Agenda

1) Introduction ⟶ Traditional ML ⟶ MCP or A2A
2) Pydantic Python

Prequisities ⟶ Python ⟶ Must

2013-2014 ⟶ Statistics ⟶ Conclusion
⟱
Statistical analysis ⟹ Observation, conclusion.

Machine Learning Algoritam ÷ DATA ⟶ Model ⟶ Pattern of DATA ⟶ Predichons.

Independent And Dependent features

f_1 f_2 f_3 f_4 O/P   TABULAR

2011 ⟹ BIG DATA
         FREELANCERS

BIG DATA ⟸

House   Area   Price   O/p   ETL
Size   2007 ÷ Fb, Instegram,
                                                  Whatsapp

                                                  Huge amount of DATA
                                                  ⟱
                                                  STORE

E-TRACT ⟶ TRANSFORM ⟶ LOAD ⟹ DATA Scientist

AI ⟶ Use this DATA ⟶ PATTERNS ⟶ Understand our Customer.
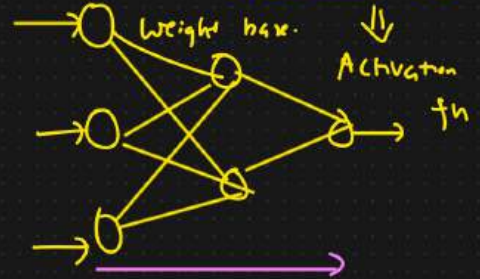
Recommendation Engine · ÷ Sapient

Accuracy

↳ Deep Learning

↳ Traditional ML Algorithm.

DATA

Multi Layered NN.

$$y = \boxed{w^T x + b}$$

Weight box.   ⇓   Activation fn

DEEP LEARNING

$$w' = w - \alpha \frac{\partial h}{\partial w}$$

Tabular DATA
↓
ANN

Images
↓
Computer Vision
↳ CNN
↳ ALEXNET, ROSNET
   VGG16, INCEPTION
↳ Detectron 2
↳ RCNN
↳ MASKED RCNN
↳ YOLO

NLP ←
↳ RNN
↳ LSTM RNN
↳ BIDIRECTIONAL LSTM RNN
↳ Encoder Decoder
↳ ATTENTION IS ALL YOU NEED
↳ TRANSFORMERS → GENAI
      ⇓   ⇓
   { NLP
     DATA }   LLMS → NLP => TEXT
                    ⇓
                 GAME CHANGING

2K +

3 Core : DATA SCIENCE + GENAI → MARCH

Agentic AI →

Text   ↑↑

Generative AI

I/P → [■] → O/p

DATASET

I/P → [**LLM**] → O/p   [Generate]

UPSC ←
  ↳ 8-9 Subjects
  ↳ 10 Subjects ←
    ↙   ↓
   Books Newspaper

1 year

Metrics

Examiner ← Metrics

I/P → [UPSC LLM] → O/p   [Generate]
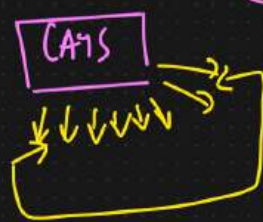
Test paper.

1st RANK
→ Open AI
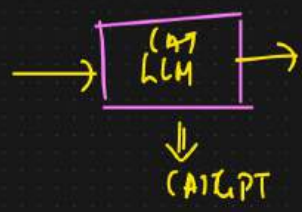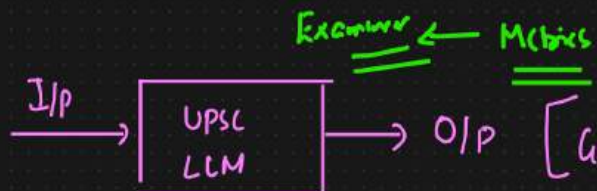
← LLM Model
← Google Gemini Model
← LLAMA

