

Learn How to Design and Develop Machine Learning Models for Predictive Inventory Management

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SAPinsider



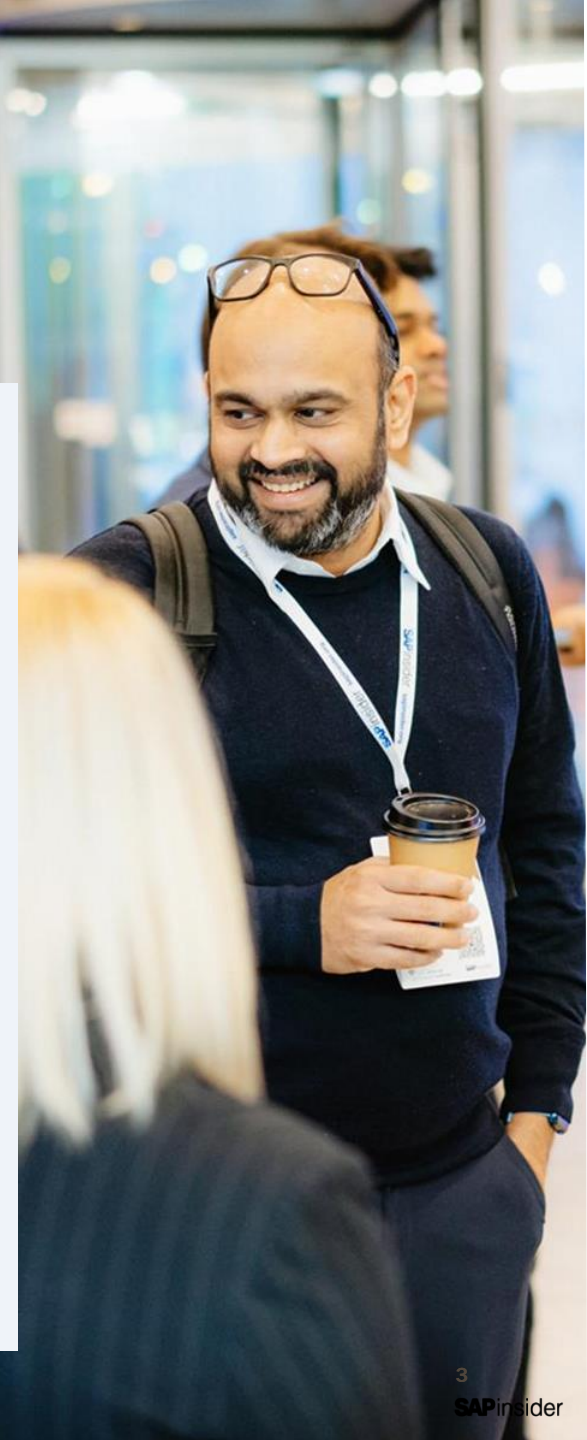
In This Session

You will learn...

- Basics of ML/AI and Predictive Analytics
- SAP BTP service offerings for AI Core and Launchpad
- Predictive Inventory Management Modelling

