Generative AI vs Predictive AI

Generative AI is a subset of Artificial intelligence that can generate outputs that are original and novel. It learns from identifying pattern in the training data and then generating new samples that mimics the pattern but are original. Generative AI is best suited for tasks that are demand creativity.

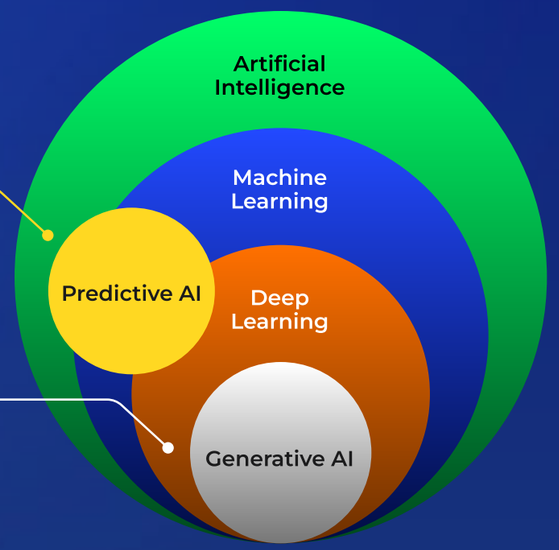
Meanwhile, Predictive AI focuses on analyzing patterns in historical data. Based on the trends and relationships in the existing data, it can make accurate predictions & forecasts about future outcomes. Predictive AI is best suited for tasks that demand accuracy and precision & can affect the decision making process.

How are they different?

Feature	Generative AI (Gen AI)	Predictive AI
Primary Function	Generates fresh information using similar to training data, but with a unique twist	Analyzes existing data to predict future outcomes
Output	New data points (images, text, music, code, etc.)	Predictions about future events or values
Focus	Creativity, innovation, exploration of possibilities	Accuracy, reliability, and actionable insights
Applications	Content creation (text, images, music), Product design, Drug discovery, Art generation	Sales forecasting, Financial modelling, Equipment failure prediction, Customer churn prediction
Challenges	Lack of explainability (black box nature), Potential for misuse (deepfakes, misinformation)	Limited to predicting based on historical data (may not capture unforeseen events)

For instance, using a machine learning techniques to predict a customer's credit risk or purchasing propensity

For instance, using a model such as GPT-4 to provide human-like answers to text prompts, create images on the fly, or summarize large texts



According to **McKinsey survey**,
In 2024, 65% of respondent reported that their organization are regularly using Generative AI compared to 33% in 2023.

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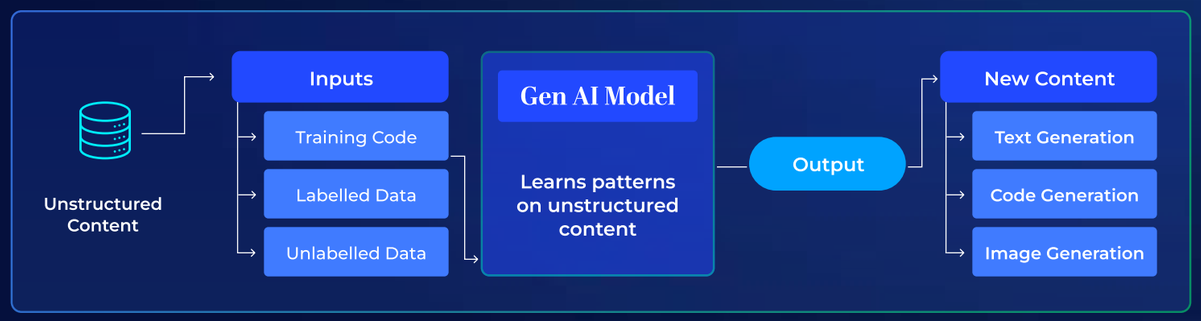
Both Generative AI and Predictive AI have multiple models. These models have their own uses and limitations. Selecting the model depends on the organization's requirement-