→ [CAT LLM] →
    ⇓
 CATGPT

[CATS]
↙ ↙↙↙↙↙

HALLUCINATED

GaurdRails ↑

RAG → Retrieval Augment Generation

UPSC → PRELIMS
       → MANS

NEWSPAPER ⇒ 30 days
    ⇓
 External

LAST Month

I/P → [UPSC GPT] → O/p

DATA
SOURCE
↑

Vector
⇒ DB

30 days

{ Tell about Today NEWS }

Context
→ O/p

Prompt ←

Vector DB ⇒ Vectors

[GPT LLM]
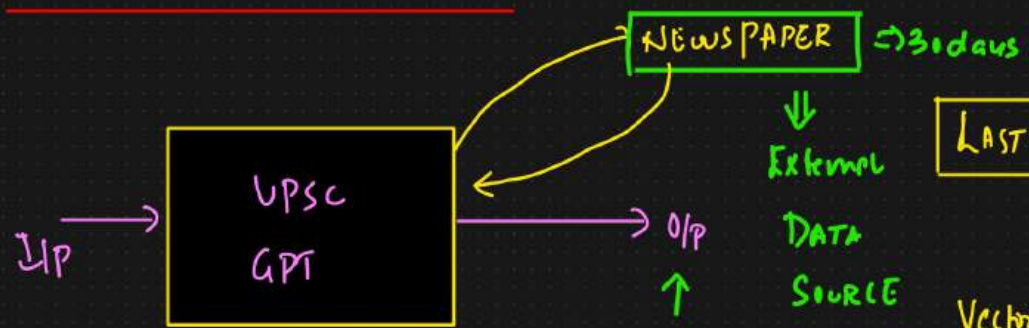
Text ⇒ Vectors
Embedding
10th May
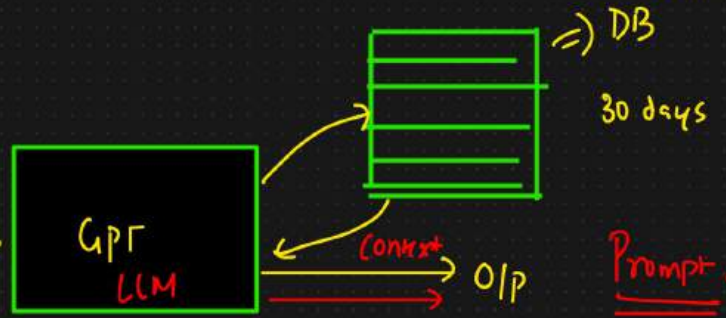
TRADITIONAL RAG'S => Aginite RAG

Day

Legal Policies

Legal Law FIRM

RAG

Retrieve → Vector DB

LLM → O/P

Augment
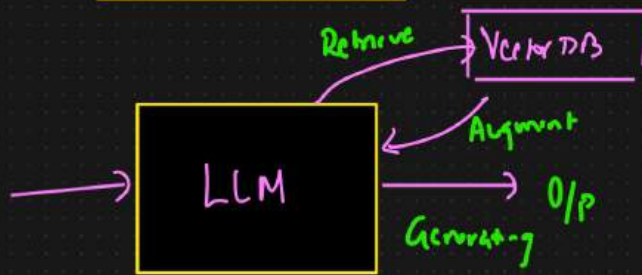
Generating

Pine Cone.
Chroma DB
DATA STAX   Qdrant
ASTRA DB
FAISS DB

Gen AI Application

Tools

Companies

Today's news On AI

Vector DB
Connection → Vector DB

→ ARXIV →

I/p → LLM → ARXIV

WIKI

API's

TAVILY

Tools

Attention IS

O/P

WIKI

all your need

Research

Machine Learning

TAVILY → External Search
Engine

func ():
"""
≡

Comment In python

"""..

