Manufacturing AI

Digital Transformation Summit

ASHLEY FURNITURE INDUSTRIES

AGENDA

- Understanding Artificial Intelligence
- Preparing your Company for AI
- Ashley's Approach to AI
- Ashley Furniture Manufacturing Use Cases

Understanding Artificial Intelligence

What is AI?

Artificial Intelligence, or AI, is a technology that allows machines to learn from experience and perform human-like tasks. This includes recognizing patterns, making decisions, and solving problems based on the information they are given.

Different Forms of AI

AI comes in many forms, each designed to handle specific tasks. For example, some AI systems might control robots on an assembly line, while others analyze data to predict equipment failures. This variety allows for tailored solutions that meet the unique needs of different manufacturing processes.

Limitations of AI

While AI can greatly enhance manufacturing processes, it's not a one-size-fits-all solution. It works best when used to complement human skills and existing systems, rather than replacing them entirely. Understanding its limitations helps ensure that AI is applied effectively and delivers real benefits.

Preparing Your Company for AI

1. Prepare your Data

Success in AI hinges on quality data. Ensure your data is well-organized, clean, and stored in an accessible location like the cloud. This preparation is crucial as poor data quality directly impacts AI performance.

2. Dedicate Resources

Effective AI implementation requires a dedicated team knowledgeable about your company's data and challenges. Assign responsibility to personnel equipped to align AI capabilities with strategic business needs.

3. Understand your Maturity

Before adopting AI, optimize current processes. AI amplifies the efficiency of existing operations; poorly designed processes lead to amplified inefficiencies.

4. Identify small wins

Start small by identifying achievable projects where AI can make immediate improvements. This approach helps to demonstrate value and gain buy-in from stakeholders.

5. Fail Fast & Adapt

Encourage a culture of rapid experimentation with AI solutions. Quickly learning from failures and adapting strategies accelerates innovation and reduces long-term risk.

AI at Ashley Furniture

UNDERSTAND
IDEATE
EVALUATE
ACCELERATE

1. **Cleanse**
   Cross the data barriers – Cleanse Master data and the Data Warehouse
2. **Educate**
   Study the trends and understand leading use cases.
3. **Understand**
   Collaborate with the business to understand their challenges & paint points
4. **Innovate**
   Identify use cases, create Proofs of Concept to prove value. "Fail Fast and Fail Small".
5. **Iterate**
   Deploy the solution, Measure the solution, and continual improve upon it.
6. **Adapt**
   Apply effective change management to manage the expectations and outcomes.

Predictive Maintenance

Factory Floor Maintenance Prediction

Problem Statement

Manufacturing teams did not possess tools to evaluate current state of maintenance requirements. This leads to unexpected machine failures, resulting in work order backlogs, downtime, and productivity losses. The teams were reactive in addressing issues and were unable to draw insights into root cause of failures.

Our Solution

- Develop dashboard to provide As Is view of failure data across facilities and asset group (ex : types of drills)
- Use **ML models** to analyze historical data to predict machine downtimes
- Future state : **Enhance ML model** that indicates to maintenance team which part will fail, and prescribe technician to be allocated to order

Benefits

- **Increase Productivity** : Reduce downtimes due to unscheduled failures allowing supervisors to plan effectively
- **Save Cost** : Purchasing team can negotiate price for bulk MRO orders across all sites
- **Save Cost** : Save transfer cost on parts with preemptive planning

Quantum QA

Quality Assurance of our Products

Problem Statement

Quality teams find it challenging to identify highest quality defects and products with highest number of issues. Quality data being unstructured and distributed across various systems presented challenges to the teams to draw inferences and address problems before they turn into issues impacting customers.

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Our Solution

- Develop a one stop shop quality tracker dashboard that enables top management, quality leaders and quality teams to track products with highest quality issues across product Lifecyle starting from manufacturing line through post delivery service.
- The solution utilized state of the art **NLP Generative AI model** to skim through 200k tech notes annually to reduce unstructured defect codes to 4 major high-level categories and 13 detailed unique defect codes. For example, manufacturing defect as a high-level category followed by electrical issue as a detailed category.