What We'll Cover

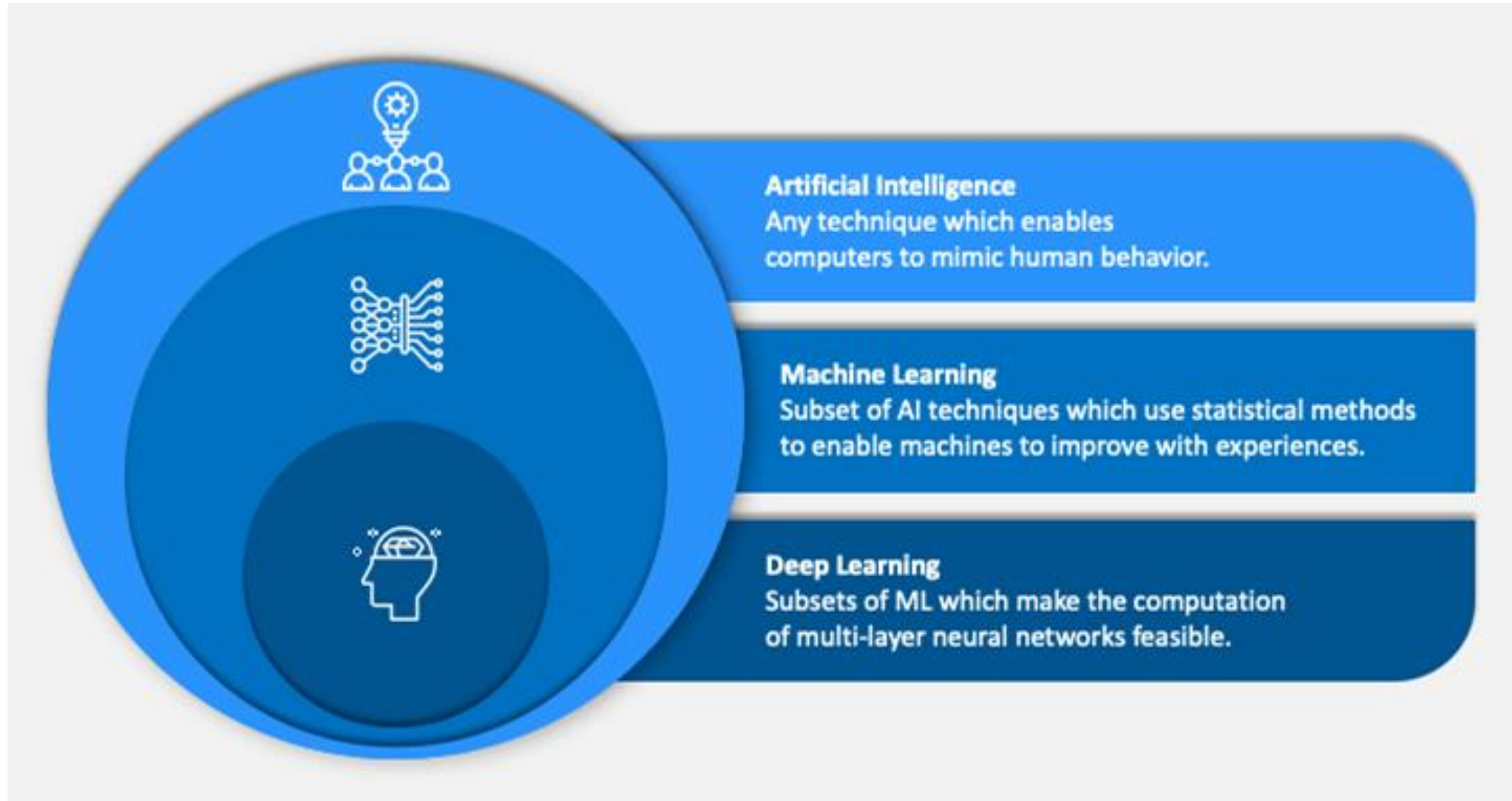
- Introduction to Artificial Intelligence and Machine Learning
- Overview of SAP BTP AI Core and AI Launchpad
- Predictive Inventory Management Use Case
- Hands-on Lab
- Wrap-up



