



Suhas Bhairav

AI Warehouse Space and Picker Route Optimizer

**Turn historic routes and item frequencies into a
data-driven warehouse layout**

A practical, step-by-step AI playbook to optimize
warehouse space and picker routes with measurable
results.

Suhas Bhairav

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What to Automate, What to Review

This page defines the AI transformation scope for warehouse layout and picker routes. It distinguishes automation candidates from human-reviewed decisions.

Key move Define ownership early; automation without clear owners stalls fast.

PRACTICAL CHECKLIST

- 01** Automate route optimization and space impact analysis using historical picker routes and item frequencies.
- 02** Automate data pipelines to ingest picks, SKUs, bin locations, and timestamps.
- 03** Keep human review for exceptions: new SKUs, safety constraints, or unusual rack changes.
- 04** Maintain data quality: deduplicate, align SKUs, and synchronize timestamps.
- 05** Maintain guardrails: safety rules, inventory integrity, and approvals for layout changes.
- 06** Pilot scope: begin in one zone, one product family, with weekly reviews.

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Data, Tools, and Model Boundaries

Identify the required data, toolchain, and AI models. Clarify what is automated versus reviewed by humans.

Key move Define governance early; avoid over-automation that bypasses safety.

PRACTICAL CHECKLIST

- 01** Data you need: historical pick routes, timestamps, SKUs, quantities, bin IDs, and zone layouts.
- 02** Data quality: de-duplicate records, align SKU codes, validate bin coordinates.
- 03** Features to engineer: travel distance, dwell time, SKU demand frequency, and time-of-day effects.
- 04** Tools: data warehouse, ETL, BI dashboards, LLMs/agents for scenario planning, and optimization solvers.
- 05** Model types: zone clustering, route scoring, and demand-driven slotting.
- 06** Automation scope and guardrails: automated layout recommendations with human approvals and safety checks.

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Weekly Adoption Roadmap

A practical, incremental plan to trial AI-driven layout changes in small weekly steps. Start simple, validate results, and scale.

Key move **Require formal approvals before applying a layout change.**

PRACTICAL CHECKLIST

- 01** Week 1: appoint owners, define data quality rules, and establish baseline metrics.
- 02** Week 2: assemble clean data subset for one zone and run initial route scoring.
- 03** Week 3: generate layout recommendations and simulate impact in a sandbox.
- 04** Week 4: implement a small change in one aisle; track travel time and picks per hour.
- 05** Week 5: collect feedback from pickers and supervisors; adjust model rules.
- 06** Week 6: scale to a second zone; monitor KPIs and governance gates.

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ABOUT THE CREATOR

Suhas Bhairav

I build AI systems that combine distributed architecture, retrieval, knowledge graphs, security, and practical workflow design. My focus is AI that can be used repeatedly by real teams: understandable, reliable, and grounded in the work people already do.

EXPERTISE

- Principal systems architecture and applied AI engineering
- Production-grade AI systems, agentic workflows, RAG, and knowledge graphs
- Full-stack workflow applications across AWS, Google Cloud, Azure, on-premise, and hybrid environments
- Practical AI implementation patterns for automotive, manufacturing, finance, logistics, cybersecurity, sales, and customer operations
- Security, governance, observability, approvals, and failure-mode thinking for operational AI systems

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