Benefits

- **Increase Efficiency**: Enable teams to prioritize issues based on impact and slot them high on roadmap
- **Increase Accountability**: Communicate effectively with the vendors pinpoint failures supported by data

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Leading Indicators

Manufacturing Constraints & Challenges

Problem Statement

Manufacturing teams were reactive in solving everyday constraints and operational challenges that often resulting in delays on customer orders. Ashley Furniture wanted to build an **Early Warning** solution to allow supervisors to adjust their plans

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Our Solution

- Develop an advanced analytical technique to evaluate factors affecting manufacturing performance and generate signals for supervisors to add more work to schedule or update schedule
- Develop a **ML model** to review factors influencing output capacity(Ex : Number of people in schedule, tenure) over historical data to predict with high degree of accuracy the desired goal for each schedule

Benefits

- **Customer Promise :** Proactive adjustments helps us to keep up with our promise
- **Efficiency**: A more mature method to predict acceptable outcomes from each schedule enabling supervisors to adjust based on data

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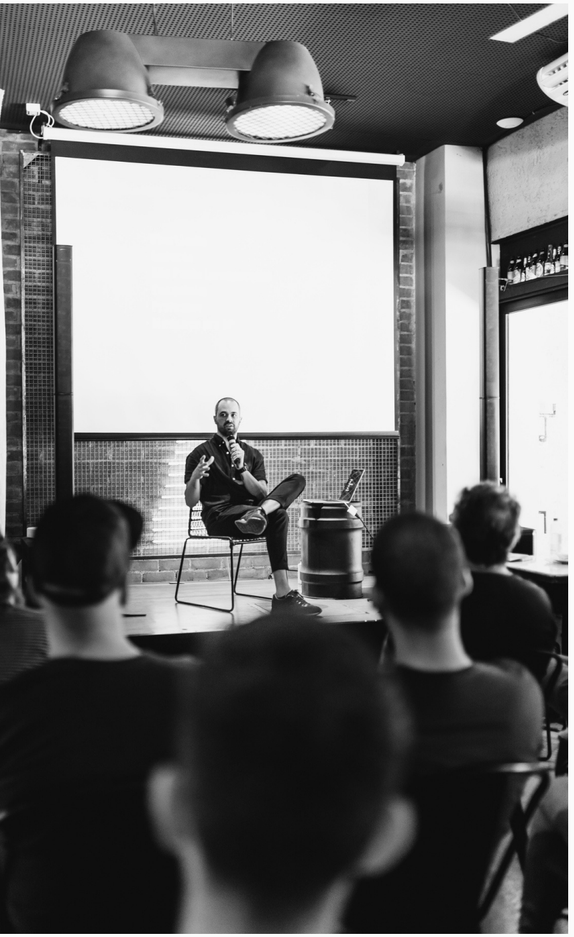

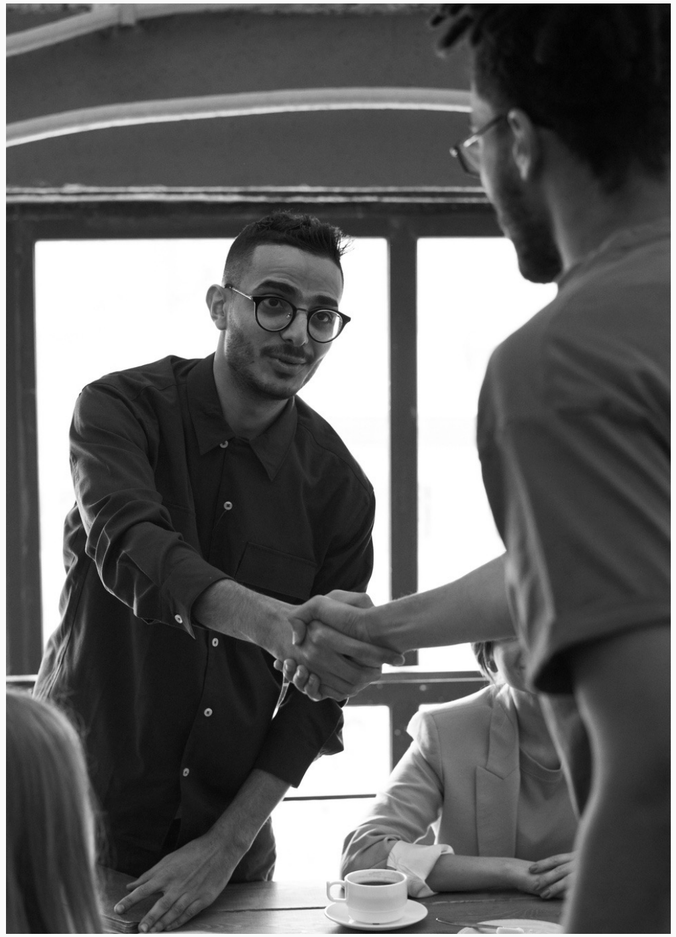

THANK YOU FOR LISTENING!