

Uncode, Innovate, Elevate : Scaling Your Potential with Generative AI!

Exploring to differentiate!

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11 Feb 2026

Welcome to AI!

01 Uncode!

Stop coding (generating!);
Understand what is what!

```
GP generate_parentheses ✓ master ✓
bfs.rs
tests.rs x
use std::collections::HashSet;
use gp_algo::implementations::IMPLEMENTATIONS;
#[test]
fn test_smaller_cases() {
    let cases :[(...);3] = [
        (1, to_set(strs:&["()"])),
        (2, to_set(strs:&["()", "(0)"], "0(0)")),
        (3, to_set(strs:&["(0)()", "0(0)", "0(0)", "((0))", "(0(0))"]))
    ];
    for (n : i32, expected : HashSet<String>) in cases {
        for (name : &&str, gen : &GenerateParenthesesFn) in IMPLEMENTATIONS {
            assert_eq!(HashSet::from_iter(gen(n)), expected, "We test {} on n={}", name, n);
        }
    }
}
test_smaller_cases
Run Test:tests x
C C S ✓ 0 E Q : 3ms
Tests passed: 2 of 2 tests - 3ms
cargo test --color=always --profile test --package gp.algo
```

Let us understand better – Survey!

<https://app.sli.do/event/vv2VrmJFuhnWj36dkbuvBe>

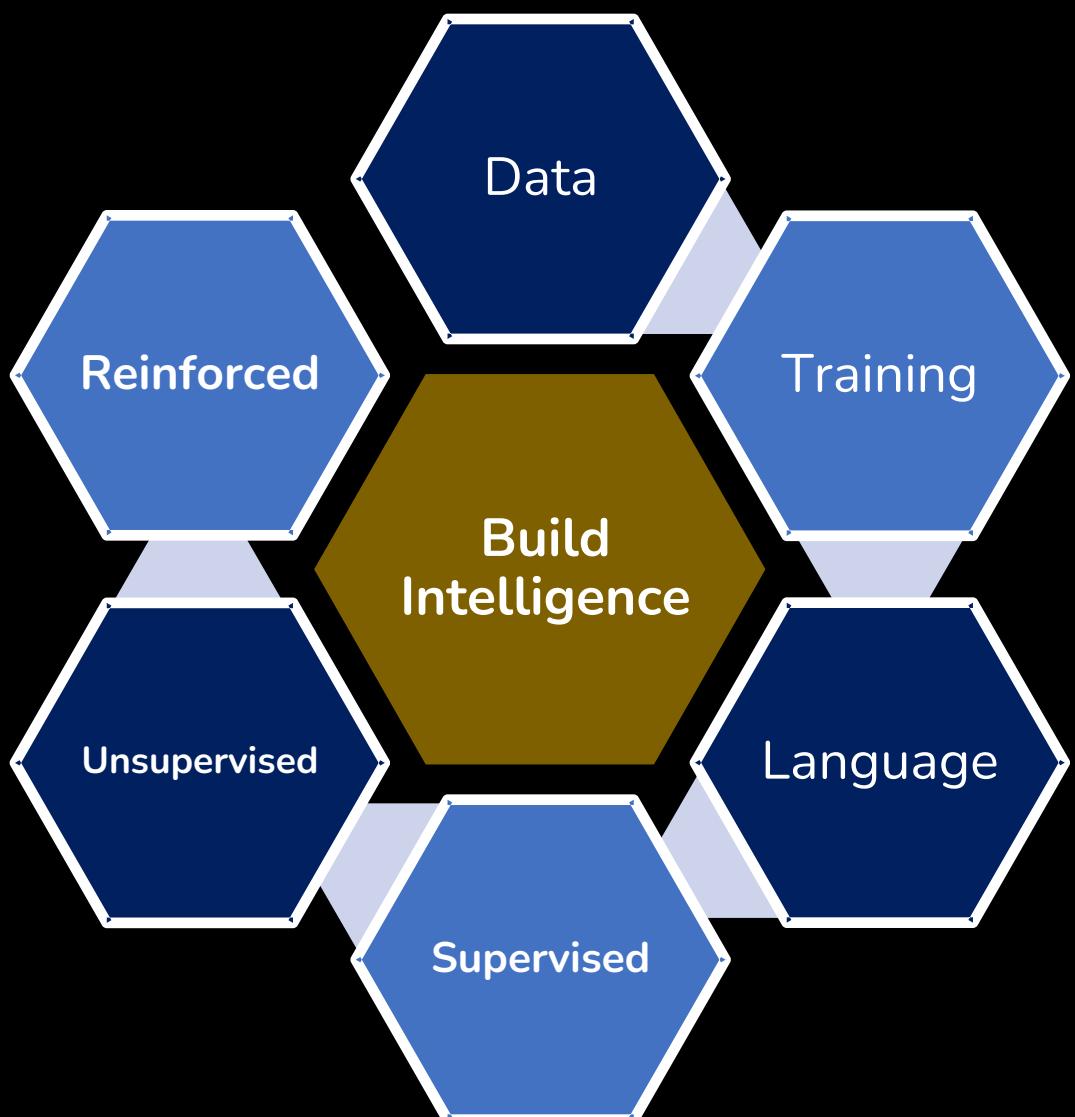


Many Buzzwords!
Are these real?



Heard of these?

ML
NLP
CV



GenAI
LLM
GPT

ML

development of algorithms and statistical models that allow computers to learn from and make predictions or decisions based on data.



Supervised Learning

learns from labelled data

Un-Supervised Learning

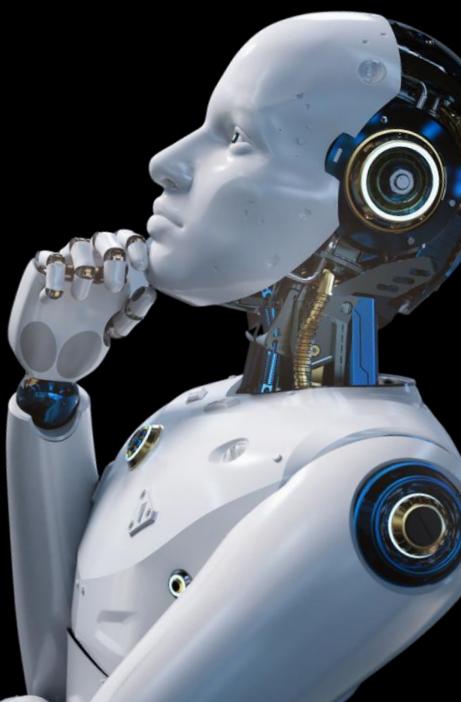
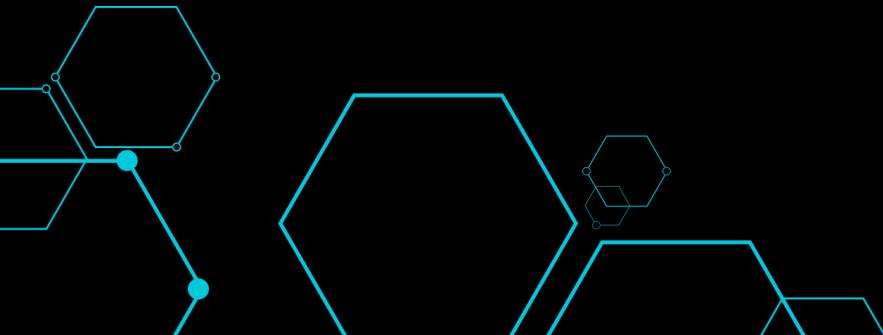
learns from unlabelled data

Reinforced Learning

learns by interacting with an environment and receiving rewards or penalties

Deep Learning

uses neural networks with many layers to handle more complex data



NLP

focuses on the interaction between computers and human language



Text processing

clean, normalize, and structure text data

Syntax / Parsing

grammatical structure

Semantic analysis

meaning behind words, phrases, and sentences

Named Entity Recognition (NER)

Identifying and categorizing entities

Sentiment Analysis

Determining the emotional tone

Machine Translation

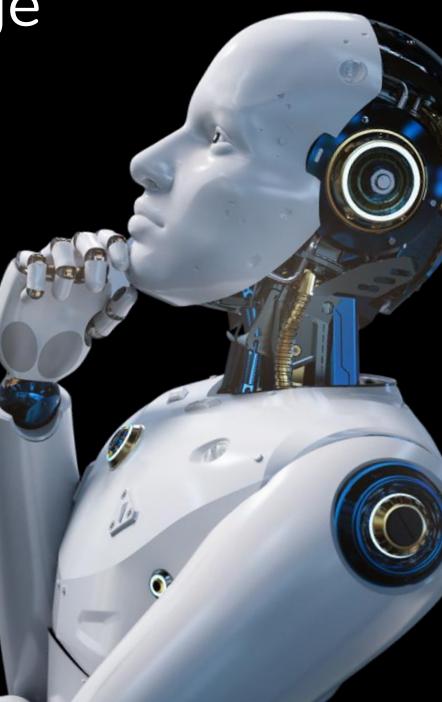
translating text from one language to another

Speech Recognition:

Converting spoken language into text

Question Answering

can answer questions posed in natural language.



CV

enabling machines to interpret and understand visual data from the world, such as images and videos



Image Classification

what objects or scenes are present in image

Image Segmentation

Dividing an image into segments

Optical Character Recognition (OCR)

Converting images of text

Object Detection

Where the objects are present in an image or a video

Facial Recognition

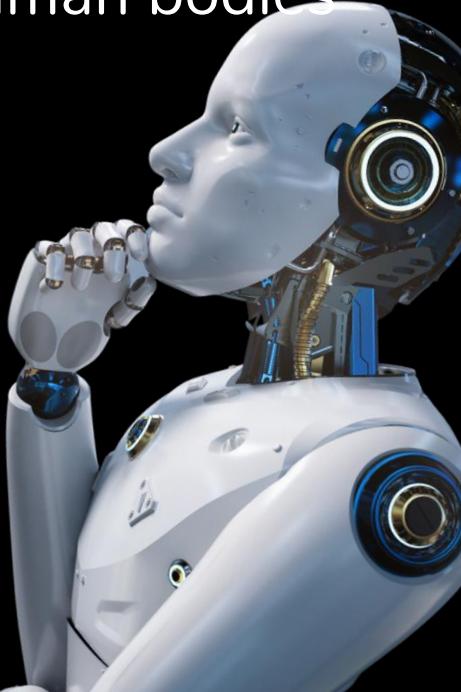
Identifying or verifying individuals

Pose Estimation

Detecting the orientation or posture of human bodies in images or videos

Image Generation

Creating or modifying images using generative models, like GANs



GenAI

artificial intelligence models that can generate new, original content such as text, images, audio, or even video



Generative Adversarial Networks (GANs)

a generator and a discriminator, that work together to create realistic data

Transformer Models

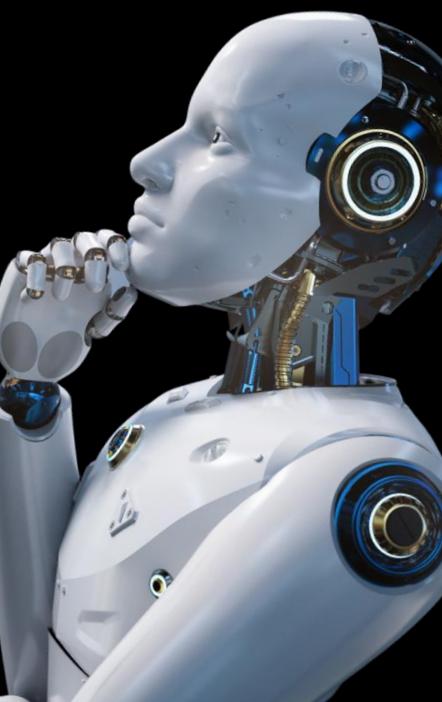
Models like GPT (Generative Pre-trained Transformer) that generate natural language text

Variational Autoencoders (VAEs)

generate new data that is similar to the input data

Diffusion Models

gradually convert noise into high-quality data
Stable Diffusion, DALL-E 3, Imagen (Image and Video), AudioGen, Riffusion, Diffusion LM...many more



Generation of text, image, audio and video...