LLM's → **API** →
- ARXIV ←
- WIKI ←
- TAULLY ←
- ☐ ←

MCP

Model Context Protocol

Service Provider

{ MCP Protocol } ← ☐ ← { _ }

☐ + ☐ →
- ☐ ←
- ☐ ← MCP
- ☐
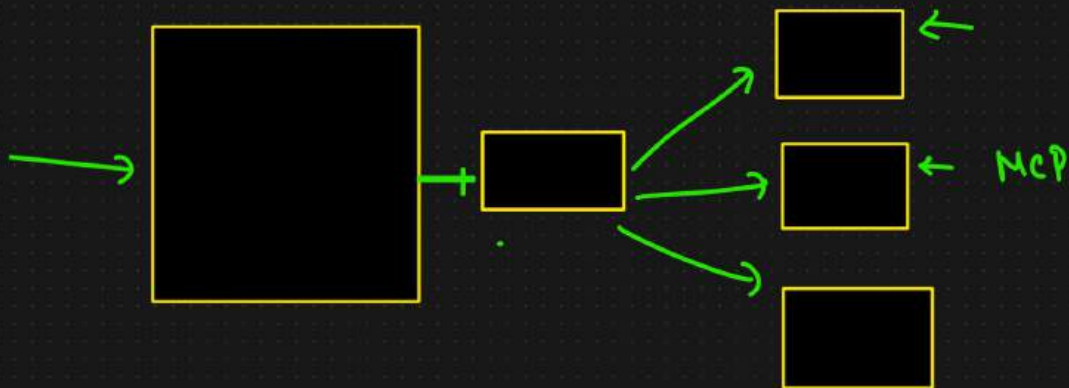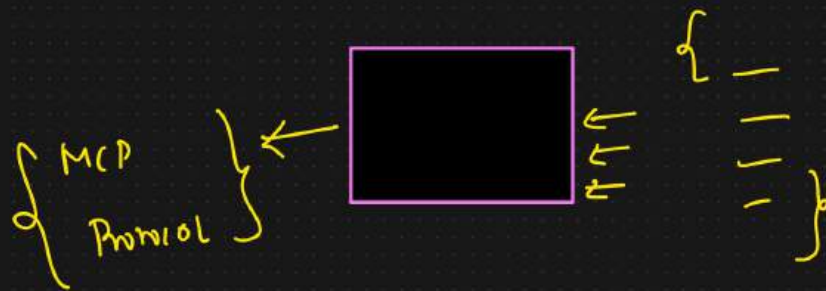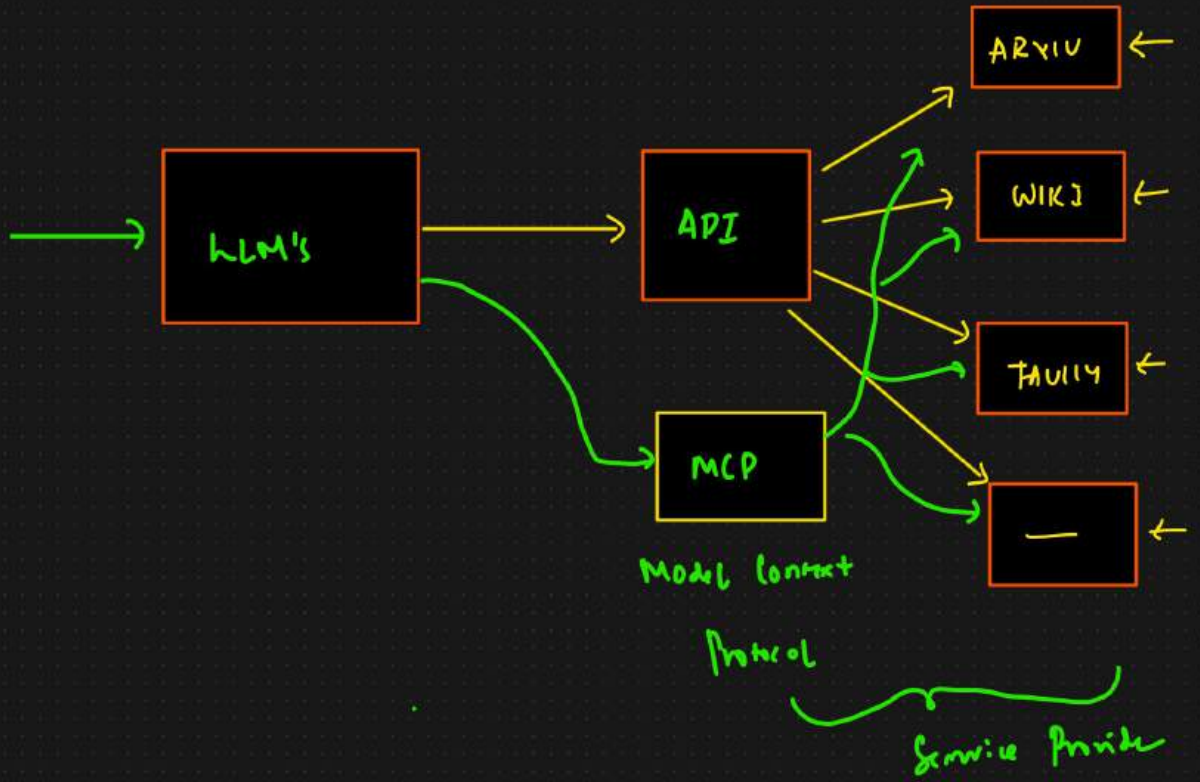
Generative AI Vs Agentic AI