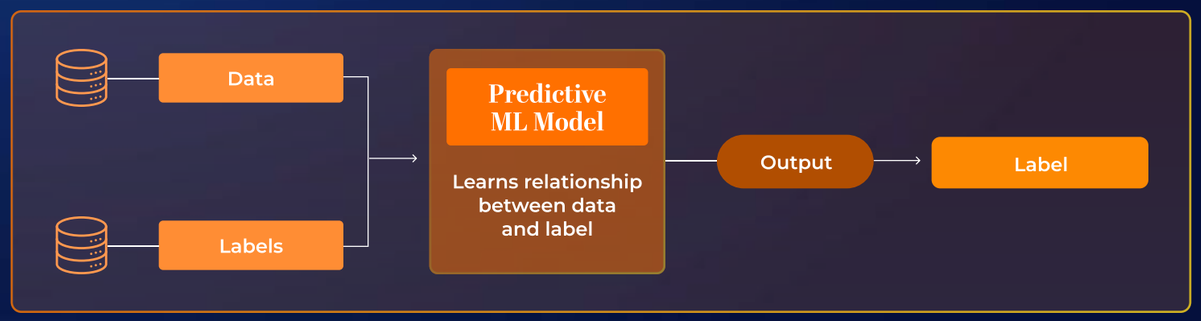
Generative AI Models

- **Generative Adversarial Network-** Document generation, Product R&D
- **Transformer-based model-** Software development, image creation
- **Diffusion model-** Design, marketing content
- **Variational Autoencoders-** Smart operational technology systems management (OTSM), Intelligent quality control
- **Large Language model-** Developing chatbots, social media sentiment analysis
- **Neural Radiance Fields-** 3D modelling, Architecture
- **Recurrent neural networks (RNNs)-** Product and process development, Better Customer self service

Predictive AI Models

- **Classification Model-** Email spam filtering, social media text analysis, language identification
- **Clustering Model-** Social media analysis, market segmentation, anomaly detection
- **Forecast Model-** Inventory optimization, demand forecast, sales forecast
- **Outlier Model-** Machine health monitoring, Fraud detection
- **Time Series Model-** Stock price predictions, demand forecasting for seasonal products





Both Generative AI and Predictive AI requires large amount of data. The difference is Generative AI can use unstructured data while Predictive AI requires structured historical data.

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Generative AI and Predictive AI Uses throughout the value chain

	Generative AI	Predictive AI
Sourcing & Procurement	**Supplier risk assessment-** Analyzing factors to predict risk associated with supplier	**Contract Optimization-** Generate new contracts
Production & Manufacturing	**Predictive Maintenance-** Predict potential equipment failures and scheduling maintenance proactively	**Product design optimization-** Generating multiple design iterations for a product
Inventory management	**Demand forecasting-** Future demand prediction based on historical trends	**Replenishment order Automation-** Creates new orders without human intervention
Logistics & Distribution	**Delivery risk assessment-** Analyze weather patterns, previous traffic data to identify potentially risky routes	**Dynamic Packaging Design-** Generate customized packaging designs as required
Store management	**Staffing optimization-** Predict future staff requirements based on historical data	**Store Layout Optimization-** Improve customer flow and boost sales with optimize layouts
Marketing & Sales	**Sales Forecasting-** Predicting future sales to optimize marketing budgets	**Marketing Content Creation-** Generate personalized marketing content
After sales service	**Customer Churn Prediction-** Identifying churn risk so as to implement retention strategies	**Chatbot-powered Customer Support-** Providing 24/7 customer support through chatbots

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Which one to choose?

Selecting between the two depends on multiple factors-

- **Organizational goals**
- **Type of data available and quality**
- **Resource requirements**
- **Integration with existing systems**

Feature	Generative AI	Predictive AI
Forecasting future outcomes	✗	✓
Decision-making based on historical data	✗	✓
Analysis of past trends & patterns	✗	✓
Data-driven risk assessment	✗	✓
Customized or personalization	✓	✓
Creating new data and content	✓	✗
Enhancing creativity and innovation	✓	✗
Generating realistic simulations	✓	✗
Filling gaps in existing data sets	✓	✗

Want to Read in detail? **Generative AI vs. Predictive AI: Choose the Best AI for your organization**

How Polestar can help you achieve this-

Assess and Define Business objective
Understand your current landscape and identify areas of improvement

Data discovery & Preparation
Identify and gather relevant data sources that are essential and transformed data for accuracy and consistency

Model development & Deployment
Develop, train, and validate models using suitable ML, deep learning, or AI methods

Monitor, Evaluate, & Iterate
Monitor the implemented solution regularly and establish a seamless monitoring mechanisms

How do you start your **Generative AI journey?**

Get a detailed overview to help you ease into your implementation journey

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