Introduction to Machine Learning

- What is ML/AI?
- Key concepts of ML/AI

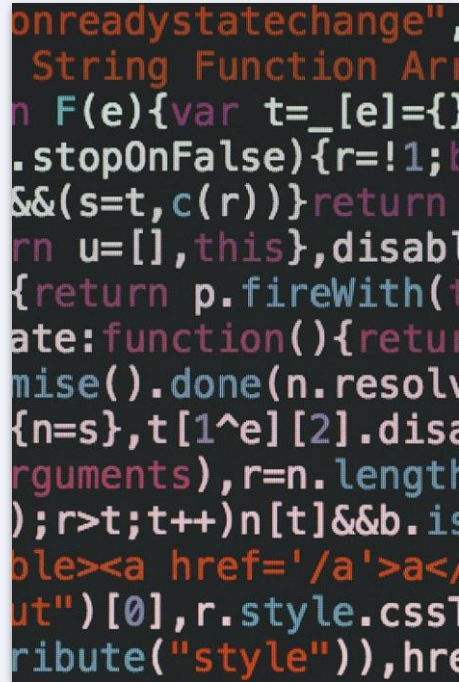
What is ML/AI?



Key Concepts of ML/AI



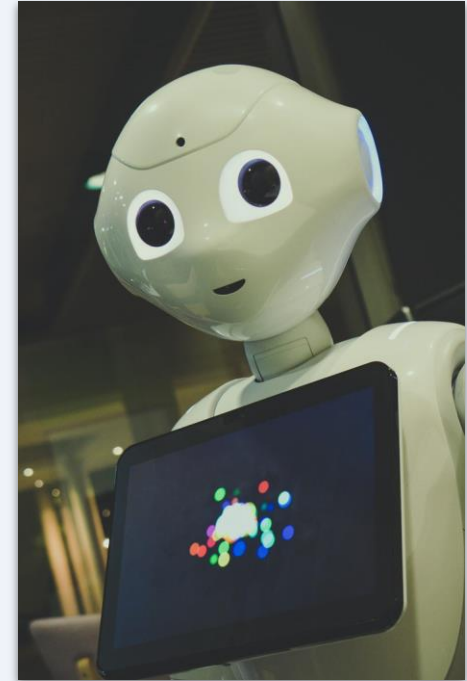
Data



Algorithms

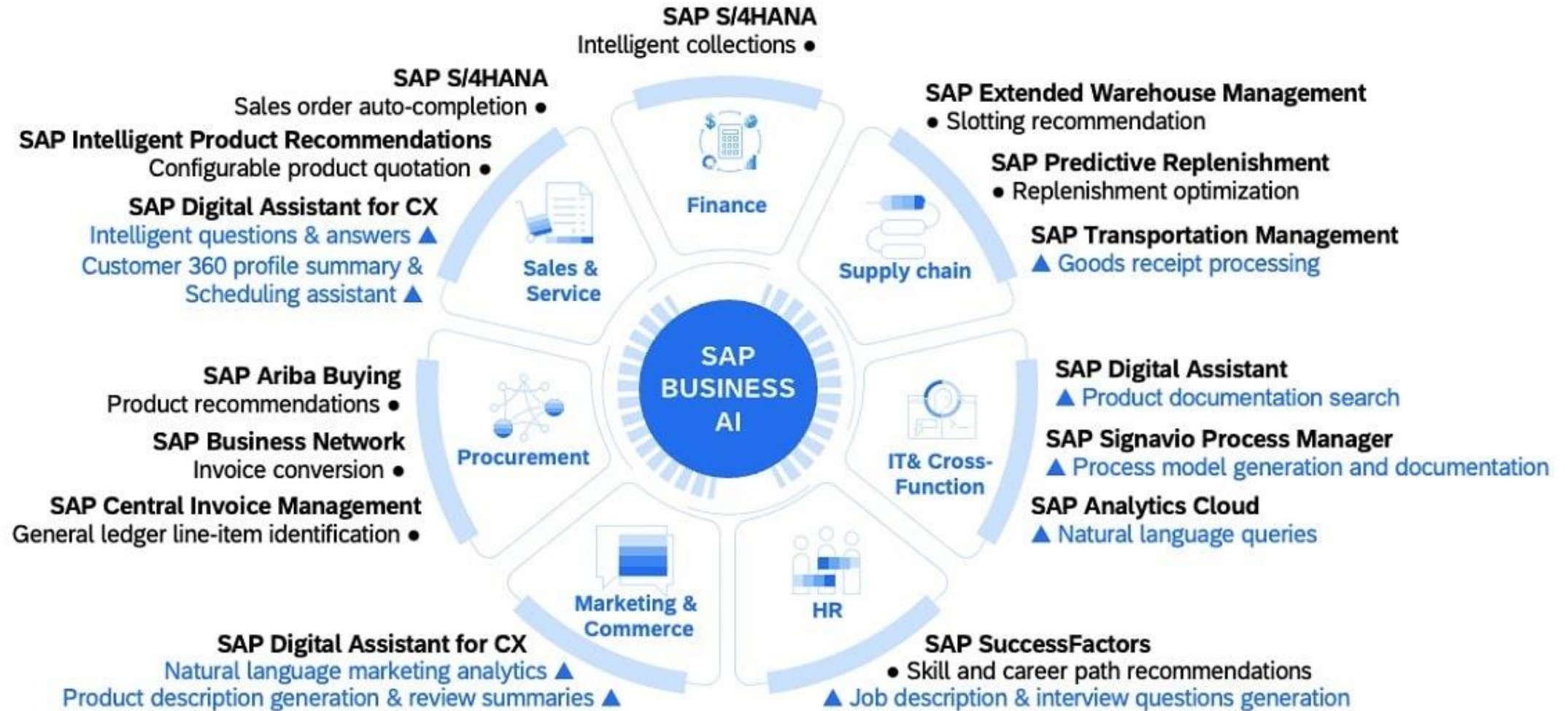


**Supervised
Learning**



**Unsupervised
Learning**

SAP AI Capabilities



▲ Generative AI scenario | Status: Announced at SAP Sapphire 2023

Overview of SAP BTP AI Core and AI Launchpad

- Intro to AI Core
- Intro to AI Launchpad

Intro to AI Core



SAP AI Core

SAP AI Core supports full lifecycle management of AI scenarios. Access generative AI capabilities and prompt lifecycle management via the generative AI hub.