AI Agents

LLM → O/P
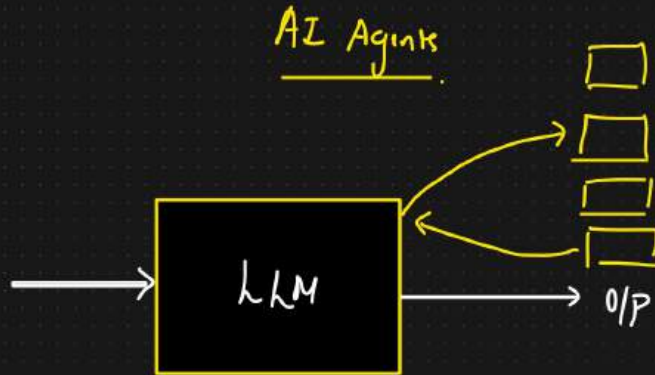
Agentic AI → Complex Workflows → SDLC

LLM
+
Human Feedback

1) Requirement Gathering ÷ Business Analyst, Product Manager

2) Documentation And User Story ÷ BA

3) DESIGN ←

4) Development ←

5) Testing ←

Workflows

I/P
↓

Agentic AI Application

Requirement Gathering ← AI Agent

Human In the loop

O/P
↓

User Story

↓

DESIGN

Industry Process

AI Agents

Vs Agentic AI

```
          ┌─────────────┐
     ┌────▶│ Development │
     │     └─────────────┘
     │            │
     │            ▼
     │     ┌─────────────┐
     └─────│  Unit       │
           │  test       │
           └─────────────┘
                  │
                  ▼
           ┌─────────────┐
           │    R&D      │
           └─────────────┘
```
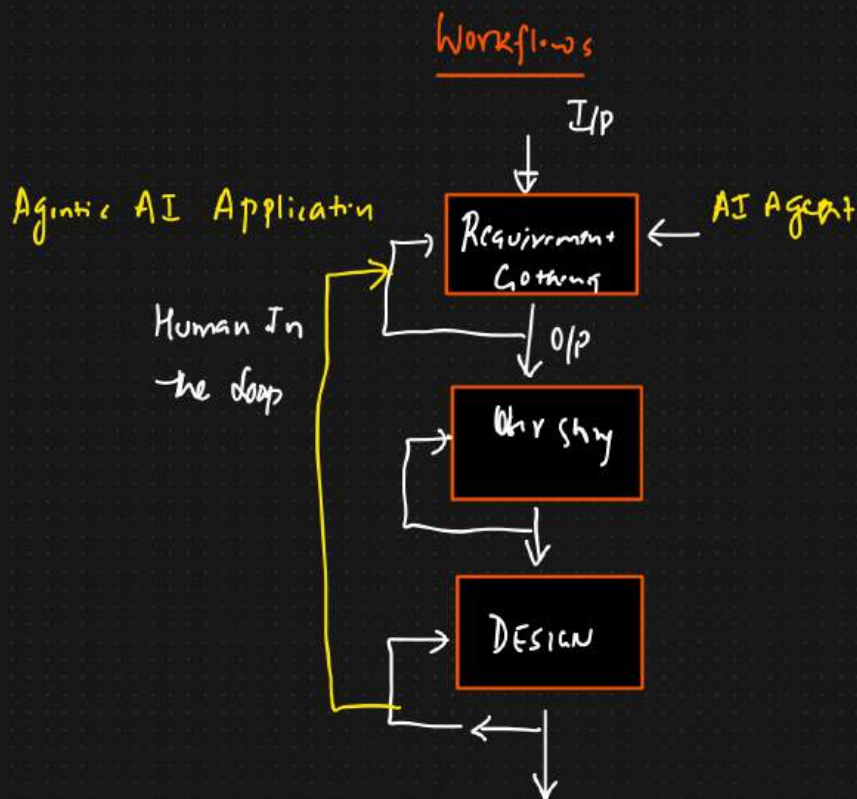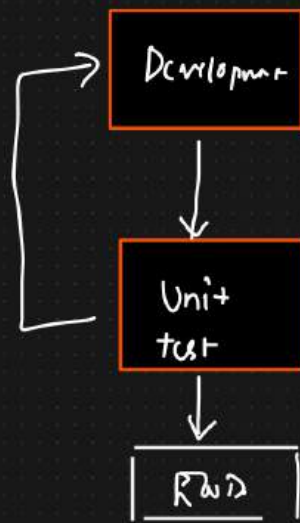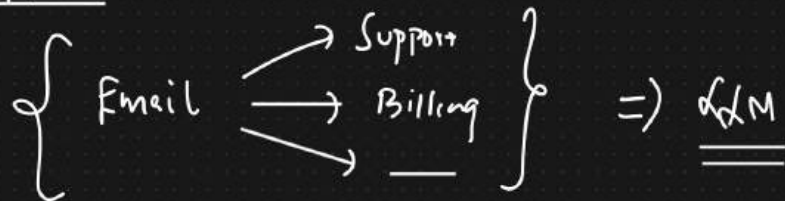
Automate Ticket Support