LLM

Large Language Model is an artificial intelligence model designed to understand, generate, and manipulate human language on a large scale.



Large Scale

trained on massive datasets containing billions of words and phrases

Pre-trained and Fine-tuned

pre-trained on a general corpus; fine-tuned on specific datasets

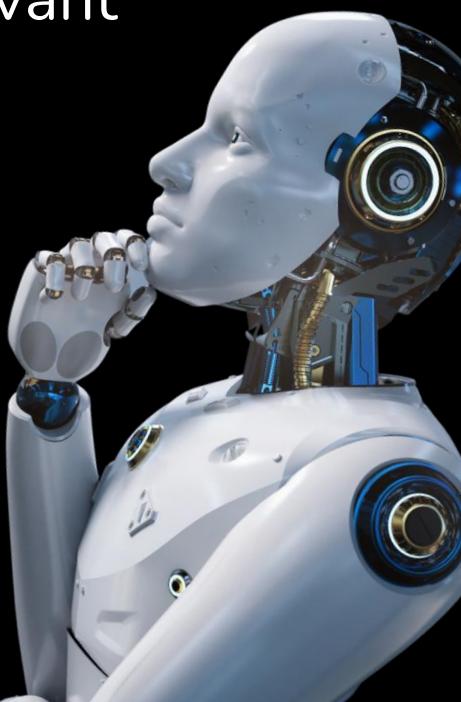
Transformer Architecture

large sequences of text efficiently and capture complex relationships

Contextual Understanding

understand the context in which words are used, allowing them to generate coherent and contextually relevant responses or content.

GPT a type of large language model (LLM) developed by OpenAI



GenAI Models

Text Gen

GPT, BERT(Generative Pre-trained Transformer),
T5(Text-to-Text Transfer Transformer)

Video gen

DeepMind's Deep Video Prior,
Runway's Gen-1,

Image Gen

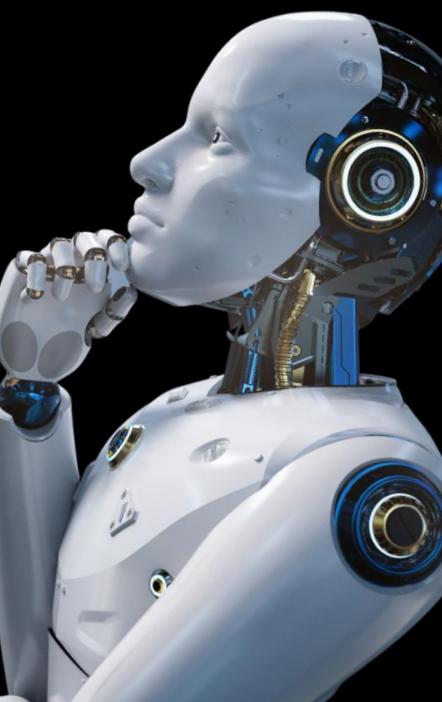
DALL-E, Stable Diffusion, BigGAN

Audio and music

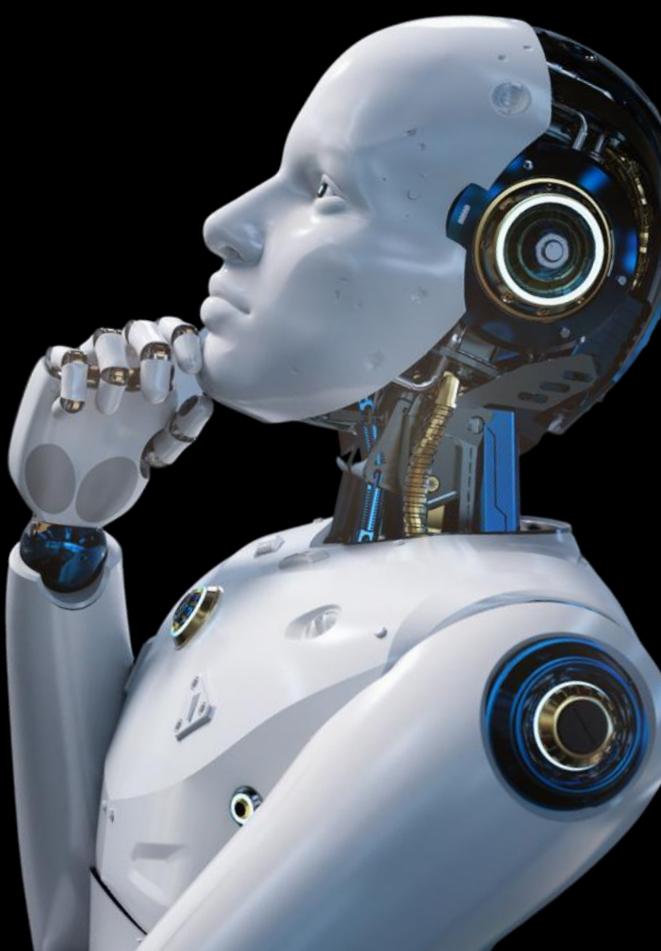
Jukedeck, OpenAI's Jukebox,
WaveNet

Multimodal

CLIP (Contrastive Language–Image
Pretraining), Imagen



M O R E
M O R E



Foundation Models

Large-scale pre-trained models (e.g., GPT, LLaMA) that can be fine-tuned for specific tasks, offering a general base for many AI applications.

AI Agents

AI systems that autonomously perform tasks by interpreting goals, planning steps, and executing actions using various tools.

Edge AI

AI models deployed on local devices (e.g., smartphones, sensors) for real-time data processing without relying on cloud infrastructure.

Synthetic Data

Artificially generated data used to train or test AI models when real-world data is limited or sensitive.

Few-Shot Learning

A technique where AI models generalize from a small number of training examples, improving performance with limited data.

Prompt Engineering

The practice of designing and optimizing prompts to guide generative AI in producing accurate and useful outputs.

Self-Supervised Learning

A machine learning approach where models learn patterns from data without labeled outputs, useful for pre-training large language models.

Explainable AI (XAI)

AI systems designed to provide transparency and interpretability, enabling users to understand how decisions are made.

Orchestration Frameworks

Tools like LangChain that manage and coordinate complex AI workflows, combining multiple models and services.



