

You can download the `requirements.txt` for this course from the workspace of this lab.
File --> Open...

L2: Create Agents to Research and Write an Article

In this lesson, you will be introduced to the foundational concepts of multi-agent systems and get an overview of the crewAI framework.

The libraries are already installed in the classroom. If you're running this notebook on your own machine, you can install the following:

```
!pip install crewai==0.28.8 crewai_tools==0.1.6  
langchain_community==0.0.29
```

In [1]:

```
# Warning control  
import warnings  
warnings.filterwarnings('ignore')
```

- Import from the crewAI library.

In [2]:

```
from crewai import Agent, Task, Crew
```

- As a LLM for your agents, you'll be using OpenAI's `gpt-3.5-turbo`.

Optional Note: crewAI also allow other popular models to be used as a LLM for your Agents. You can see some of the examples at the [bottom of the notebook](#).

In [3]:

```
import os  
from utils import get_openai_api_key  
  
openai_api_key = get_openai_api_key()  
os.environ["OPENAI_MODEL_NAME"] = 'gpt-3.5-turbo'
```

Creating Agents

- Define your Agents, and provide them a `role`, `goal` and `backstory`.
- It has been seen that LLMs perform better when they are role playing.

Agent: Planner

Note: The benefit of using *multiple strings*:

```
varname = "line 1 of text"
         "line 2 of text"
```

versus the *triple quote docstring*:

```
varname = """line 1 of text
           line 2 of text
           """
```

is that it can avoid adding those whitespaces and newline characters, making it better formatted to be passed to the LLM.

```
In [4]: planner = Agent(
    role="Content Planner",
    goal="Plan engaging and factually accurate content on {topic}",
    backstory="You're working on planning a blog article "
              "about the topic: {topic}."
              "You collect information that helps the "
              "audience learn something "
              "and make informed decisions. "
              "Your work is the basis for "
              "the Content Writer to write an article on this topic.",
    allow_delegation=False,
    verbose=True
)
```

Agent: Writer

```
In [5]: writer = Agent(
    role="Content Writer",
    goal="Write insightful and factually accurate "
          "opinion piece about the topic: {topic}",
    backstory="You're working on a writing "
              "a new opinion piece about the topic: {topic}. "
              "You base your writing on the work of "
              "the Content Planner, who provides an outline "
              "and relevant context about the topic. "
              "You follow the main objectives and "
              "direction of the outline, "
              "as provide by the Content Planner. "
              "You also provide objective and impartial insights "
              "and back them up with information "
              "provide by the Content Planner. "
              "You acknowledge in your opinion piece "
              "when your statements are opinions "
              "as opposed to objective statements.",
    allow_delegation=False,
    verbose=True
)
```

Agent: Editor

```
In [6]: editor = Agent(
    role="Editor",
```

```
goal="Edit a given blog post to align with "
    "the writing style of the organization. ",
backstory="You are an editor who receives a blog post "
    "from the Content Writer. "
    "Your goal is to review the blog post "
    "to ensure that it follows journalistic best practices,"
    "provides balanced viewpoints "
    "when providing opinions or assertions, "
    "and also avoids major controversial topics "
    "or opinions when possible.",
allow_delegation=False,
verbose=True
)
```

Creating Tasks

- Define your Tasks, and provide them a `description`, `expected_output` and `agent`.

Task: Plan

```
In [7]: plan = Task(
    description=(
        "1. Prioritize the latest trends, key players, "
        "and noteworthy news on {topic}.\n"
        "2. Identify the target audience, considering "
        "their interests and pain points.\n"
        "3. Develop a detailed content outline including "
        "an introduction, key points, and a call to action.\n"
        "4. Include SEO keywords and relevant data or sources."
    ),
    expected_output="A comprehensive content plan document "
        "with an outline, audience analysis, "
        "SEO keywords, and resources.",
    agent=planner,
)
```

Task: Write

```
In [8]: write = Task(
    description=(
        "1. Use the content plan to craft a compelling "
        "blog post on {topic}.\n"
        "2. Incorporate SEO keywords naturally.\n"
            "3. Sections/Subtitles are properly named "
            "in an engaging manner.\n"
        "4. Ensure the post is structured with an "
            "engaging introduction, insightful body, "
            "and a summarizing conclusion.\n"
        "5. Proofread for grammatical errors and "
            "alignment with the brand's voice.\n"
    )
)
```

```
        ),
        expected_output="A well-written blog post "
            "in markdown format, ready for publication, "
            "each section should have 2 or 3 paragraphs.",
        agent=writer,
    )
```