{ Email ⇉ → Support
         → Billing } =) LLM
         → _____

Mock Interview   ÷ 15 minutes → B2B
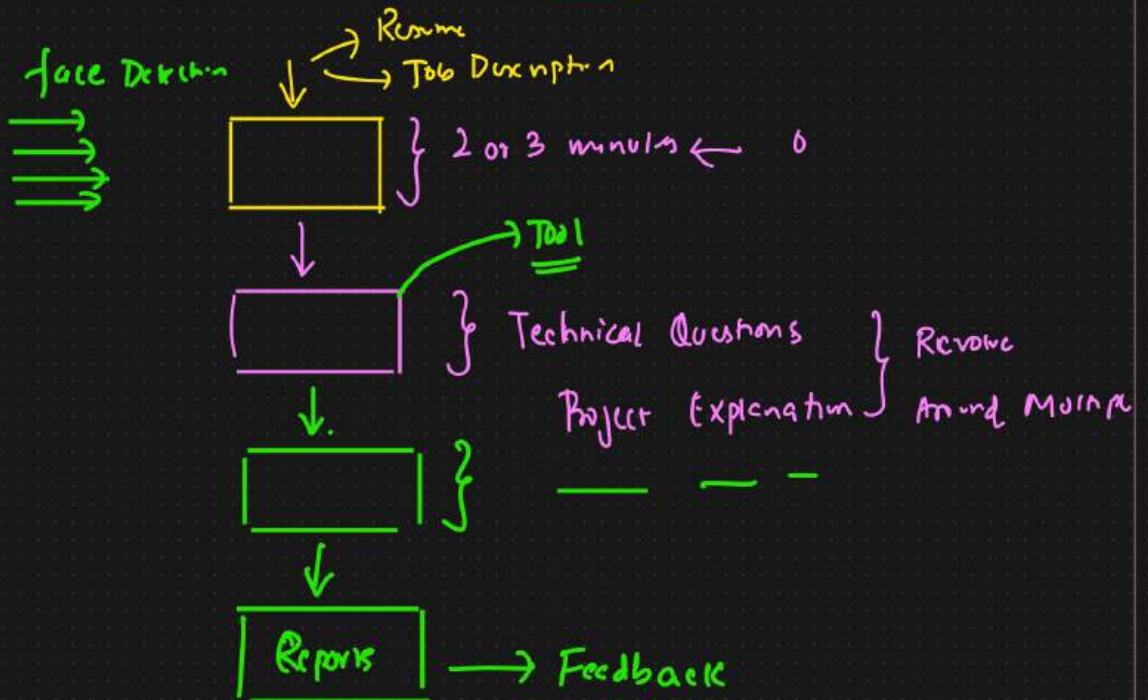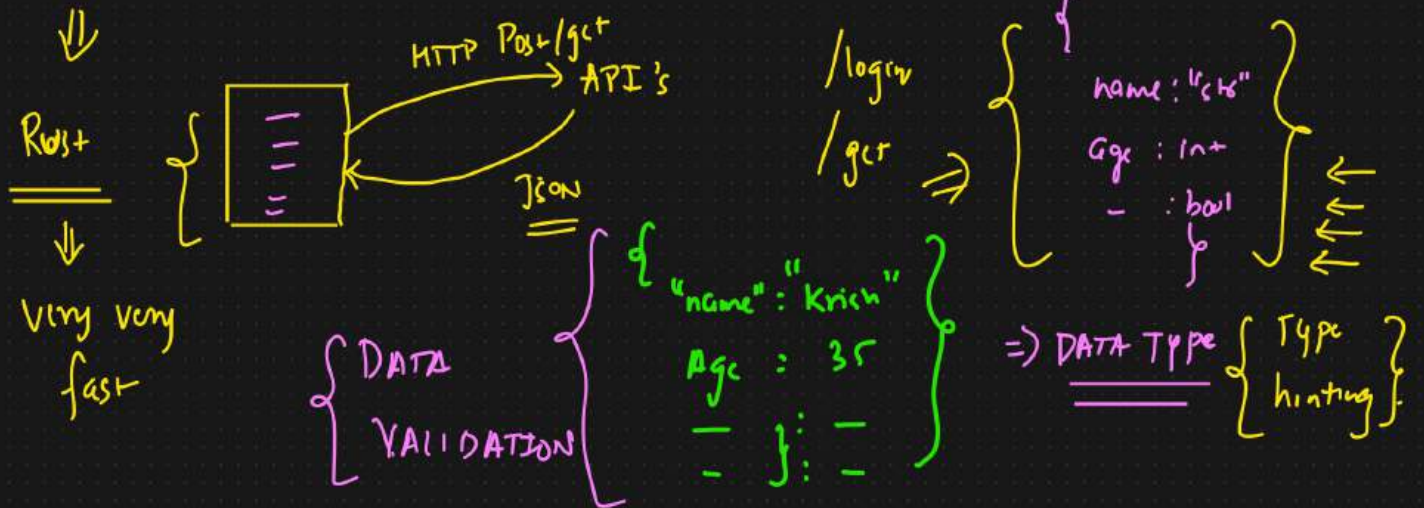
B2C   face Detection
                                    → Resume
                                 ↙ → Job Description
                 ┌──────────┐
                 │   │ } 2 or 3 minutes ← 0
                 └──────────┘
                       │
                       ▼   → Tool
                 ┌──────────┐
                 │   │ } Technical Questions } Revolve
                 └──────────┘   Project Explanation } Around Main pt.
                       │
                       ▼
                 ┌──────────┐
                 │   │ }   ____ ─ ─
                 └──────────┘
                       │
                       ▼
                 ┌──────────┐
                 │ Reports │ → Feedback
                 └──────────┘
```

**Pydantic** → **FAST API** ←  

$\Downarrow$

**Rust**  
$\Downarrow$  
Very very fast

HTTP Post/get  
→ API's  
JSON

$\begin{cases} \text{DATA} \\ \text{VALIDATION} \end{cases}$

$\{$ "name" : "Krish"  
Age : 35  
— } : —  
— —  $\}$

DATA Model

Class  
$\{$  
name : "str"  
Age : int  
— : bool  
$\}$  
← ← ← ←

⇒ DATA Type $\{$ Type hinting $\}$

/login  
/get ⇒

----

| DATA CLASSES | ⇒ DATA VALIDATION //

**Yt to Blog**

1) YT video → TRANSCRIPT

2) TRANSCRPT →  
→ Blog Headline : String  
→ Blog Content : string  
→ Conclusion : String

LLM  →  Class (BaseModel)  
$\{$  
headline : str  
content : str  
Conclusion : str  
$\}$  ←

→ | LLM | →