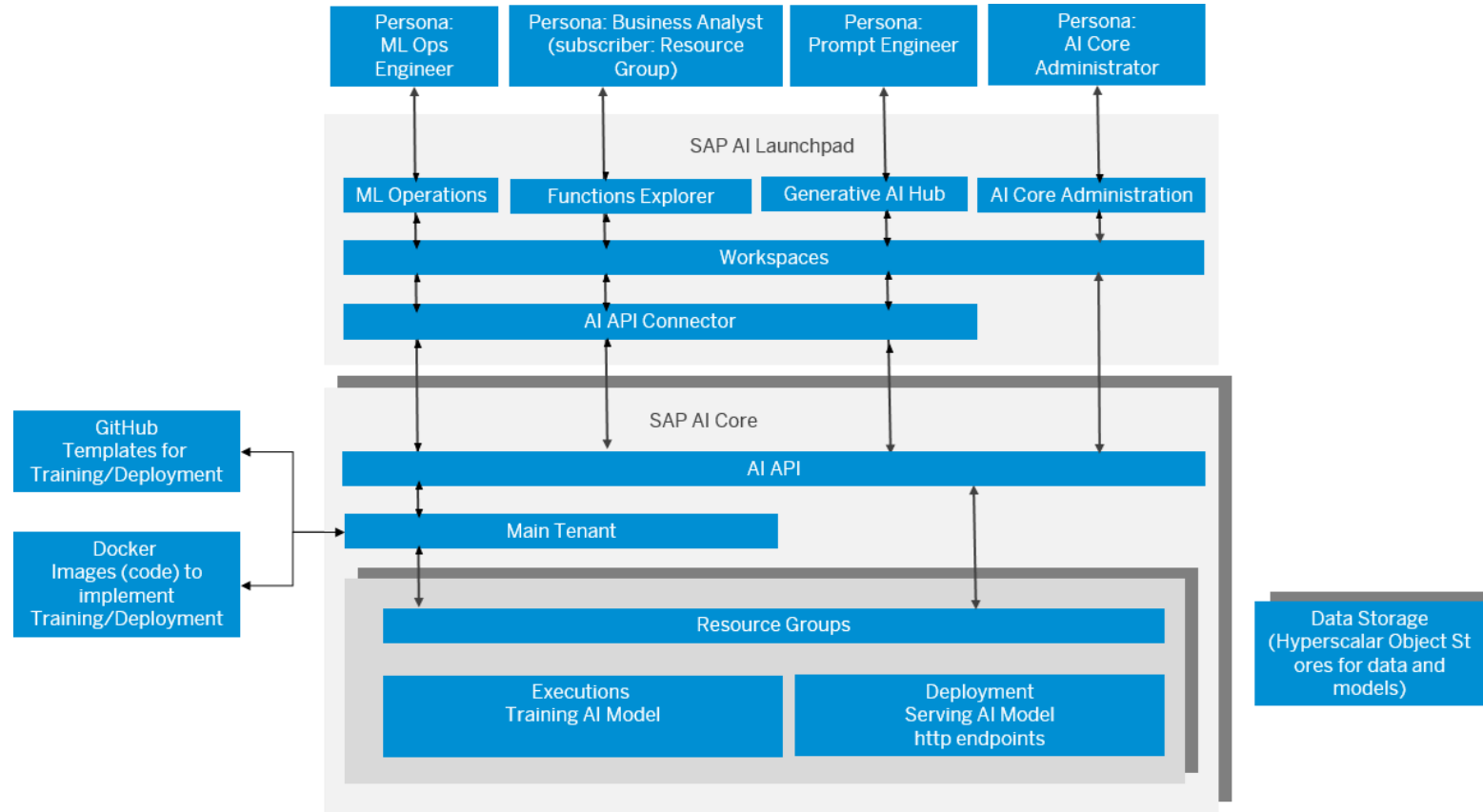
SAP AI Core comes with preconfigured SAP solutions, can be configured for open source machine learning frameworks, can be used with Argo Workflow and KServe, and can be embedded into other applications.

- Seamlessly and easily embed AI capabilities into other applications
- Leverage high-volumes of data from applications to create robust AI learning models
- Execute AI training on accelerated hardware
- Serve AI inference with low latency and high-throughput in a cost-efficient manner
- Adhere to a compliant, explainable, and maintainable process
- Manage all stages of the AI lifecycle using a comprehensive set of tools and services
- Focus on the productization and operationalization of AI scenarios

Intro to AI Launchpad

Enables the management of AI use cases (scenarios) across multiple instances of AI runtimes (such as SAP AI Core).

- Manage the lifecycle of AI use cases
- Access statistics on your use cases
- Manage administration for SAP AI Core
- Integrate with AI runtime instances
- Work with resource groups of SAP AI Core



Predictive Inventory Management Use Case

- Overview of the use case and its business objectives
- Predictive Inventory Management Challenges

Predictive Inventory Management Use Case

Leveraging machine learning algorithms and predictive analytics to forecast demand, optimize stocking levels, and enhance overall inventory efficiency. This approach helps businesses minimize stockouts, reduce excess inventory, and improve overall supply chain performance. Here's an overview of how AI can be applied to predictive inventory management

Demand Forecasting:

- AI algorithms can analyze historical sales data, taking into account seasonality, trends, and other patterns, to predict future demand accurately.

Inventory Optimization:

- AI models can help businesses determine the optimal service levels by balancing the costs of holding inventory against the costs of potential stockouts.
- AI algorithms can dynamically calculate reorder points based on demand variability, lead times, and desired service levels.

Dynamic Pricing Strategies:

- AI-driven Pricing Models incorporate AI into pricing strategies to dynamically adjust prices based on demand, competitor pricing, and inventory levels. This helps maximize revenue and manage demand fluctuations.

