems for tool-heavy environments. By integrating it with cloud-based platforms, companies can also market remote

monitoring and management systems for tool inventories, providing real-time data analytics to further enhance efficiency.

This adaptable and scalable solution can revolutionize how tools are managed across industries, enhancing productivity and reducing operational risks.

UNIQUE VALUE PROPOSITION

The Computer Vision-Powered Tool Chest offers a major improvement over traditional tool tracking systems like manual checks, barcodes, or RFID tagging. By using advanced computer vision, the system automates real-time tool detection and placement verification, eliminating the need for manual scanning and reducing errors.

Its unique advantage lies in providing instant alerts for missing or misplaced tools, enhancing efficiency and reducing downtime. With cloud integration for seamless data monitoring, it offers a scalable, cost-effective, and flexible solution for industries like aerospace, automotive, and construction, ensuring accurate tool management with minimal human intervention.