Task: Edit

```
In [9]: edit = Task(
    description="Proofread the given blog post for "
        "grammatical errors and "
        "alignment with the brand's voice."),
    expected_output="A well-written blog post in markdown format, "
        "ready for publication, "
        "each section should have 2 or 3 paragraphs.",
    agent=editor
)
```

Creating the Crew

- Create your crew of Agents
- Pass the tasks to be performed by those agents.
 - **Note:** For this simple example, the tasks will be performed sequentially (i.e they are dependent on each other), so the *order* of the task in the list *matters*.
- `verbose=2` allows you to see all the logs of the execution.

```
In [10]: crew = Crew(
    agents=[planner, writer, editor],
    tasks=[plan, write, edit],
    verbose=2
)
```

Running the Crew

Note: LLMs can provide different outputs for the same input, so what you get might be different than what you see in the video.

```
In [11]: result = crew.kickoff(inputs={"topic": "Artificial Intelligence"})
```

```
[DEBUG]: == Working Agent: Content Planner
[INFO]: == Starting Task: 1. Prioritize the latest trends, key players, and noteworthy news on Artificial Intelligence.
2. Identify the target audience, considering their interests and pain points.
3. Develop a detailed content outline including an introduction, key points, and a call to action.
4. Include SEO keywords and relevant data or sources.
```

> Entering new CrewAgentExecutor chain...
I now can give a great answer

Final Answer:
Content Plan Document

Title: The Latest Trends and Key Players in Artificial Intelligence

Introduction:

- Brief overview of artificial intelligence and its importance in today's technological landscape
- Mention of the rapid advancements and innovations in AI technology

Key Points:

1. Latest Trends in Artificial Intelligence:

- Deep learning and neural networks
- Natural language processing
- AI in healthcare and medicine
- Autonomous vehicles and robotics
- AI ethics and bias

2. Key Players in Artificial Intelligence:

- Google DeepMind
- IBM Watson
- Amazon Web Services
- Microsoft Azure
- OpenAI

3. Noteworthy News in Artificial Intelligence:

- Recent breakthroughs in AI research
- Industry partnerships and collaborations
- AI applications in various sectors
- Regulatory developments in AI technology

Target Audience:

- Tech-savvy individuals interested in AI advancements
- Business professionals looking to implement AI solutions
- Researchers and academics in the field of artificial intelligence
- General audience curious about the impact of AI on society

SEO Keywords:

- Artificial Intelligence trends
- Key players in AI
- Latest news in artificial intelligence
- AI technologies and advancements
- Impact of AI on different industries

Resources:

- Forbes: Latest AI Trends to Watch
- TechCrunch: Top Companies Leading in AI Innovation
- Harvard Business Review: The Ethics of Artificial Intelligence
- McKinsey & Company: AI in Healthcare Report
- Gartner: AI Market Trends and Forecasts

Call to Action:

- Encourage readers to stay updated on the latest AI trends and developments
- Prompt them to explore the impact of AI on their industry or area of interest
- Invite them to share their thoughts and insights on AI advancements

This comprehensive content plan document includes an outline of the article on the latest trends and key players in artificial intelligence, an analysis of the target audience, relevant SEO keywords, and credible resources for further information.

> Finished chain.

[DEBUG]: == [Content Planner] Task output: Content Plan Document

Title: The Latest Trends and Key Players in Artificial Intelligence

Introduction:

- Brief overview of artificial intelligence and its importance in today's technological landscape
- Mention of the rapid advancements and innovations in AI technology

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1. Latest Trends in Artificial Intelligence:

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- Latest news in artificial intelligence
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This comprehensive content plan document includes an outline of the article on the latest trends and key players in artificial intelligence, an analysis of the target audience, relevant SEO keywords, and credible resources for further information.

```
[DEBUG]: == Working Agent: Content Writer
[INFO]: == Starting Task: 1. Use the content plan to craft a compelling blog post on Artificial Intelligence.
2. Incorporate SEO keywords naturally.
3. Sections/Subtitles are properly named in an engaging manner.
4. Ensure the post is structured with an engaging introduction, insightful body, and a summarizing conclusion.
5. Proofread for grammatical errors and alignment with the brand's voice.
```

> Entering new CrewAgentExecutor chain...