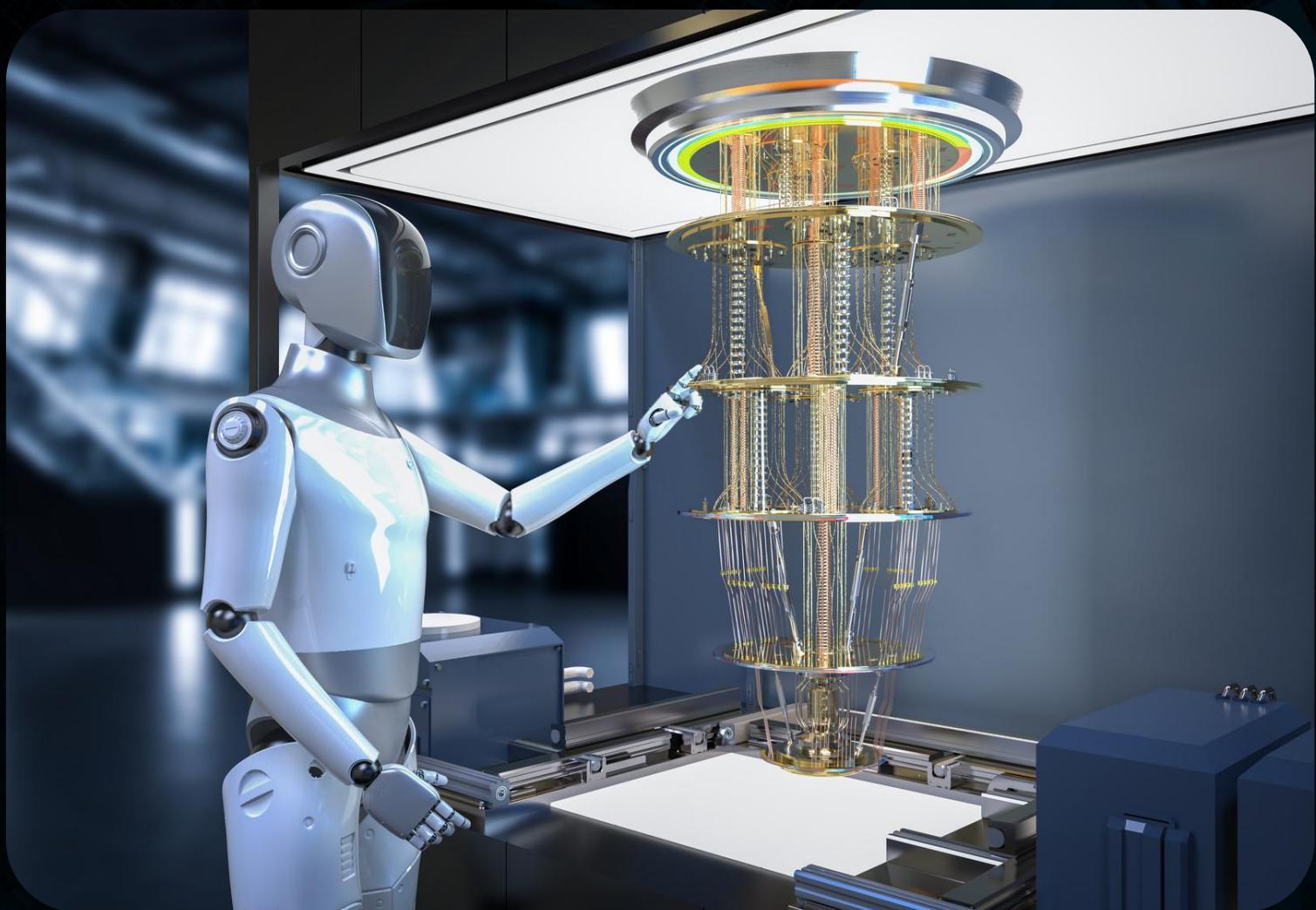
Wanna

M O R E
M O R E



Key
Takeaways



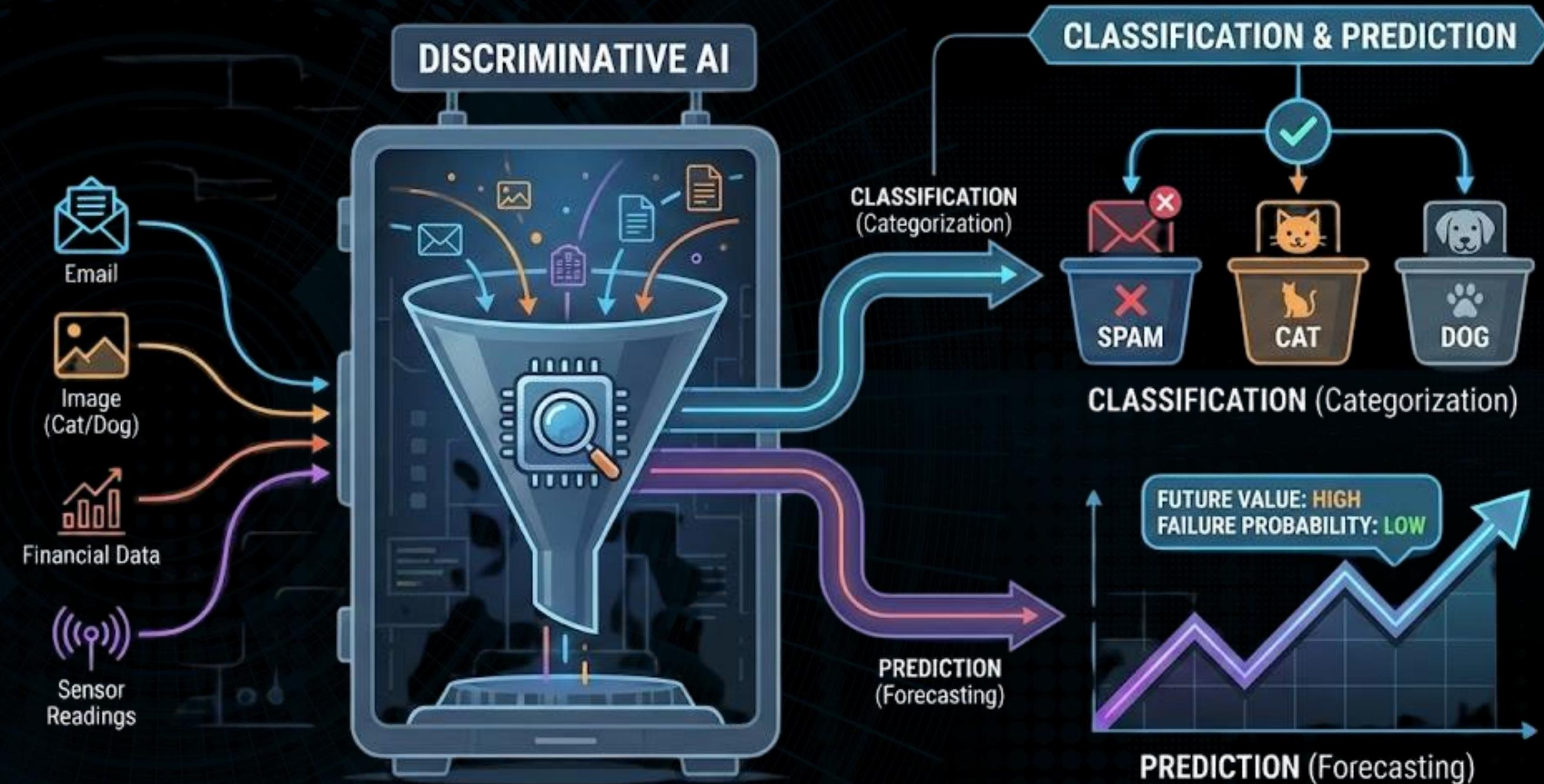


Generative AI

Creativity Unleashed!

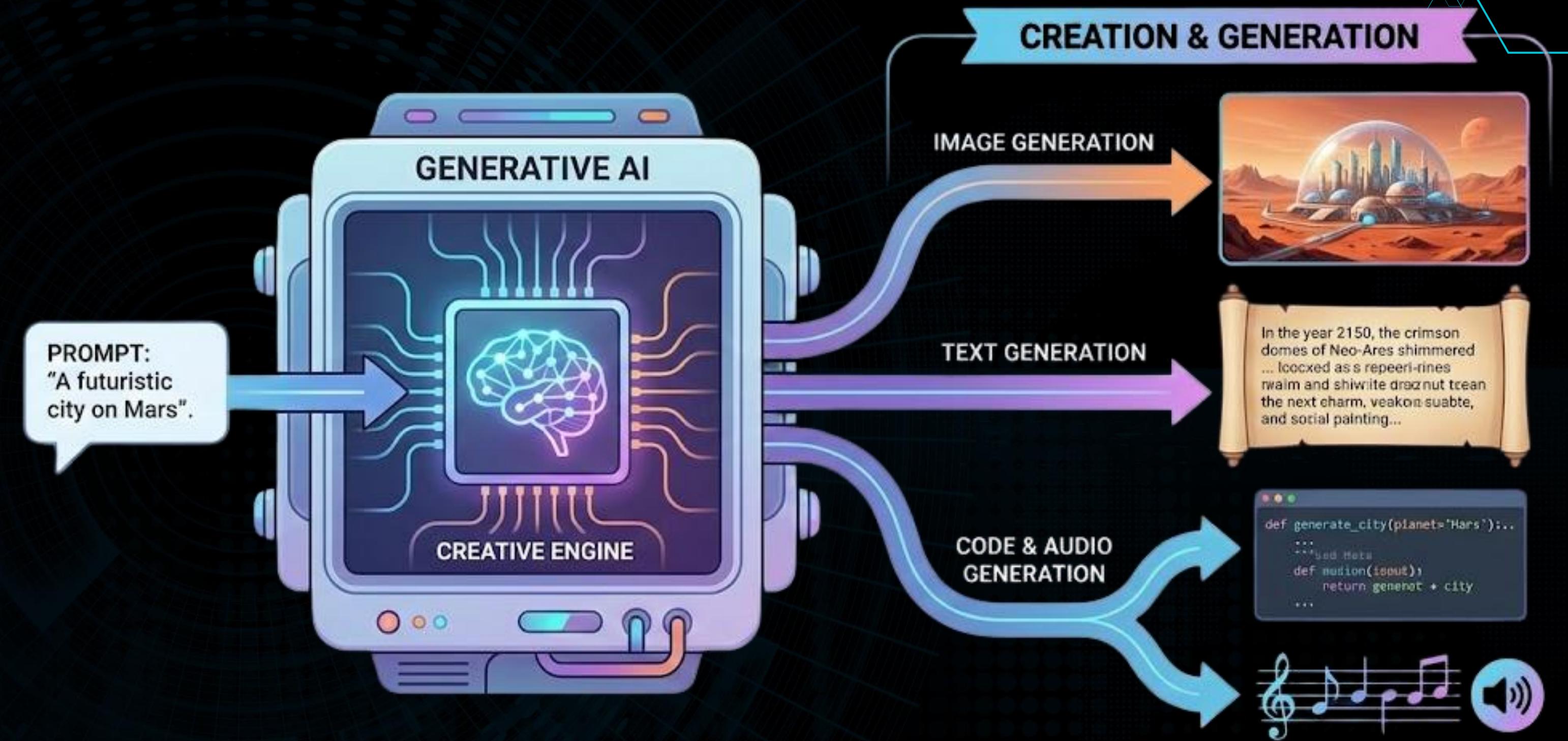
- ✓ Enhanced Content Creation
- ✓ Applications Across Industries
- ✓ Ethical / Security Challenges

Discriminative AI / Predictive AI



Focuses on distinguishing data points into pre-defined categories or forecasting future values based on past patterns.

GenAI



Focuses on creating NEW content—images, text, code, and audio—from simple prompts

GenAI

LLM

OTHERS

Claude Series, Gemini Series, Llama Series of Models

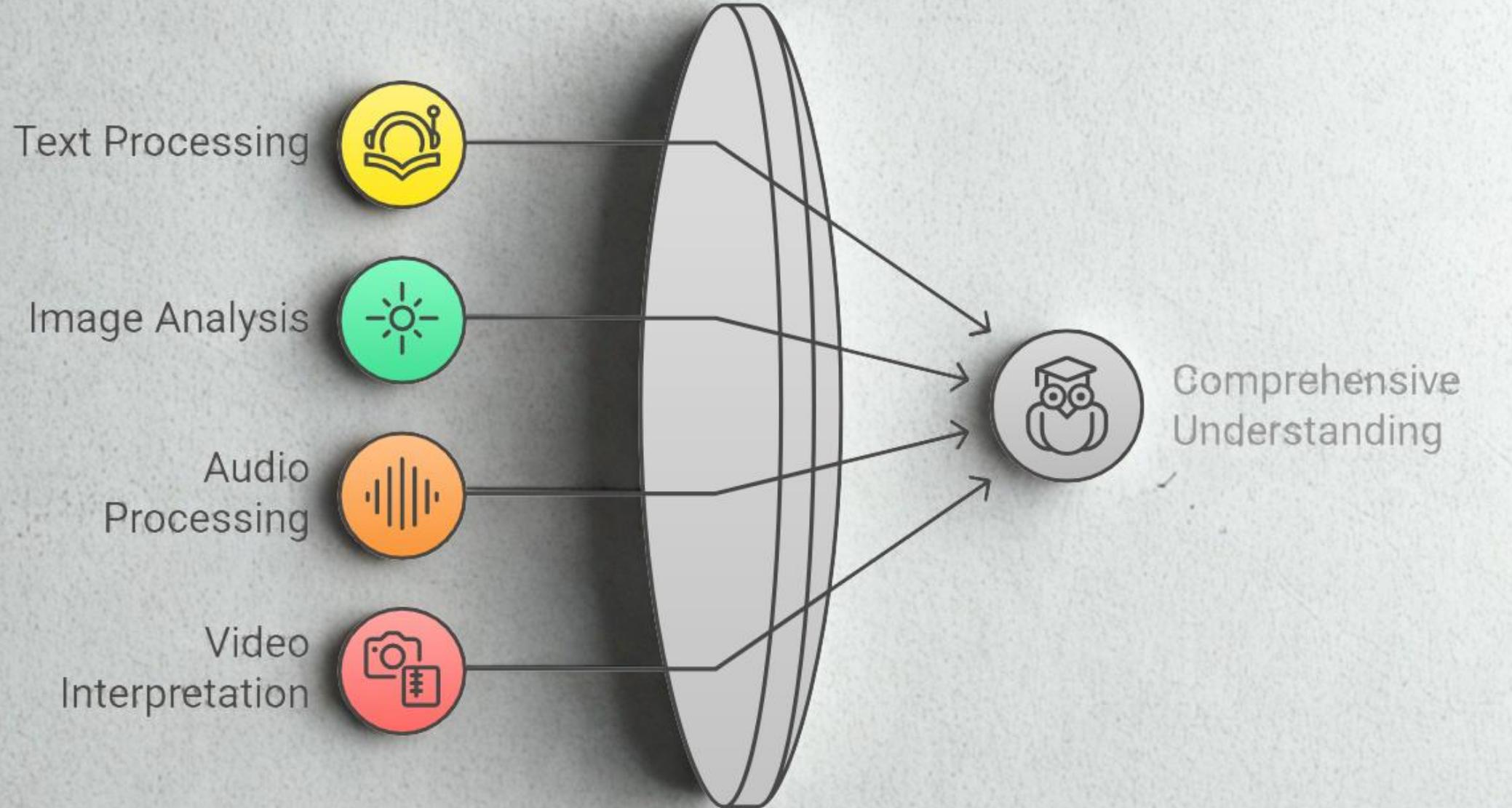
GPT

broad category of AI which can learn the underlying patterns of data to generate new, original content.

Large Language Model

NLP based model - understand, interpret, and generate human-like text (recent developments bring multimodal support)

a specific type of model architecture used to build some of the most famous Generative AI products, like ChatGPT GPT-3.5, GPT-4, GPT-4o.

