Online Workshop
on
Applying AI in Software Development Life Cycle (SDLC)

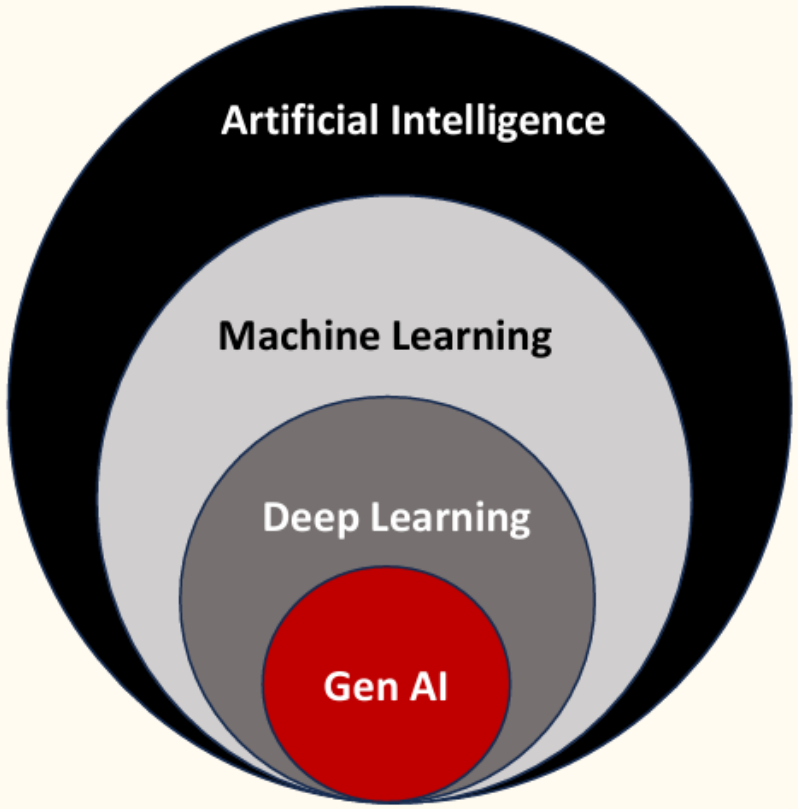
26th – 27th June 2025

Centre for Development of Advanced Computing (C-DAC)

Artificial Intelligence (AI)

- Cognition differentiates AI from other technologies
- Augment the intelligence of Human beings (better decisions, automation)

Artificial Intelligence (AI)



Artificial Intelligence — Dartmouth conf 1956

Any technique that enables computer to mimic human behavior

Machine Learning — IBM Deep Blue 1997

A subset of AI that enables computer to learn pattern from data

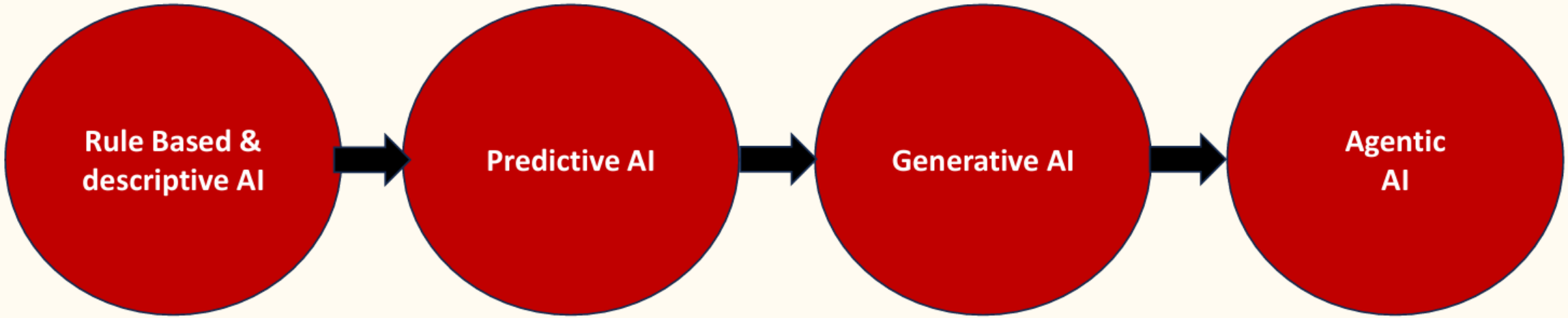
Deep Learning — Revival of interest in 2006