I have a clear understanding of the content plan and I am ready to craft a compelling blog post on Artificial Intelligence. I will incorporate SEO keywords naturally and ensure that each section is engaging and properly structured. My goal is to provide insightful information about the latest trends and key players in AI, catering to a diverse audience interested in this rapidly evolving field.

Final Answer:

```
# The Latest Trends and Key Players in Artificial Intelligence
```

```
## Introduction
```

Artificial Intelligence (AI) has become a pivotal technology in today's fast-paced digital landscape. From enhancing business operations to revolutionizing healthcare, AI is at the forefront of innovation. The rapid advancements in AI technology have paved the way for groundbreaking developments in various sectors, shaping the future of society.

```
## Latest Trends in Artificial Intelligence
```

```
### Deep Learning and Neural Networks
```

Deep learning and neural networks are driving the evolution of AI, enabling machines to learn from vast amounts of data and make autonomous decisions. This trend has sig

nificantly improved the capabilities of AI systems, leading to more accurate predictions and insights.

Natural Language Processing

Natural Language Processing (NLP) is another key trend in AI, allowing machines to understand and generate human language. This technology is powering virtual assistants, chatbots, and language translation services, making communication more seamless and efficient.

AI in Healthcare and Medicine

AI is revolutionizing the healthcare industry by streamlining processes, diagnosing diseases, and personalizing treatments. From predictive analytics to robotic surgeries, AI is transforming the way healthcare professionals deliver care and improve patient outcomes.

Autonomous Vehicles and Robotics

The development of autonomous vehicles and robotics is reshaping transportation and manufacturing industries. AI-powered self-driving cars, drones, and robots are enhancing efficiency, safety, and productivity, heralding a new era of automation and innovation.

AI Ethics and Bias

As AI becomes more pervasive in society, ethical considerations and bias have come to the forefront. Ensuring transparency, fairness, and accountability in AI systems is crucial to prevent unintended consequences and promote trust among users.

Key Players in Artificial Intelligence

Google DeepMind

Google DeepMind is a leader in AI research and development, focusing on deep learning, reinforcement learning, and healthcare applications. Their groundbreaking work in AI has pushed the boundaries of what machines can achieve.

IBM Watson

IBM Watson is a cognitive computing platform that leverages AI to analyze vast amounts of data and provide valuable insights. From healthcare to finance, Watson is revolutionizing industries with its innovative solutions.

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Amazon Web Services (AWS) offers a wide range of AI services and tools, including machine learning, computer vision, and natural language processing. AWS's AI capabilities enable businesses to harness the power of AI in their operations.

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OpenAI is a non-profit AI research organization dedicated to developing safe and beneficial AI for humanity. Their work focuses on advancing AI technology while ensuring ethical and responsible use of artificial intelligence.

Noteworthy News in Artificial Intelligence

Recent breakthroughs in AI research, industry partnerships, AI applications in various fields, and policy discussions surrounding AI development and regulation.

us sectors, and regulatory developments are shaping the future of artificial intelligence. Stay updated on the latest AI trends and developments to explore the impact of AI on your industry or area of interest.

In conclusion, Artificial Intelligence is a transformative technology that continues to drive innovation and change across industries. By staying informed about the latest trends and key players in AI, you can harness the power of artificial intelligence to drive success and make a positive impact on society.

Don't miss out on the incredible opportunities that AI presents. Explore the latest AI trends, engage with industry leaders, and share your insights on the future of artificial intelligence. Embrace the potential of AI and be part of the next wave of digital transformation.

> Finished chain.

[DEBUG]: == [Content Writer] Task output: # The Latest Trends and Key Players in Artificial Intelligence

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[DEBUG]: == Working Agent: Editor

[INFO]: == Starting Task: Proofread the given blog post for grammatical errors and alignment with the brand's voice.

> Entering new CrewAgentExecutor chain...

I now can give a great answer

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> Finished chain.