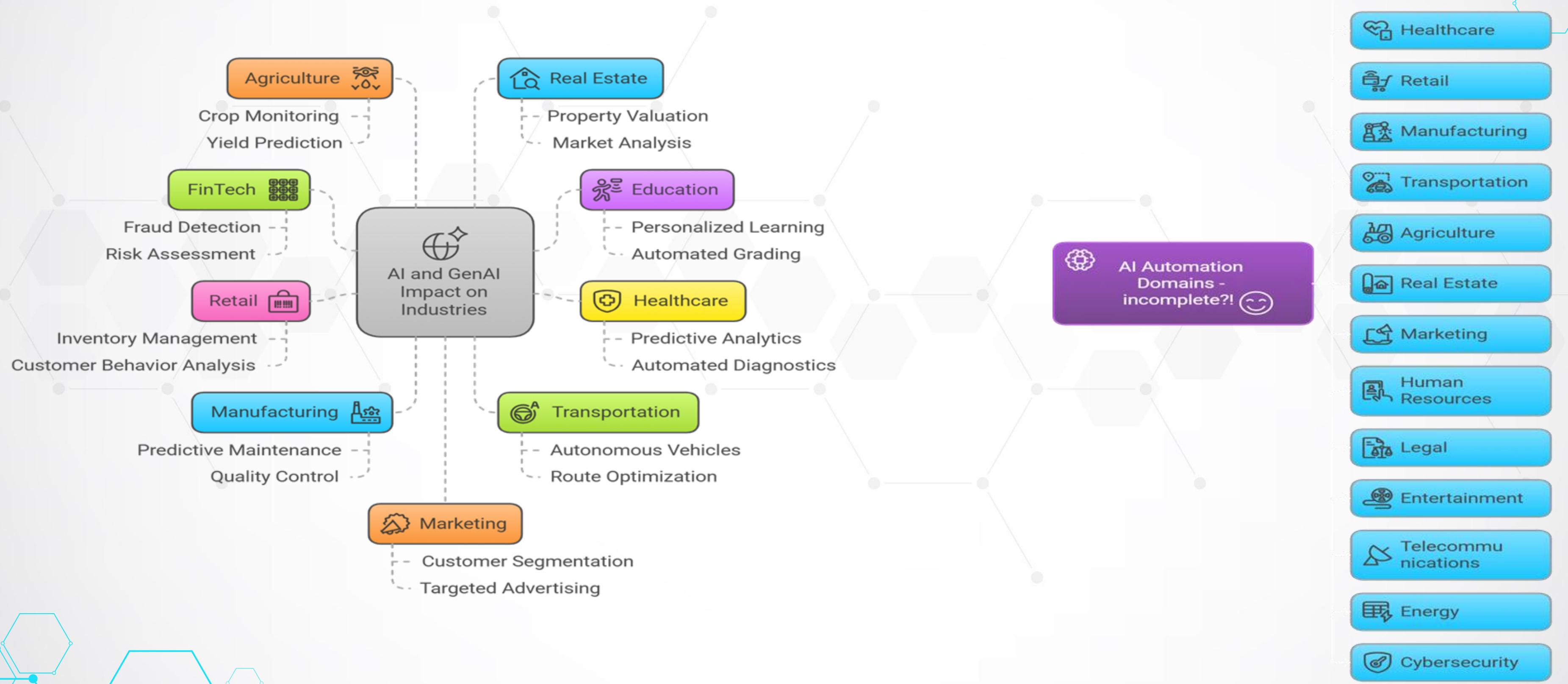


Multimodal

Creativity Unleashed

- ✓ Gains deeper context
- ✓ Enables more natural, human-like
- ✓ Improves accuracy and reliability

It is a reality! Unlimited Use Cases!



The catch! : How to co-work with AI and innovate to the best?!

Welcome to the Future!

02 Innovate!

Coexist and Collaborate;
Create our space!
(Start differentiating!)



TRENDS

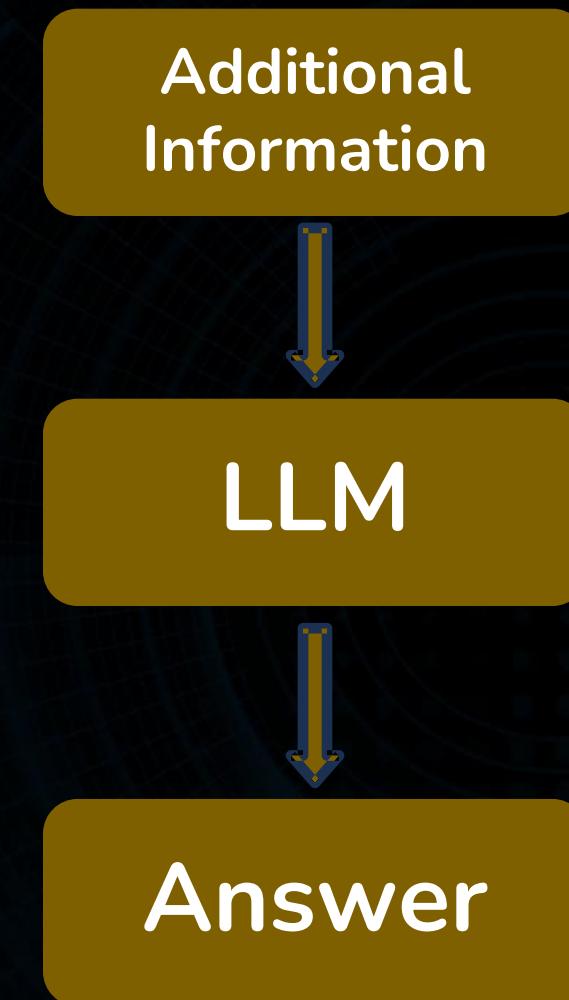
100%
ALIGNED

Chatbots to MCPs to Agents!

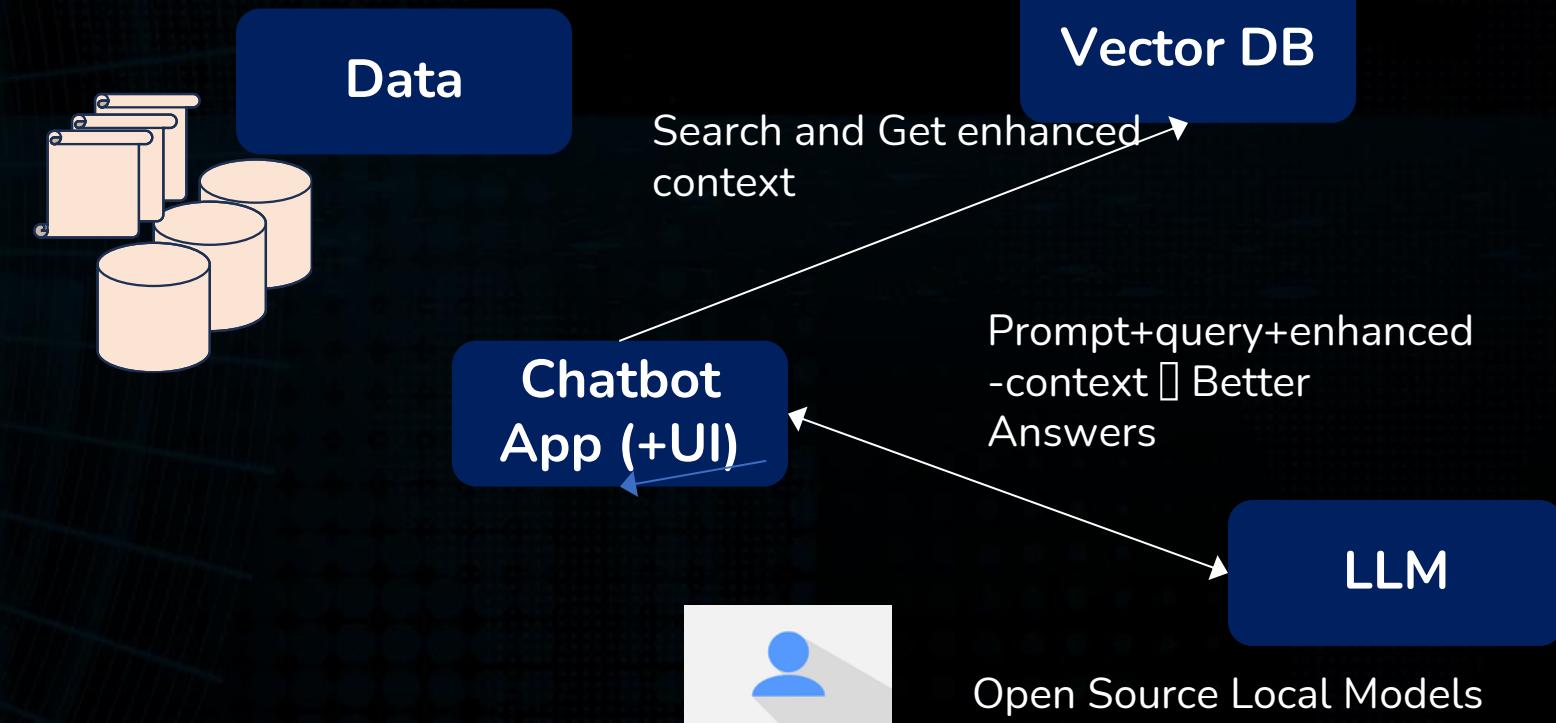
So Many Tools! Overwhelming?!



RAG (Retrieval Augmented Generation)

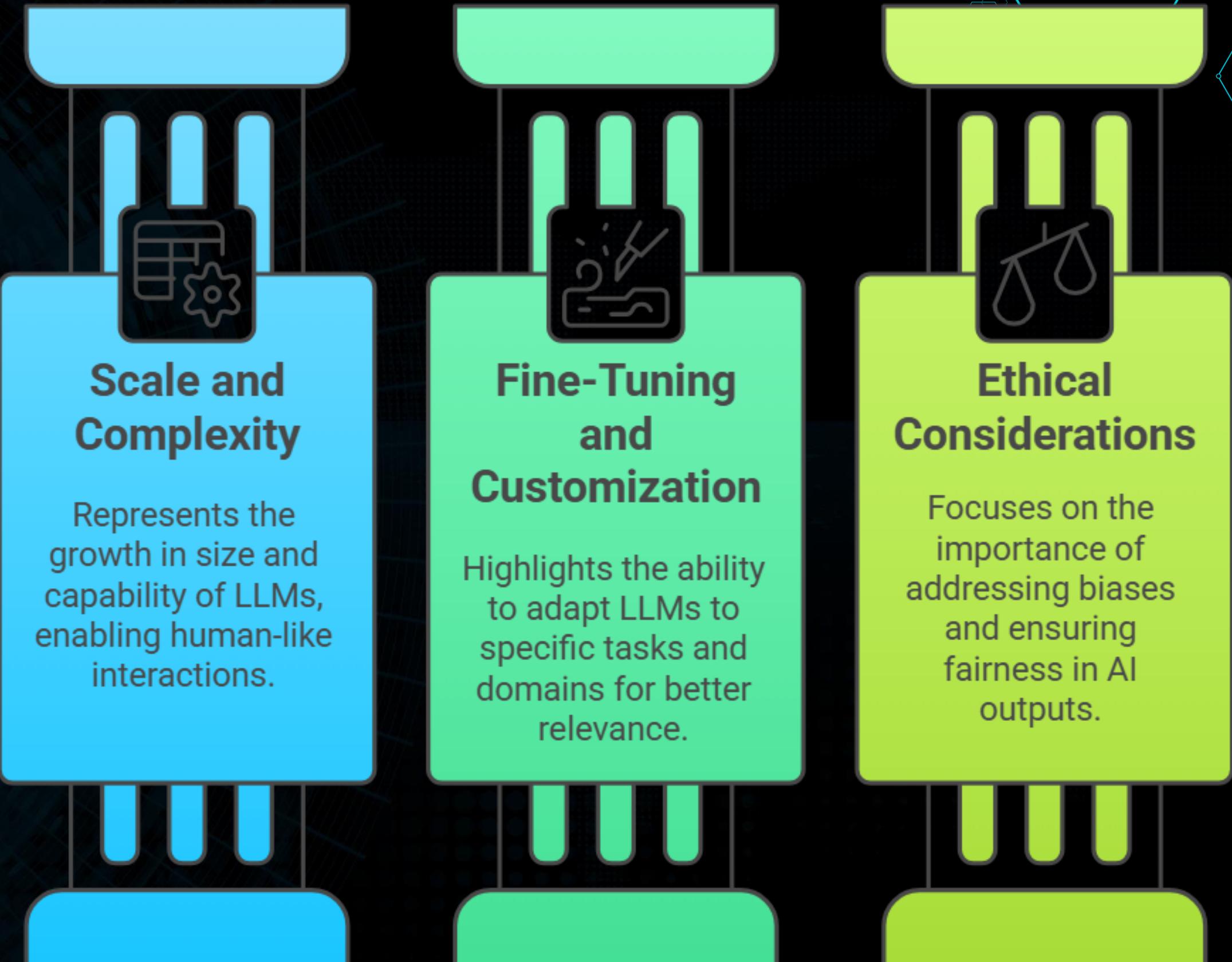


- Improve accuracy and efficiency
 - Relevant answer
 - Custom Data
-
- AI Data Assistants
 - Content Generation
 - Improve AI Models



Frameworks/Tools: LangChain, LlamaIndex, FAISS (Facebook AI Similarity Search)
Try : LM Studio (helps to host LLMs) connects to external RAG libs like FAISS

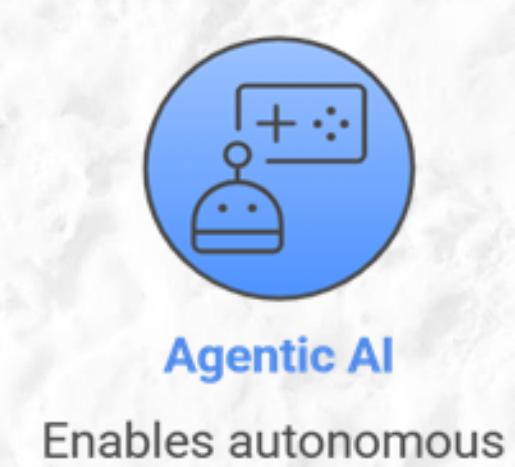
LLMs are getting better!