A subset of ML that works more like human brain

Generative AI — ChatGPT in 2021

Create new text, visual or auditory content based on prompt

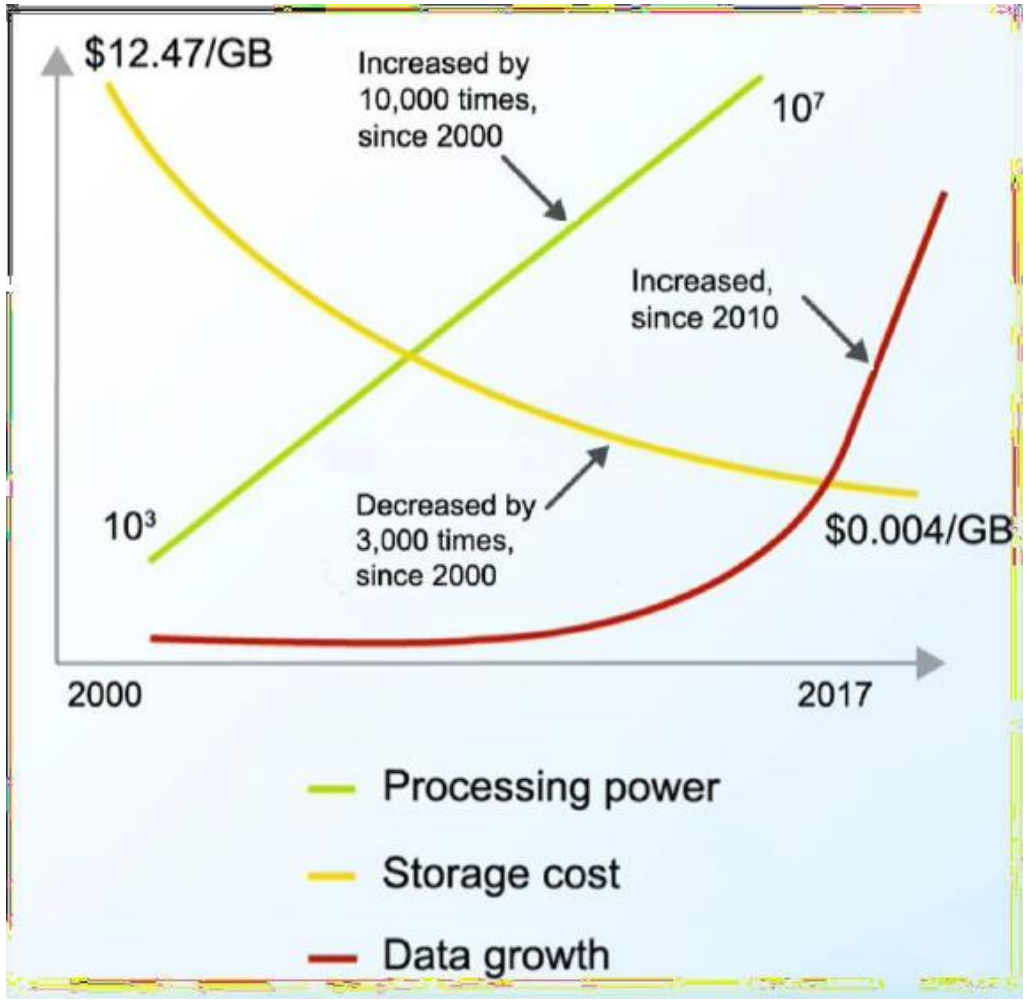
4 Phases of AI Evolution



Pre-2000	2000- 2020	2020- 2025	2025- onward
Early Automation	Data-Driven Insights	AI as a Creative Partner	Autonomous AI Decision-Making
AI relied on fixed rules to automate simple tasks like fraud detection and customer support. Businesses used expert systems for decision-making, but AI lacked flexibility and learning capability	AI started learning from data, enabling businesses to predict customer behavior, market trends, and risks. Machine learning powered recommendation engines, fraud detection, and operational forecasting.	AI evolved from analysis to creation, generating text, images, and strategies. Businesses use tools like ChatGPT for marketing, customer support, and product innovation, enhancing efficiency.	AI will act as independent agents, executing complex tasks and making business decisions. Companies will shift from AI-assisted to AI-driven operations, raising new opportunities and challenges.

Contributing Factors – Rapid Growth of AI

- Expanding availability of Data
- Decreasing cost of computing power
- Decreasing cost of storage
- Novel AI algorithms & techniques
- Demand for AI solutions
- Increased Research
- Reduced Cost of Prediction
- Increased Investments
- Affordability by small companies/entities

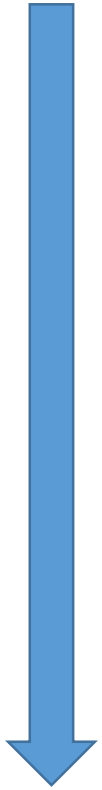


AI and Application Domains

- Education
- RPA
- Software Engineering
- Manufacturing
- Entertainment
- Quality Control
- Healthcare
- Agriculture
- Logistics
- Voice Assistants & Translation
- Defence & Military
- Cyber Security **and many more**

Evolution of SDLC

- Early SDLC (Binary Code & Assembly)
- High-Level Languages & Abstraction
- Object-Oriented Programming (OOP) and APIs (third party integration)
- Low Code/ No Code Platforms
- Generative AI - LLMs in SDLC (AI to assist in different phases of SDLC - leading to more efficient software development)
- Agentic AI (Autonomous Action)



Increased Automation and Intelligence

Generative AI Vs Agentic AI

Generative AI — focuses on generating content (text, code, image) in **response to a user prompt**.

It is stateless, passive, and reactive.

Assists developers in writing code, identifying bugs, and generating documentation.

Generate Python code for a function that calculates the factorial of a number

Agentic AI – They are **goal oriented**. They can perceive, plan, act, and learn.

They are stateful and proactive.

With high level goal, they have automated workflow management. Based on the goal, they can code, debug, test, refactor, and even deploy components.

Design and Deploy online shopping platform

Workshop - Learning Outcome

- Utilizing AI in end to end system (software) development including documentation
- Writing quality & rapid code and documentation using AI
- Prompt Engineering: Learn to write effective prompts
- Result Interpretation Eg. Cross Verifying Results, Debugging Errors in Code etc
- Ethical Use of AI
- Agentic AI

Thank You