

## Lesson 8: Building Agents

### Introduction:

In this lesson, we will dive into the concept of **agents** and their role in AI systems. Agents are autonomous entities designed to perform tasks, make decisions, and interact with their environment in an intelligent manner. Building agents for your AI projects can automate processes, improve efficiency, and provide a seamless user experience.

We'll explore **agents vs. workflows**, understand how to build simple agents, and introduce the use of tools like **N8N** for building workflow-based automation.

This session will be divided into two parts:

1. **Lecture (1.5 hours)**: Explaining the theory of agents, comparing them with workflows, and introducing N8N.
2. **Challenge (1.5 hours)**: A hands-on exercise where you'll create a simple agent to use in your project.

### Lecture: Agents vs. Workflows

#### What is an Agent?

An **agent** in AI is an entity that can autonomously perform actions or make decisions to achieve specific goals. Agents can be **reactive** (responding to specific inputs or triggers) or **proactive** (initiating actions based on predefined goals). Agents often have decision-making capabilities, and they can adapt to changes in the environment, process new information, and execute tasks.

#### Key Characteristics of Agents:

1. **Autonomy**: Agents act independently to make decisions without direct human intervention.
2. **Adaptability**: They can adjust their behavior based on changing conditions or new data.
3. **Goal-Oriented**: Agents perform actions to achieve specific goals, such as completing tasks or making recommendations.
4. **Interaction**: Agents interact with their environment, often receiving inputs and providing outputs.

Examples of AI agents include:

- **Personal assistants** (e.g., Siri, Alexa) that perform tasks for users.
- **Chatbots** that engage in conversations with users.
- **Recommendation systems** that suggest products or services.

### **What is a Workflow?**

A **workflow** refers to a sequence of automated actions or processes designed to accomplish a specific task or set of tasks. Workflows are generally linear, following a defined path of execution, often triggered by an event. Unlike agents, workflows are usually rule-based and do not exhibit decision-making capabilities or adaptability. They follow a preset sequence of actions.

### **Key Characteristics of Workflows:**

- **Task automation:** Workflows automate repetitive tasks such as data processing, file transfers, or notifications.
- **Predefined process:** The workflow follows a specific order of steps or tasks.
- **No decision-making:** Workflows don't make decisions but rely on predefined logic to function.