Agentic AI

Agentic AI refers to artificial intelligence systems designed to operate with a degree of autonomy, enabling them to make decisions and perform tasks without continuous human intervention.

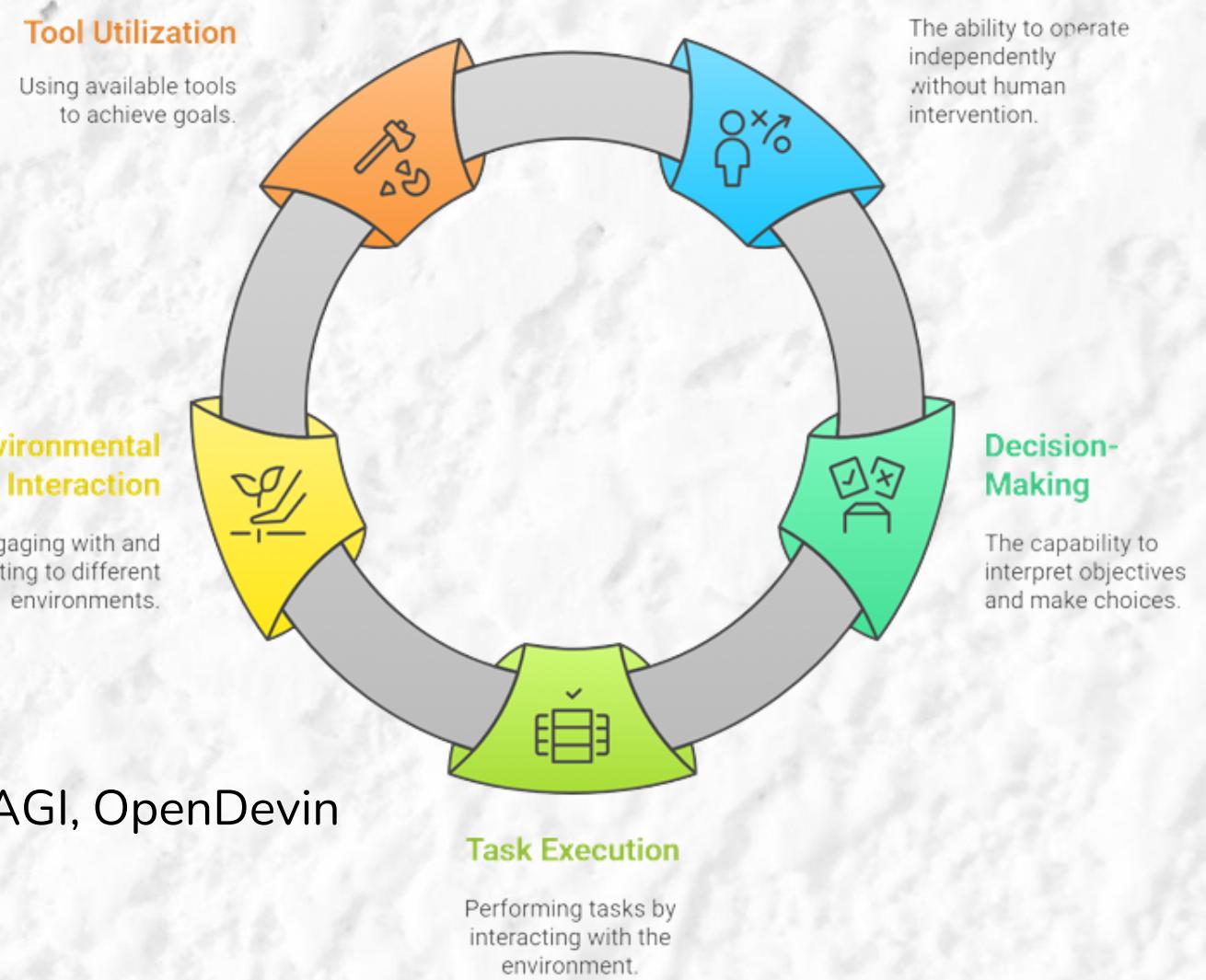
Orchestration | Tools | LLM/Model



Enables autonomous decision-making



Traditional AI
Requires explicit instructions



Frameworks/Tools: AutoGPT, LangChain, LlamaIndex, FAISS (Facebook AI Similarity Search), BabyAGI, OpenDevin

Try: AutoGPT for basic Automation for Doc summarization and emailing action

Agentic Developments : Interesting Tool Sets

LlamaIndex + LangChain

Combine for building tool-using agents that interact with external APIs.

LlamaIndex + AutoGPT

Use LlamaIndex to give AutoGPT access to local and external knowledge

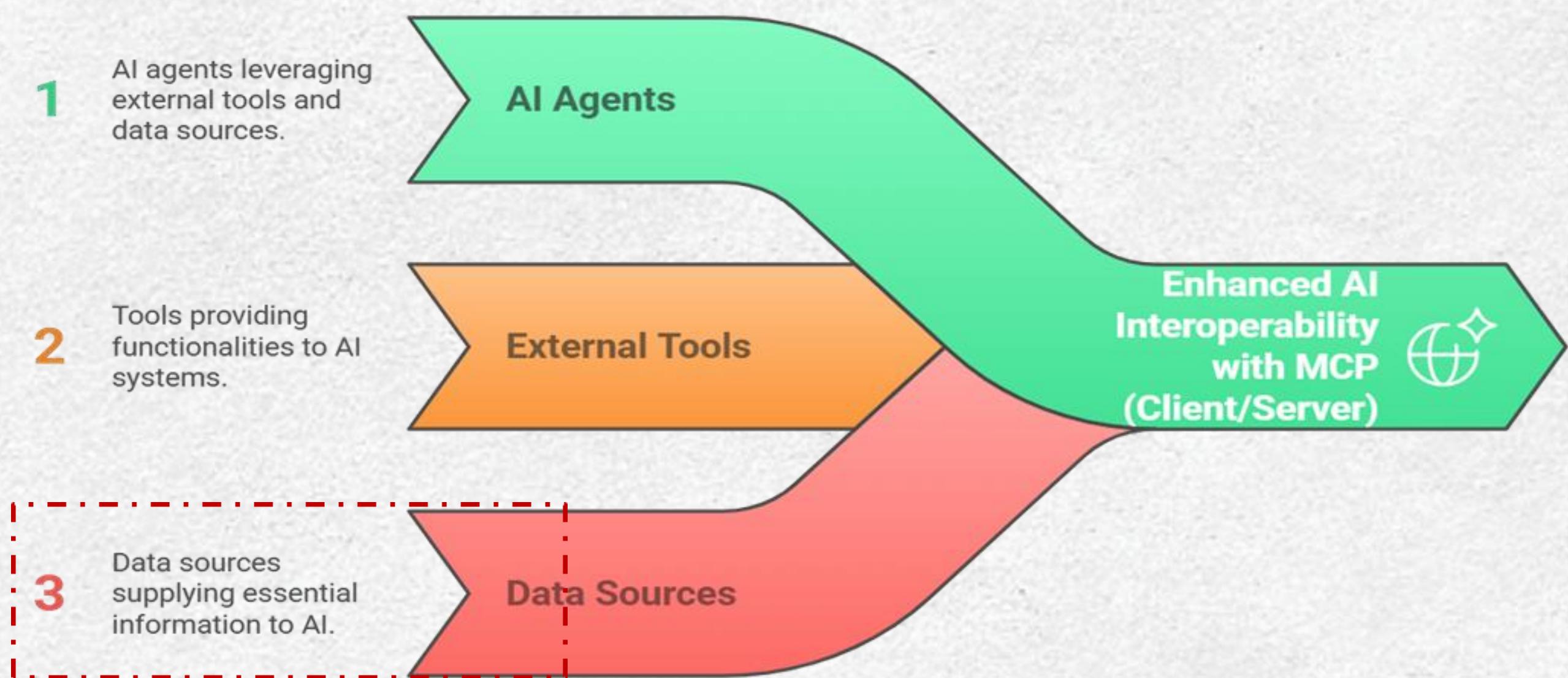
LlamaIndex + OpenDevIn

Enhance AI agents for autonomous coding and software development

Llama Index Libs for interfacing

Component	Purpose	Usage
llama_index.tools	Provides a framework to define and use custom tools for calling external APIs.	Use for REST APIs, GraphQL, or custom API endpoints.
llama_index.agent	Allows creation of multi-modal agents that can dynamically use external services.	Ideal for building Agentic AI workflows using APIs.
llama_index.query_engine	Supports advanced query routing to external data sources.	Connects AI with API-driven knowledge bases.
llama_index.bridge	Facilitates communication with other frameworks like LangChain for more complex API handling.	Combine LlamaIndex with external toolkits.

MCP (Model Context Protocol)



Standardized interface to connect multiple data sources. It provides two way communication

MCP Explained in detail with all components and working :
<https://composio.dev/blog/what-is-model-context-protocol-mcp-explained/>

Frameworks/Tools: Theia AI/Theia IDE, MCPAgentAI(python SDK), MCP Hub, Semantic Kernel

Try: Simple MCP Server building from scratch using python SDK (<https://composio.dev/blog/mcp-server-step-by-step-guide-to-building-from-scratch/>)

Links to tutorials, documentation, and research papers

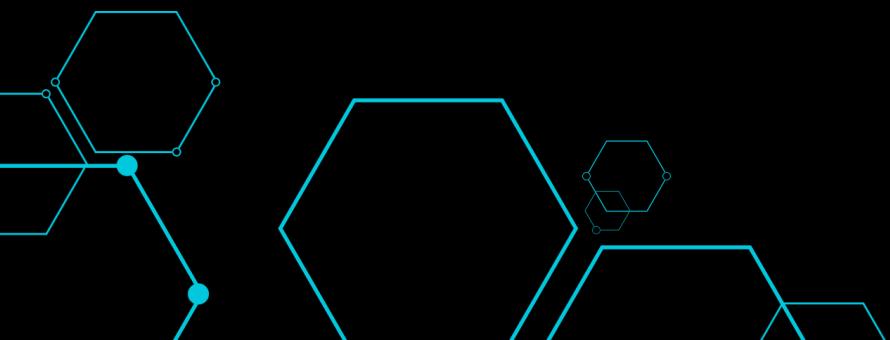
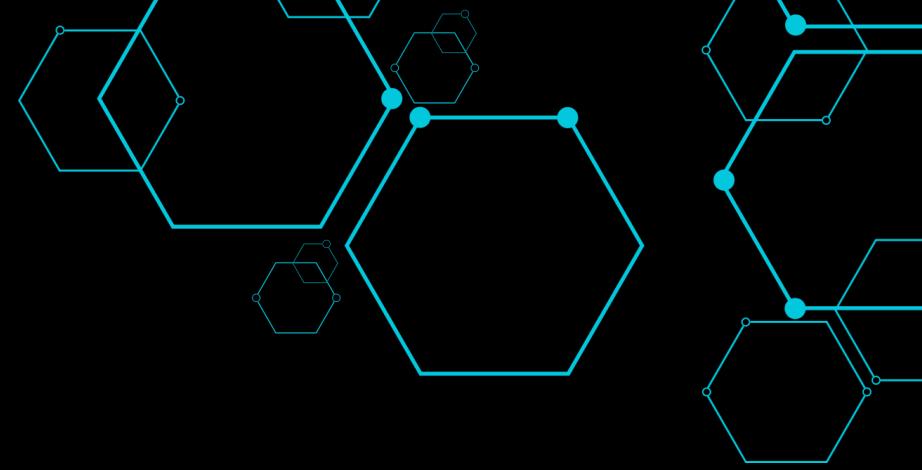
1. [GeeksforGeeks: 7 Steps to Learn AI From Scratch in 2024](#)
2. [GeeksforGeeks: 10 Must Read Machine Learning Research Papers](#)
3. [TechRepublic: The 10 Best AI Courses That Are Worth Taking](#)
4. [GeeksforGeeks: Top 10 AI Tools for Creating Research Papers](#)
5. [GitHub: Must Read Papers for Data Science, ML, and DL](#)
6. [Academia Insider: The Best AI Tools for Research Papers and Academic Research](#)
7. [Tech.co: 20 Best Free AI Training Courses for 2024](#)
8. [GitHub: Awesome AI Tutorials and Surveys](#)
9. [Texta: The Ultimate Guide to Starting Your AI and Machine Learning Journey](#)
10. [PhDTalks: Machine Learning Research Papers for Beginners in 2025](#)