[DEBUG]: == [Editor] Task output: # The Latest Trends and Key Players in Artificial Intelligence

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- Display the results of your execution as markdown in the notebook.

```
In [12]: from IPython.display import Markdown  
Markdown(result)
```

Out[12]:

The Latest Trends and Key Players in Artificial Intelligence

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Try it Yourself

- Pass in a topic of your choice and see what the agents come up with!

```
In [13]: topic = "YOUR TOPIC HERE"
result = crew.kickoff(inputs={"topic": topic})
```

```
[DEBUG]: == Working Agent: Content Planner
[INFO]: == Starting Task: 1. Prioritize the latest trends, key players, and noteworthy news on YOUR TOPIC HERE.
2. Identify the target audience, considering their interests and pain points.
3. Develop a detailed content outline including an introduction, key points, and a call to action.
4. Include SEO keywords and relevant data or sources.
```

> Entering new CrewAgentExecutor chain...
I now can give a great answer

Final Answer:

Content Plan:

Title: The Importance of Mental Health Awareness in the Workplace

Outline:

I. Introduction

- Definition of mental health
- Importance of mental health awareness in the workplace
- Brief overview of key points to be discussed

II. Latest Trends

- Increase in mental health awareness initiatives in companies
- Implementation of mental health programs and policies
- Rise in remote work and its impact on mental health

III. Key Players

- Mental health advocates and organizations
- HR departments in companies promoting mental health initiatives
- Employee assistance programs (EAPs) providers

IV. Noteworthy News

- Studies on the impact of mental health on productivity
- Success stories of companies who prioritize mental health
- Updates on legislation related to mental health in the workplace

V. Target Audience

- Employees in corporate settings
- HR professionals and managers
- Mental health advocates and organizations

VI. Audience Analysis

- Interests: Promoting mental health awareness, improving workplace culture, increasing productivity
- Pain Points: Stress, burnout, stigma surrounding mental health issues

VII. SEO Keywords

- Mental health awareness in the workplace
- Workplace mental health programs
- Employee mental health initiatives
- Importance of mental health support

VIII. Resources

- National Alliance on Mental Illness (NAMI)

- World Health Organization (WHO) mental health resources
- Harvard Business Review articles on workplace mental health

Call to Action:

Encourage readers to prioritize mental health awareness in their workplace, provide resources for implementing mental health programs, and promote open discussions about mental health issues.

Final Content Plan:

Title: The Importance of Mental Health Awareness in the Workplace

Introduction:

Mental health is an essential aspect of overall well-being, especially in the workplace where individuals spend a significant amount of their time. This article will dive into the latest trends, key players, and noteworthy news surrounding mental health awareness in the workplace.

Latest Trends:

In recent years, there has been a noticeable increase in mental health awareness initiatives in companies. Organizations are implementing mental health programs and policies to support their employees' well-being. Additionally, the rise in remote work has brought attention to the impact of isolation and increased stress on mental health.

Key Players:

Key players in promoting mental health awareness in the workplace include mental health advocates and organizations, HR departments in companies that prioritize mental health initiatives, and providers of Employee Assistance Programs (EAPs).

Noteworthy News:

Recent studies have highlighted the significant impact of mental health on productivity and overall workplace culture. Success stories of companies that prioritize mental health and updates on legislation related to mental health in the workplace are also noteworthy developments.

Target Audience:

This article is intended for employees in corporate settings, HR professionals, managers, and mental health advocates and organizations.

Audience Analysis:

The target audience is interested in promoting mental health awareness, improving workplace culture, and increasing productivity. Pain points include stress, burnout, and the stigma surrounding mental health issues.

SEO Keywords:

- Mental health awareness in the workplace
- Workplace mental health programs
- Employee mental health initiatives
- Importance of mental health support

Resources:

- National Alliance on Mental Illness (NAMI)
- World Health Organization (WHO) mental health resources
- Harvard Business Review articles on workplace mental health

Call to Action:

Readers are encouraged to prioritize mental health awareness in their workplace, utilize resources for implementing mental health programs, and promote open discussions about mental health issues.

> Finished chain.

[DEBUG]: == [Content Planner] Task output: Content Plan:
Title: The Importance of Mental Health Awareness in the Workplace

Outline:

I. Introduction

- Definition of mental health
- Importance of mental health awareness in the workplace
- Brief overview of key points to be discussed

II. Latest Trends

- Increase in mental health awareness initiatives in companies
- Implementation of mental health programs and policies
- Rise in remote work and its impact on mental health

III. Key Players

- Mental health advocates and organizations
- HR departments in companies promoting mental health initiatives
- Employee assistance programs (EAPs) providers

IV. Noteworthy News

- Studies on the impact of mental health on productivity
- Success stories of companies who prioritize mental health
- Updates on legislation related to mental health in the workplace

