

AIML For beginners

Overview

- Course progress diaries are crucial for participant communication, supporting the tailored roadmaps provided for the full AI track participants.
- AI hierarchy established: AI is the superset, ML is a subset of AI, DL is a subset of ML, Gen AI is a subset of DL, and Agentic AI extends Gen AI with autonomous actions.
- Historical milestones include Turing's 1950s AI introduction and the official 1956 Dartmouth Conference establishing AI research as a field.
- ML pipeline stages were outlined: Data extraction, analysis, preprocessing, model training, evaluation, validation, and deployment via MLOps.
- Supervised Learning uses labeled data for training and has applications in weather forecasting, stock analysis, and astrology prediction tools.
- Generative AI is exemplified by ChatGPT, which operates on the GPT 5.2 model, showcasing the need for prompt engineering to optimize outputs.
- Multi-step prompting illustrated as an effective method for refining instructions and enhancing real-world task performance.
- Agentic AI can perform autonomous tasks such as scheduling, content creation, and customer interactions, differentiating from generative AI.
- Market research is essential for AI engineers to compare model capabilities and features, ensuring informed selection for projects.
- Upcoming learning opportunities include a session on broader AI concepts scheduled for January 25th and Python basics classes starting February 1st.

Notes

Meeting Introduction & Participant Check-ins (03:21 - 08:40)

- Sahid K21 opened the session as host from K21 Academy, specializing in AI courses and career guidance.
- Sahib attended for beginner session despite having joined multiple previous sessions; directed to Python classes at 9:00 PM IST.
- Rachana confirmed receipt of personalized roadmap and scheduled onboarding call at 11:00 AM.
- Sagarika joined first Beginners 1 class after attending Azure AIML and Leaders classes previously.
- Akhilesh from Atlanta identified scheduling conflicts due to US East timezone; recently joined AIML course but hadn't received roadmap yet.

Course Structure & Progress Tracking (08:40 - 11:59)

- Progress diary creation emphasized as primary communication method for course participants.
- Customized roadmaps provided specifically for participants enrolled in entire AI track, not just specific Azure or AWS tracks.
- Video tutorial link shared for creating progress diaries and understanding their significance.
- Session designed as beginner-friendly theory class without hands-on components.

Core AI Concepts Hierarchy (11:59 - 33:10)

- Artificial Intelligence (AI) established as superset - systems capable of mimicking human intelligence for decision-making and predictions.
- Machine Learning (ML) defined as subset of AI - the process/technology used to train machines to become artificially intelligent.
- Deep Learning (DL) positioned as subset of ML - uses multi-layered neural networks for complex tasks like face recognition and self-driving cars.
- Generative AI (Gen AI) categorized as subset of DL - creates new content but cannot take autonomous actions.
- Agentic AI introduced as subset of Gen AI - capable of autonomous actions beyond content generation.

AI Historical Context (23:17 - 33:11)

- Alan Turing credited with introducing AI concept in 1950s through machine thinking evaluation tests.
- 1956 Dartmouth Conference officially announced AI as field of research.
- Machine Learning concepts developed in 1980s, 30 years after initial AI introduction.
- Deep Learning emerged in 2000s to handle advanced tasks ML couldn't accomplish.
- Generative AI introduced in 2010 and remains trending technology.

Machine Learning Pipeline & Types (33:11 - 44:05)

- ML Pipeline stages: Data extraction → Data analysis → Data preprocessing → Model training → Model evaluation → Model validation → Model deployment via MLOps.
- Unsupervised Learning explained through fruit sorting example - machines learn patterns from unlabeled data and create groupings independently.
- Practical application demonstrated with Netflix customer segmentation based on movie preferences without knowing specific customer identities.

Supervised Learning & Deep Learning Applications (44:05 - 57:54)

- Supervised Learning contrasted with unsupervised - uses labeled data with correct answers provided during training phase.
- Applications include weather prediction, stock market analysis, and astrology apps for future predictions.

- Reinforcement Learning briefly covered as trial-and-error learning with reward/penalty feedback systems, primarily used in games and robotics.
- Deep Learning neural networks inspired by human brain neurons, designed for complex data processing in self-driving cars and face recognition.

Self-Driving Car Integration Example (57:56 - 01:13:37)

- AI serves as overall intelligent system making smart decisions like human drivers.
- Machine Learning provides pattern recognition and decision improvement based on historical data and experiences.
- Deep Learning handles complex visual recognition tasks including traffic signs, pedestrians, and police officers.
- Combined technologies enable autonomous vehicle operation with safety prioritization.

Generative AI Deep Dive (01:13:37 - 01:26:29)

- ChatGPT clarification: Application built on GPT 5.2 model, not the AI model itself - OpenAI provides the underlying technology.
- Foundation models defined as pre-trained models capable of multiple content generation tasks.
- Hugging Face platform showcased with 200,000+ available pre-trained models for reuse rather than building from scratch.
- Prompt engineering introduced as skill for crafting effective instructions to generate desired AI outputs.
- Hallucination defined as errors or incorrect content generated when models or prompts are improperly configured.

Practical Prompt Engineering Demonstration (01:26:29 - 01:36:36)

- Multi-step prompting process demonstrated for email creation, showing iterative refinement from vague to specific instructions.
- Real-world applications emphasized for complex tasks like KPI analysis from large datasets and video summarization.
- Fine-tuning applications explained where prompt engineering applies to model customization on specific datasets.
- Job market relevance highlighted with prompt engineer positions offering high salaries in current market.