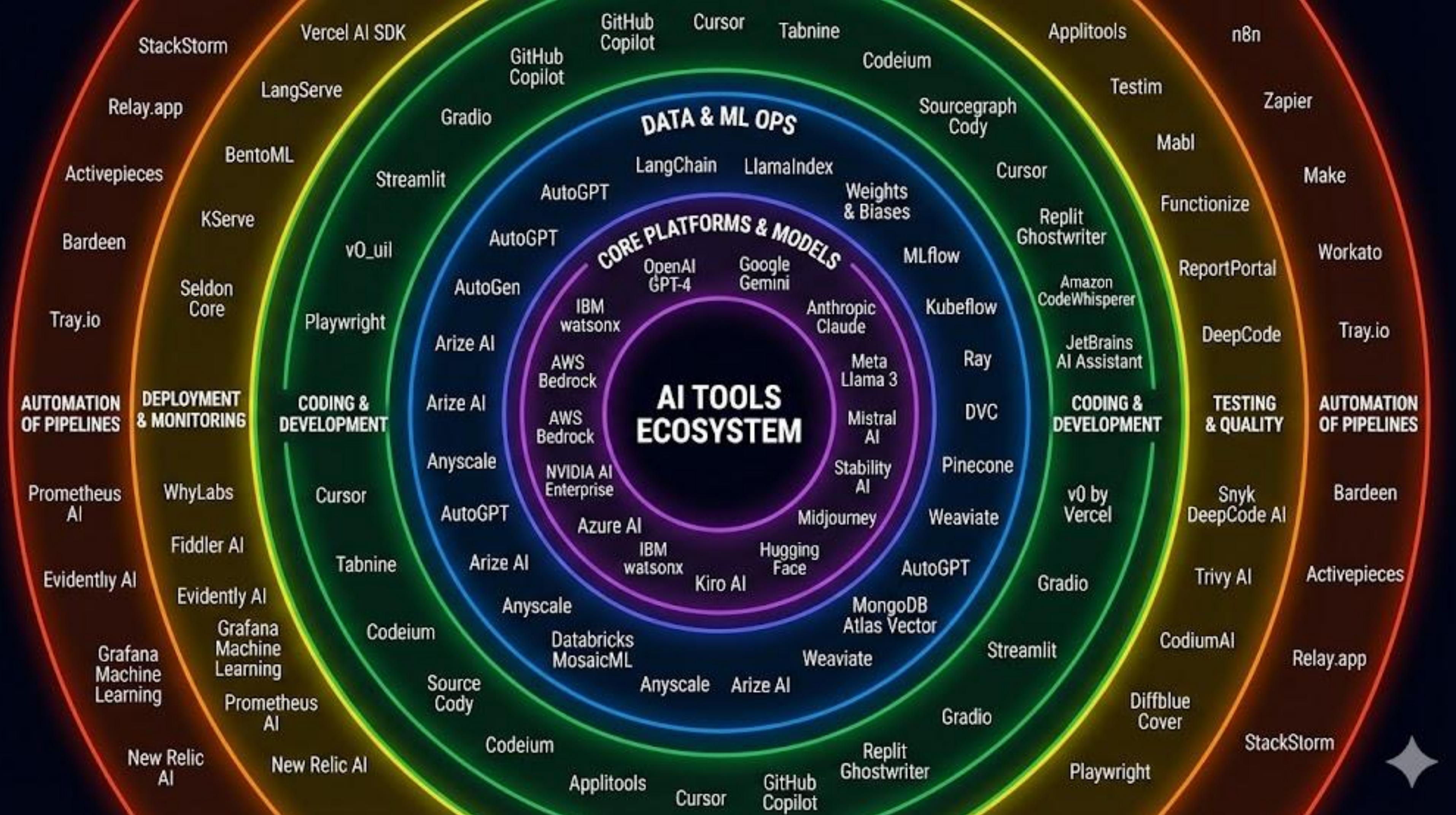
Recommended: Tools for building AI Copilots

Tool/Platform	Description	Link
Hugging Face Transformers	Open-source platform for building AI models, including conversational copilots.	Visit Site
LangChain	Open-source framework for building AI copilots using large language models (LLMs) and custom workflows.	Visit Site
LlamaIndex (GPT Index)	Open-source tool for building AI copilots with data integration and natural language search.	Visit Site
OpenAI API (Free Tier)	While OpenAI is not fully open-source, it offers a free tier to experiment with AI copilots.	Visit Site
FastChat (By LMSYS)	Open-source platform to build and deploy chatbots and AI copilots with support for LLaMA and OpenAI APIs.	Visit Site
Rasa	Open-source conversational AI platform for building AI copilots with customizable UI components.	Visit Site
ChromaDB	Open-source AI-native database for building context-aware copilots and AI assistants.	Visit Site
Haystack (deepset.ai)	Open-source framework for building production-ready, UI-integrated AI copilots for search and Q&A.	Visit Site
Auto-GPT	Open-source experimental AI agent that automates complex tasks using LLMs like GPT-4.	Visit Site
Chatbot UI	Open-source chat UI framework for building AI copilots with support for OpenAI and open models.	Visit Site



Glimpse of AI Tools







What we need?
How to select?
How to Use?
How to innovate?

NAVIGATING THE AI TOOLS ECOSYSTEM: A DEVELOPER'S GUIDE

1. WHAT WE NEED?

(Defining the Problem)

Impactful Answer: Identify the core problem you're solving, not just the AI hype.

Key Considerations:

- Problem Definition & Scope
- Resource Constraints (Time, Budget, Skill)
- Desired Outcome & Scalability Requirements



2. HOW TO SELECT?

(Choosing the Right Tools)

Impactful Answer: Evaluate based on pragmatic fit, cost-effectiveness, and community support, not just features.

Key Considerations:

- Vendor vs. Open Source Trade-offs
- Pricing Models (Token-based vs. Subscription)
- Ease of Integration (APIs, SDKs, Ecosystem)
- Community Activity & Documentation Quality



3. HOW TO USE?

(Mastering Configuration & Prompts)

Impactful Answer: Master the art of prompting and configuration through iterative experimentation and learning.

Key Considerations:

- Prompt Engineering Techniques (Zero-shot, Few-shot, Chain-of-Thought)
- Model Configuration (Temperature, Max Tokens, Context Window)
- Data Privacy & Security Compliance
- Continuous Learning (New Models, Features)



4. HOW TO INNOVATE?

(Creating Novel Solutions)

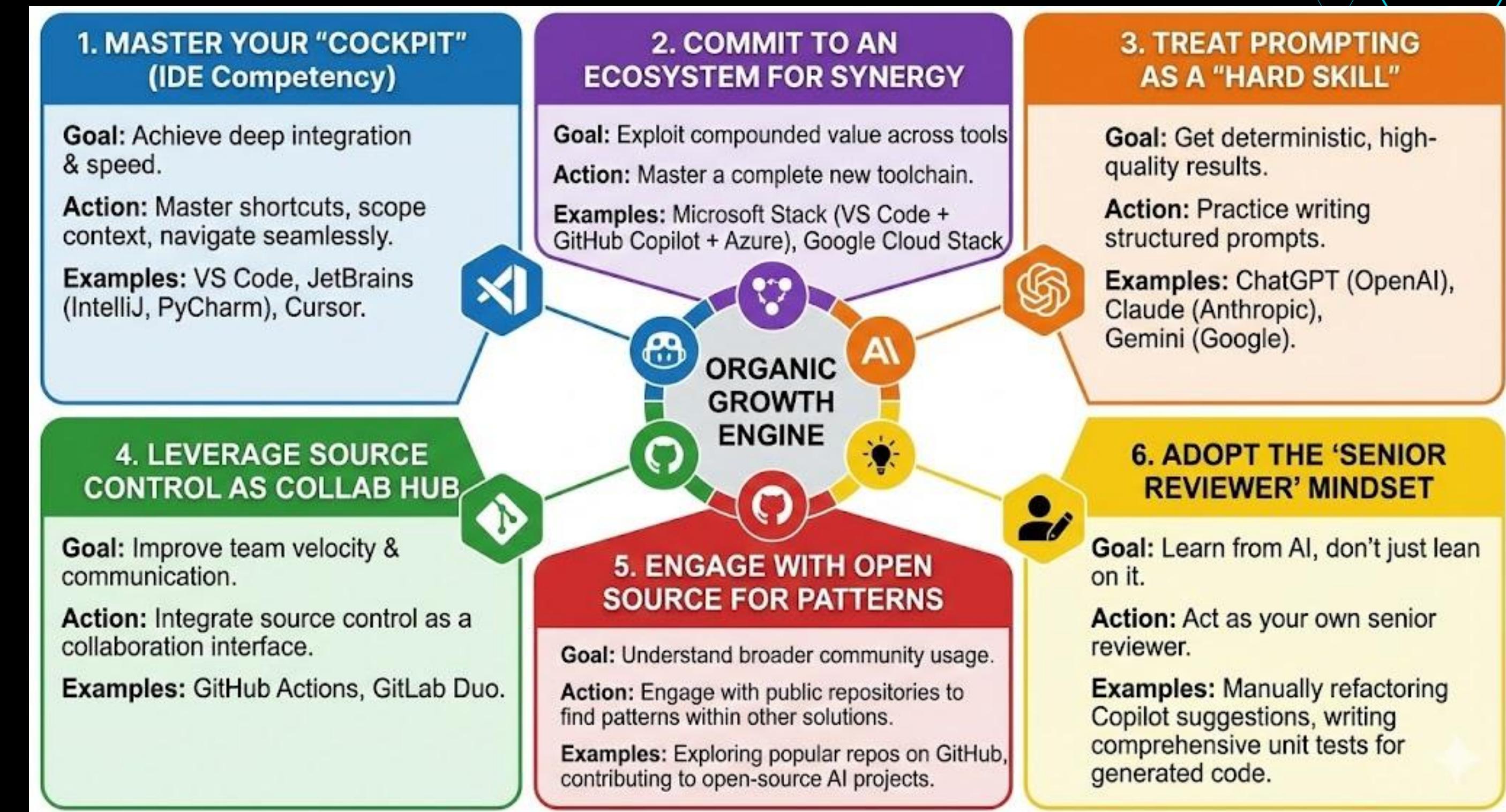
Impactful Answer: Combine AI capabilities with unique **domain expertise** to create novel, high-value solutions.