Challenges

Data Quality and Availability:

Challenge: AI models heavily rely on accurate and timely data. Inaccurate or incomplete historical data can lead to suboptimal predictions and decisions.

Mitigation: Invest in data quality assurance processes, ensure data integrity, and implement robust data governance. Additionally, explore data enrichment strategies to enhance the quality of available data.

Complexity of Demand Patterns:

Challenge: The demand for products can exhibit complex patterns, including seasonality, trends, and sudden shifts. Traditional forecasting methods may struggle to capture such complexities accurately.

Mitigation: Implement advanced machine learning models that can handle non-linear and complex demand patterns. Techniques such as deep learning and ensemble models may offer better accuracy for challenging demand scenarios.

Hands-on Lab

- Data Sources and ML Model
- Additional required tools
- Hands-on workshop

Data Sources and ML Modelling

Databases: Traditional relational databases (e.g., MySQL, PostgreSQL, Oracle) store structured data in tables with predefined schemas. These databases often contain transactional data, customer information, and other structured records.

Data Warehouses: Data warehouses aggregate data from multiple sources and provide a centralized repository for analytics and reporting. Examples include Amazon Redshift, Google BigQuery, and Snowflake.

Spreadsheets: Data stored in spreadsheet formats (e.g., Excel) can be used as input for machine learning models. This data may include tabular information, financial records, or experimental data.

CSV Files: Comma-separated values (CSV) files are a common format for storing structured data. They can be easily imported into machine learning frameworks for analysis and modeling.

Additional Required Tools



Docker

Docker is used for various purposes to streamline the development, deployment, and management of AI applications.

By leveraging Docker in AI development and deployment workflows, teams can address many challenges associated with managing dependencies, environment consistency, and scalability, ultimately streamlining the AI development lifecycle.

GitHub

GitHub, a web-based platform built around the Git version control system, provides a centralized and collaborative environment for developers and researchers working on AI projects.

GitHub repositories are used extensively in the field of Artificial Intelligence (AI) for version control, collaboration, and sharing of code, models, datasets, and related resources.

Postman



Postman is an API platform for building and using APIs. Postman simplifies each step of the API lifecycle and streamlines collaboration so you can create better APIs—faster.

- API Repository
- A comprehensive set of tools that help accelerate the API lifecycle
- Postman integrates with the most important tools in your software development pipeline to enable API-first practices



Hands-on Workshop

Let's get Started!

Raise your hand for assistance!

Digital Instruction guide Link Below:

<https://tinyurl.com/AvvaleHandsOn>

Lab User Accounts - BTP, GitHub, and Docker

LAB01@avvale.com thru LAB45@avvale.com

Password - Avvale2024!





Wrap up

Key Points to Take Home

- Understand the key concepts of AI/ML
- Learn how AI/ML can be used to increase the efficiency of your organization.
- Discover the key components and solutions required to deploy and AI/ML solution.
- Learn about the the capabilities
- Understand the basic requirements to define your own AI/ML solution

Where to Find More Information

SAP Help Content

- Follow Product Hierarchy > SAP AI Core > SAP AI Core > What Is SAP AI Core?
 - <https://help.sap.com/docs/sap-ai-core/sap-ai-core-service-guide/what-is-sap-ai-core>
- Follow Product Hierarchy > SAP AI Launchpad > SAP AI Launchpad > What Is SAP AI Launchpad?
 - <https://help.sap.com/docs/ai-launchpad/sap-ai-launchpad/what-is-sap-ai-launchpad>

SAP Community

- [Artificial Intelligence and Machine Learning at SAP](#)
- [Artificial Intelligence Blog Community](#)

Additional Links

- GitHub
 - <https://github.com/>
- Docker
 - <https://www.docker.com/>

Thank you! Any Questions?

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Please remember to
complete your session
evaluation.

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