Agentic AI Capabilities (01:36:37 - 01:42:02)

- Autonomous actions differentiate agentic AI from generative AI - can execute tasks like sending emails, booking meetings, scheduling calendar events.
- Advanced applications include content creation with automatic YouTube posting, customer interaction, and autonomous sales processes.
- Implementation complexity acknowledged requiring extensive learning and understanding of underlying concepts.

Course Project Structure Discussion (01:42:04 - 01:47:21)

- Multiple project scenarios available beyond single customer service agent - includes gym appointment booking, IT support, dynamic planning agents.
- Scalability confirmation for all projects using DevOps tools like Docker and Kubernetes through dedicated MLOps courses.
- Agent Ki Mastery course timeline discussed for future enrollment after foundational learning completion.

Model Selection & Market Research (01:47:23 - 01:54:19)

- GPT model limitations acknowledged - different models excel in different areas (image creation, research, quick tasks).
- Gemini's Nano Banana highlighted for superior realistic image generation compared to GPT models.
- Market research necessity emphasized for AI engineers to evaluate different models' strengths, weaknesses, pricing, and features.
- Professional workflow outlined: requirement gathering → market research → development → model integration.

Technical Implementation & API Usage (01:54:20 - 01:58:41)

- Hugging Face integration demonstrated using API tokens rather than model downloads due to size constraints.
- API key management explained for different platforms - unified tokens for model hubs vs. individual keys for specific models.
- Python integration shown through Google Colab environment for practical model implementation.

Future Learning Path & Session Conclusion (01:57:27 - 01:58:41)

- January 25th expanded session scheduled covering broader AI concepts and components.
- February 1st Python basics classes planned for foundational programming skills.
- Theoretical focus option available for PM/architect roles without extensive coding requirements.

Summary

AI Concepts Overview for Beginners

Sahid, an AI expert at K1 Academy, conducted a beginner-friendly session to explain the differences between various AI concepts, including AIML, Deep Learning, Gen AI, and Agentic AI. He clarified that AI is a broad field encompassing machine learning, deep learning, and other subsets, and emphasized that understanding these concepts is crucial for career growth. Sahid encouraged participants to create progress diaries for ongoing support and shared a link to a video explaining how to do so. The session was theoretical and aimed to help participants prepare for interviews, with no hands-on activities planned.

AI, ML, and Deep Learning Basics

The instructor explained the basics of artificial intelligence, machine learning, and deep learning, providing historical context and examples to illustrate these concepts. They described how AI mimics human intelligence through processes involving data and algorithms, and introduced the machine learning pipeline, which includes data extraction, cleaning, preparation, model training, evaluation, validation, and deployment. The instructor also mentioned MLOps, a combination of DevOps and machine learning, and briefly touched on the types of machine learning, including supervised and unsupervised learning.

Unsupervised Machine Learning Concepts

Sahid explained the concept of unsupervised machine learning using a scenario involving a child separating flowers based on features like color and shape, which was analogous to training a machine learning model without labeled data. He described how unsupervised learning allows a model to identify patterns and groupings in unlabeled data, using examples like clustering fruits based on features such as shape and color. Sahid concluded the theoretical explanation and invited Leroy to confirm his understanding, though Leroy was multitasking during the discussion.

Machine Learning and AI Overview

The instructor explained the concepts of machine learning, focusing on supervised and unsupervised learning, and their applications in various domains like e-commerce and weather prediction. They also discussed reinforcement learning and its use in games and self-driving cars. The instructor then provided a high-level overview of deep learning, comparing it to machine learning and explaining its role in processing complex data. Finally, they introduced the concept of artificial intelligence and how it integrates with machine learning and deep learning to create intelligent systems like self-driving cars.

Generative AI: Creation and Integration

Sahid explained the concept of generative AI, distinguishing between generative AI models and applications like ChatGPT. He emphasized that the focus of the course is on understanding how to create and integrate generative AI models, rather than just using existing applications. Sahid introduced the concept of prompt engineering, explaining how to craft precise instructions for generative AI models to produce accurate outputs. He also mentioned the concept of hallucination, where improper prompts can lead to errors or incorrect outputs. Sahid concluded by mentioning that they would later discuss why specific models might be needed despite the capabilities of existing models like GPT-5.

Understanding AI: Gen vs Agent

Sahid explained the differences between Generative AI (Gen AI) and Agentive AI (Agent AI), noting that Gen AI can generate content but cannot take autonomous actions, while Agent AI can perform autonomous actions. He demonstrated how to use prompts to create emails with ChatGPT and emphasized the importance of prompt engineering in

fine-tuning AI models. Sahid also discussed future course content, including building agents with no-code and low-code solutions, as well as more advanced topics like Dockerization and Kubernetes for scalability.

AI Model Comparison and Access

Sahid explained the differences between various AI models, emphasizing that GPT-5.2 is primarily designed for content creation but lacks capabilities in areas like image generation compared to other models like Gemini's nano banana. He highlighted the importance of exploring different models for specific use cases and conducting market research to understand their features and limitations. Tim asked about accessing information on model training, and Sahid suggested conducting market research to gather such details. They also discussed using API keys to access models from platforms like Hugging Face, with Sahid demonstrating the process of creating and using tokens in Python code. The session concluded with an announcement of upcoming classes on January 25th and February 1st, which will cover more advanced topics in AI and Python programming.