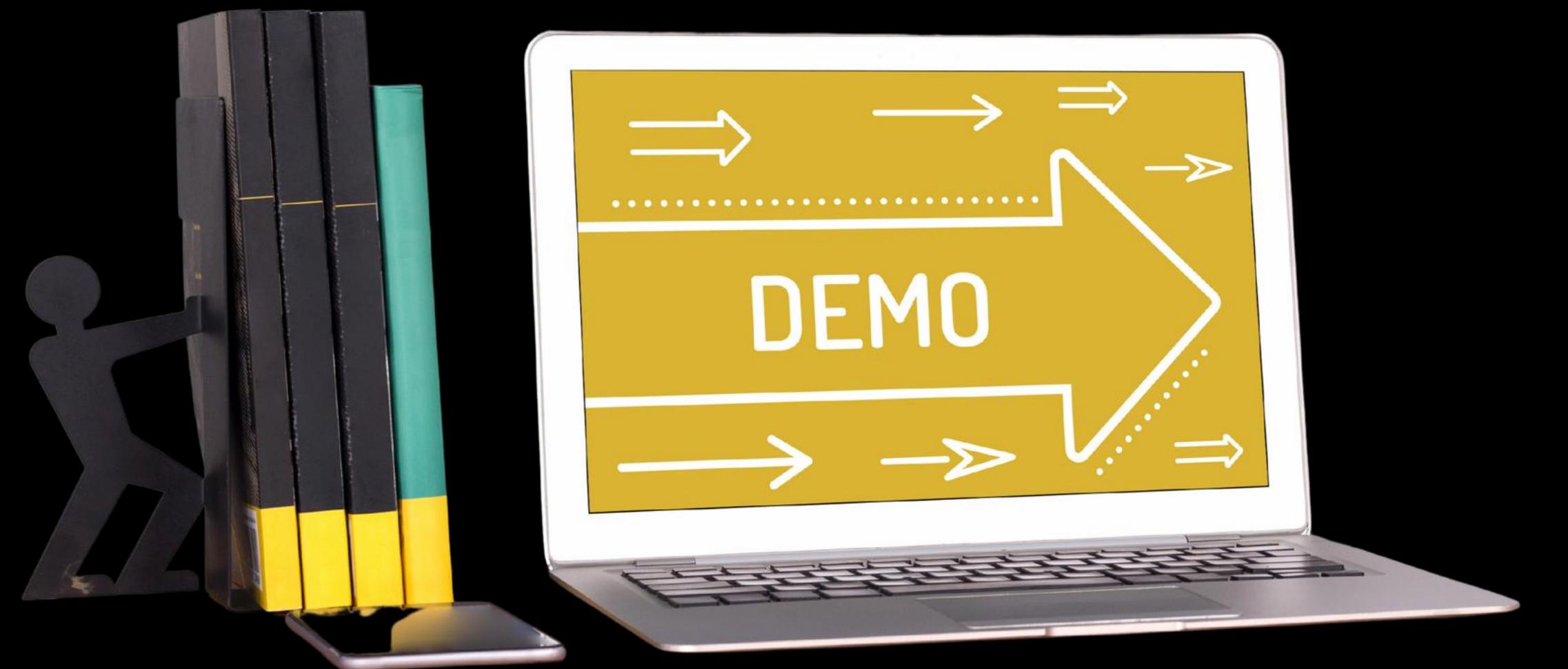
Key Considerations:

- Cross-Domain Synthesis & Creative Application
- Experimenting with Multimodal Capabilities (Text, Image, Audio, Code)
- Solving Unmet User Needs Uniquely
- Building & Iterating on Prototypes Rapidly



How to navigate...?



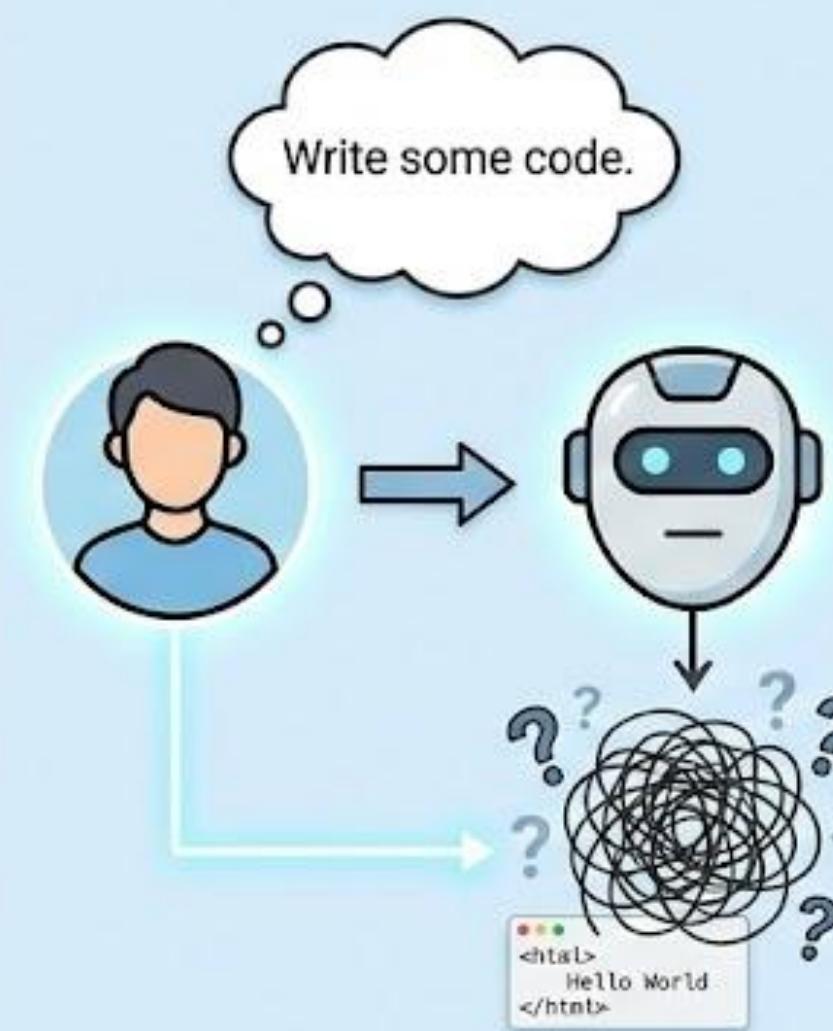


Key
Takeaways





ZERO-SHOT (VAGUE)



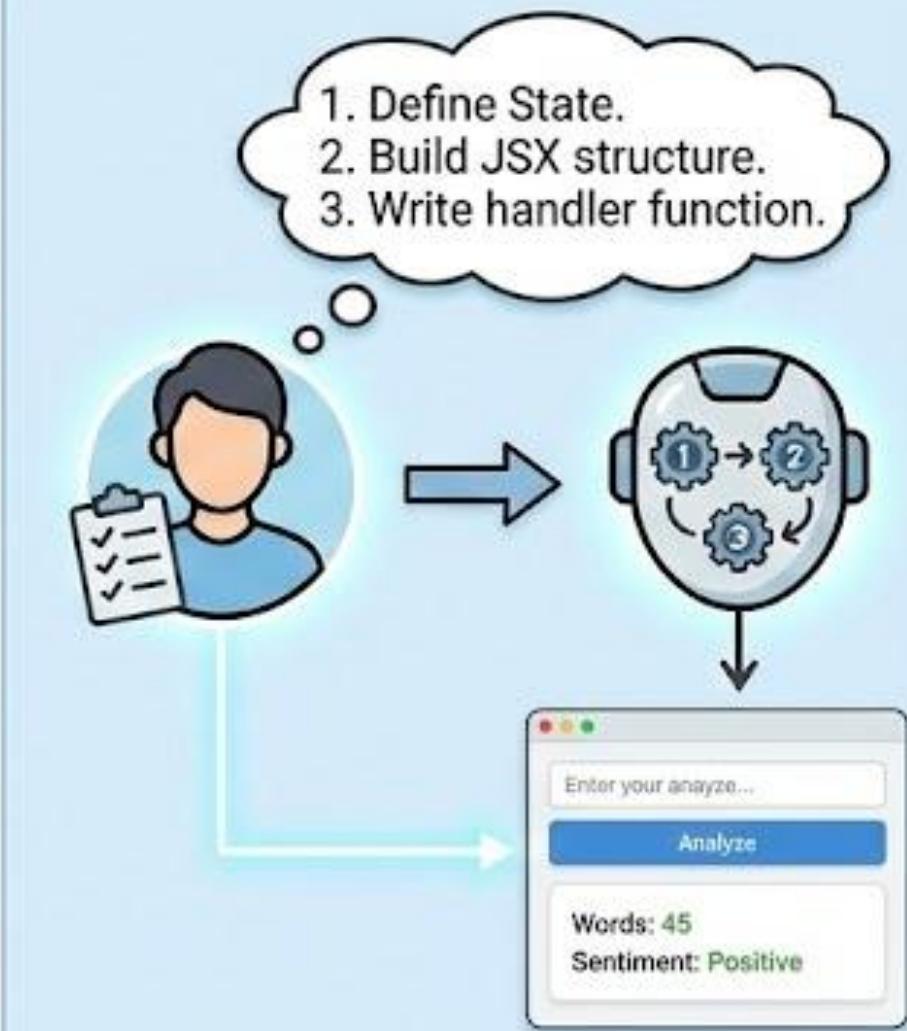
Prompt: "Build a web page."
→ **Output:** Basic, unstyled HTML.

PERSONA + CONSTRAINT (SPECIFIC)



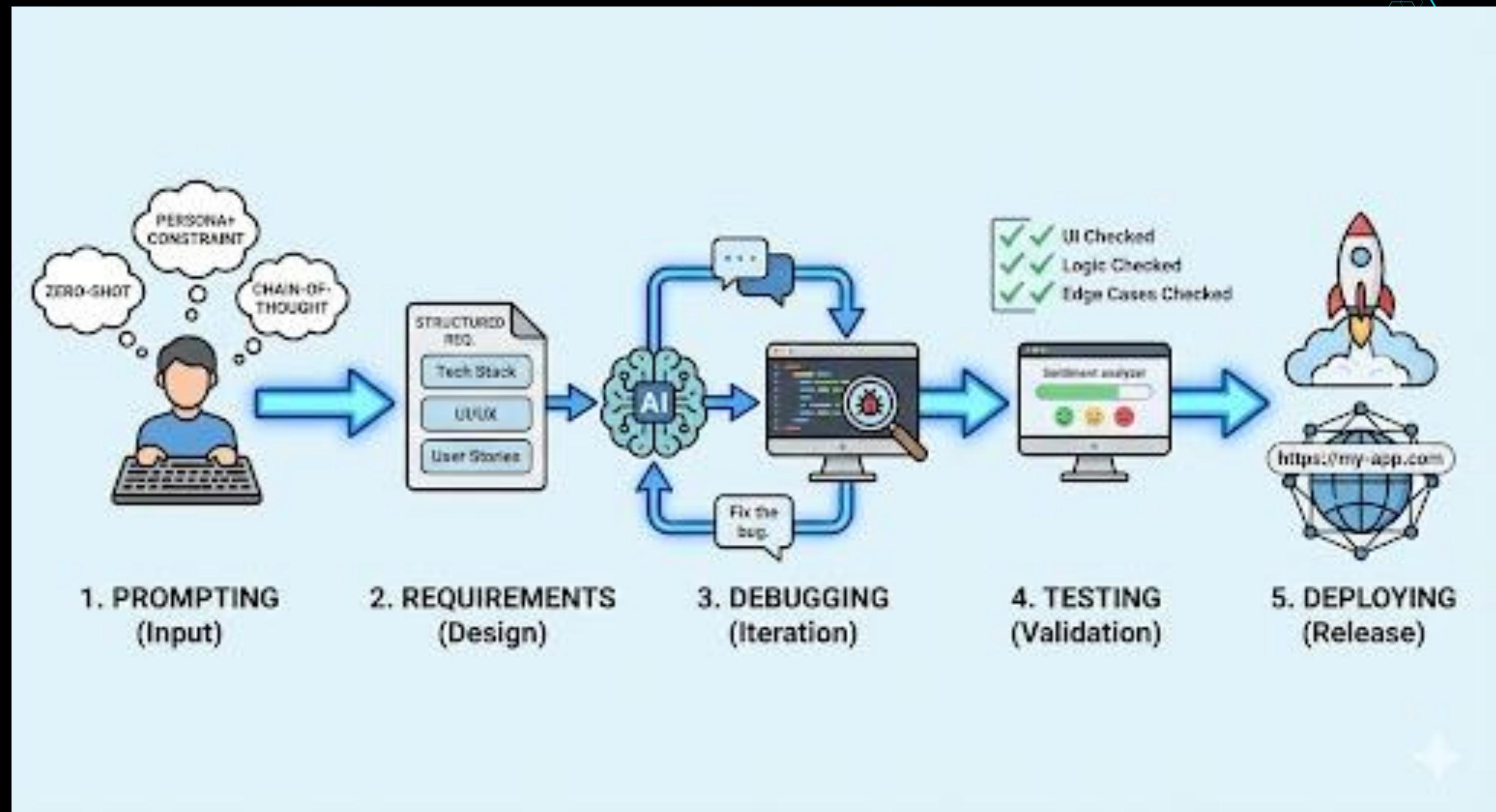
Prompt: "Act as a Frontend Engineer. Create a React component with a blue button using Tailwind." → **Output:** Styled component with specific features.

CHAIN-OF-THOUGHT (STRUCTURED)



Prompt: "First, define state. Second, create JSX structure. Third, write the handler."
→ **Output:** Full, logical application code.

General Dev Flow





Define the Future!



03 Elevate!

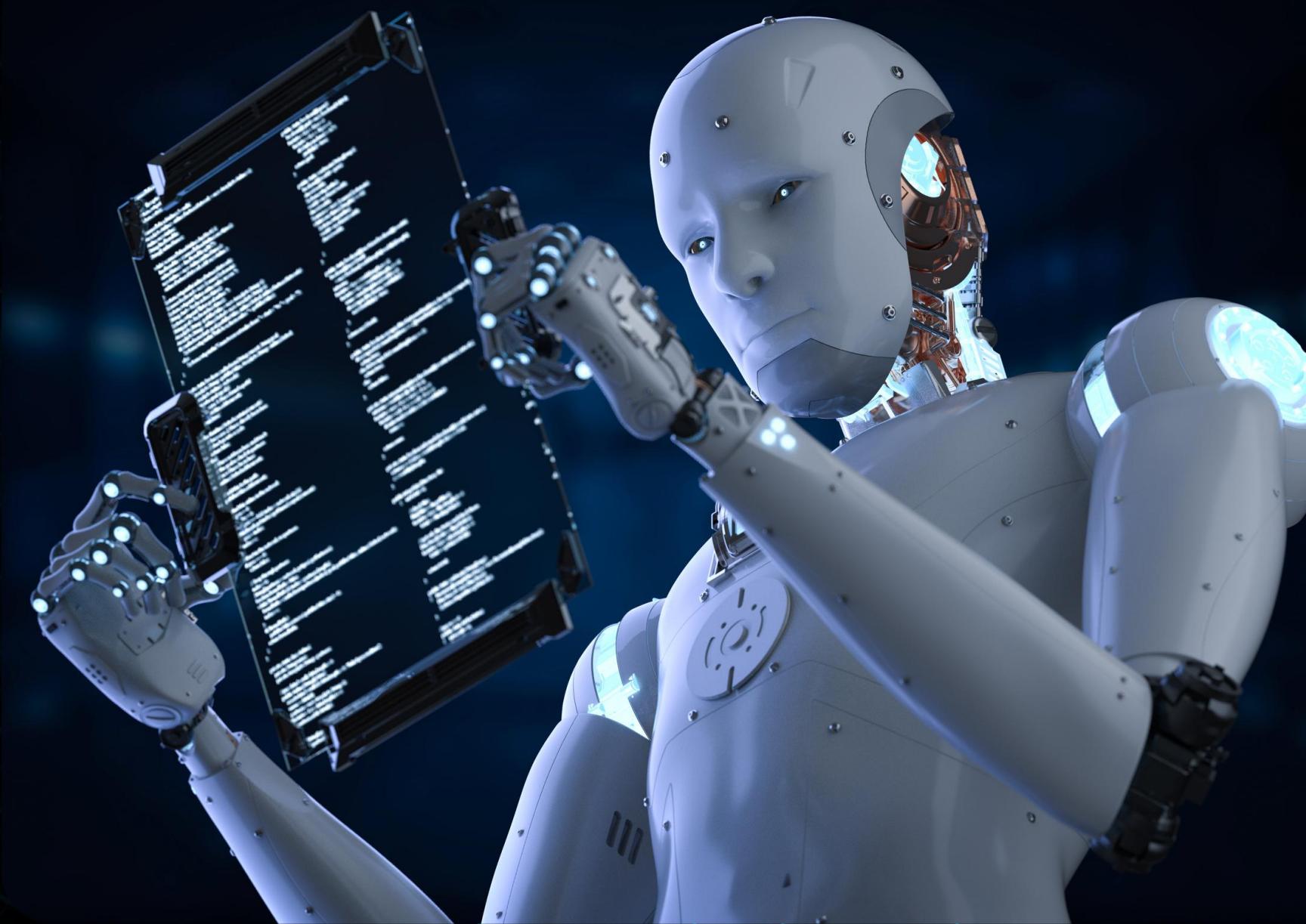
Master,
Best of the potential,
Define what next!

FUTURE



Watch out!

Upskill, Adapt and
Align



AI for Security

How AI can be utilised for Security Inference and Automation, Assessment, Auditing, Compliance, Threat hunting, detection, respond and remediate



Agentic AI, MCP

Agents for specific tasks, connecting to build AI pipelines for inference, decision making and actions

AI Orchestration & Monitoring

Orchestration and Management of AI deployments. LLM, Agents and more - Monitoring and Actions

AI Performance

AI Performance Benchmarking and Resource optimisation

Security of AI

Ensuring security of AI (Models, APIs, Training and more)

Multimodal GenAI

Support text, image, audio, video and hybrid

Responsible AI (RAI)

Fairness and Bias Mitigation

Explainable AI (XAI)

Transparency and Security

AI Cost

AI Cost Management

AI NEXT : Beyond LLMs and Agents!

Recent AI research in late 2025 and early 2026 is rapidly moving away from rigid, discrete, token-based architectures toward continuous, non-autoregressive, and hybrid models.

These shifts address fundamental limitations in token-based LLMs, such as high latency, limited reasoning, and language-specific inefficiencies.

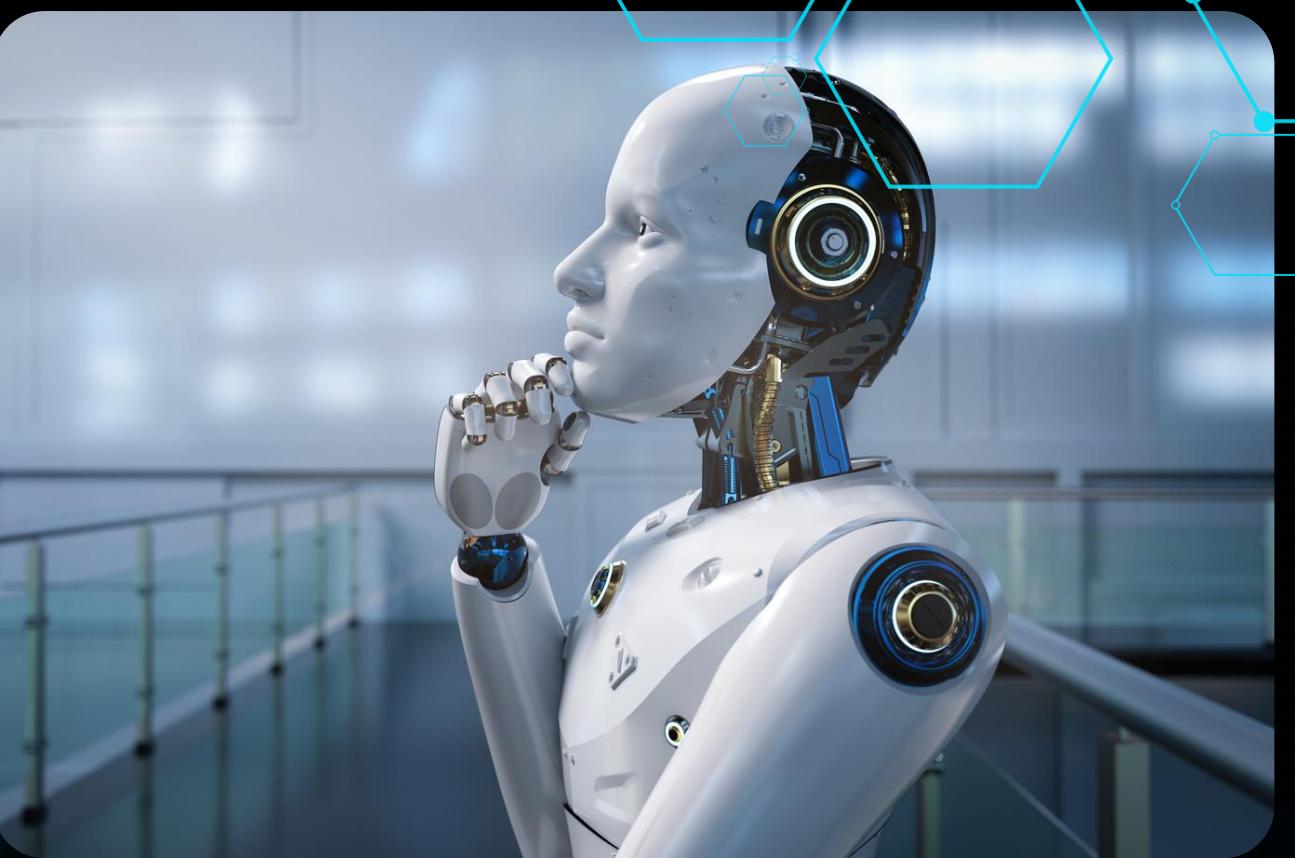
1. Get latest research papers / any knowledge, through Gemini / ChatGPT
2. Make a pdf
3. Upload to [NotebookLM](#)
4. Create podcast and interact

Key
Takeaways



1. Next Month Plan!

- ✓ Create a commitment plan of 30 Days
- ✓ Setup Antigravity or similar (with VSCode and GitHub)
- ✓ Identify one automation task for you / college
- ✓ Requirement Document (Antigravity / Gemini can help)
- ✓ Design, Dev, Debug and Test with Antigravity
- ✓ Document Each Step (Antigravity can help)
- ✓ Deploy the Application and Use!
- ✓ Learning Summary : Requirement, Prompting, Tools, Tips



Note : The tool platform can be selected based on what is suitable for you. Recommended to have VSCode kind of IDE and GitHub integration for code version control

2. Weekly Credibility Builder

- ✓ LinkedIn Post and Commenting, Follow AI Experts and Channels
- ✓ NotebookLM podcast and knowledge management
- ✓ Update all learning and app created to github

ALL
THE

BEST



Uncode → Innovate → Elevate!



Sanil Kumar D
Industry Awarded
Technologist|CostSense...



THANK YOU

<https://www.linkedin.com/in/sanilkumard/>

BONUS!

SODA CONTEXTURE

The Open Context Engine for AI



SODA Contexture is an open source project under SODA Foundation (a sub foundation under Linux Foundation). It is an open context building engine for AI.

JOIN HERE!

GitHub : <https://github.com/sodafoundation/contexture>

Slack : <https://sodafoundation.slack.com/>