V. Target Audience

- Employees in corporate settings
- HR professionals and managers
- Mental health advocates and organizations

VI. Audience Analysis

- Interests: Promoting mental health awareness, improving workplace culture, increasing productivity
- Pain Points: Stress, burnout, stigma surrounding mental health issues

VII. SEO Keywords

- Mental health awareness in the workplace
- Workplace mental health programs
- Employee mental health initiatives
- Importance of mental health support

VIII. Resources

- National Alliance on Mental Illness (NAMI)
- World Health Organization (WHO) mental health resources
- Harvard Business Review articles on workplace mental health

Call to Action:

Encourage readers to prioritize mental health awareness in their workplace, provide resources for implementing mental health programs, and promote open discussions about mental health issues.

Final Content Plan:

Title: The Importance of Mental Health Awareness in the Workplace

Introduction:

Mental health is an essential aspect of overall well-being, especially in the workplace where individuals spend a significant amount of their time. This article will dive into the latest trends, key players, and noteworthy news surrounding mental health awareness in the workplace.

Latest Trends:

In recent years, there has been a noticeable increase in mental health awareness initiatives in companies. Organizations are implementing mental health programs and policies to support their employees' well-being. Additionally, the rise in remote work has brought attention to the impact of isolation and increased stress on mental health.

Key Players:

Key players in promoting mental health awareness in the workplace include mental health advocates and organizations, HR departments in companies that prioritize mental health initiatives, and providers of Employee Assistance Programs (EAPs).

Noteworthy News:

Recent studies have highlighted the significant impact of mental health on productivity and overall workplace culture. Success stories of companies that prioritize mental health and updates on legislation related to mental health in the workplace are also noteworthy developments.

Target Audience:

This article is intended for employees in corporate settings, HR professionals, managers, and mental health advocates and organizations.

Audience Analysis:

The target audience is interested in promoting mental health awareness, improving workplace culture, and increasing productivity. Pain points include stress, burnout, and the stigma surrounding mental health issues.

SEO Keywords:

- Mental health awareness in the workplace
- Workplace mental health programs
- Employee mental health initiatives
- Importance of mental health support

Resources:

- National Alliance on Mental Illness (NAMI)
- World Health Organization (WHO) mental health resources
- Harvard Business Review articles on workplace mental health

Call to Action:

Readers are encouraged to prioritize mental health awareness in their workplace, utilize resources for implementing mental health programs, and promote open discussions about mental health issues.

[DEBUG]: == Working Agent: Content Writer

[INFO]: == Starting Task: 1. Use the content plan to craft a compelling blog post on YOUR TOPIC HERE.

2. Incorporate SEO keywords naturally.

3. Sections/Subtitles are properly named in an engaging manner.
4. Ensure the post is structured with an engaging introduction, insightful body, and a summarizing conclusion.
5. Proofread for grammatical errors and alignment with the brand's voice.

> Entering new CrewAgentExecutor chain...

I now can give a great answer

Final Answer:

The Importance of Mental Health Awareness in the Workplace

Introduction

Mental health is a critical component of overall well-being, especially in the context of the workplace where individuals often spend a significant portion of their time. The importance of mental health awareness in the workplace cannot be overstated, as it impacts not only the individual employees but also the overall productivity and success of the organization. In this article, we will explore the latest trends, key players, and noteworthy news surrounding mental health awareness in the workplace.

Latest Trends

In recent years, there has been a noticeable surge in mental health awareness initiatives within companies. Organizations are increasingly recognizing the importance of implementing mental health programs and policies to support the well-being of their employees. With the rise of remote work, there has been a growing awareness of the impact of isolation and increased stress on mental health, highlighting the need for proactive measures to address these issues.

Key Players

Key players in promoting mental health awareness in the workplace include mental health advocates and organizations, HR departments that prioritize mental health initiatives, and providers of Employee Assistance Programs (EAPs). These entities play a crucial role in creating a supportive and inclusive environment that prioritizes mental health and well-being.

Noteworthy News

Recent studies have underscored the significant impact of mental health on productivity and overall workplace culture. Success stories of companies that prioritize mental health initiatives serve as inspiring examples of the positive outcomes that can result from such efforts. Additionally, updates on legislation related to mental health in the workplace reflect a growing recognition of the importance of addressing mental health issues in a comprehensive and proactive manner.

Target Audience

This article is intended for a wide range of audiences, including employees in corporate settings, HR professionals, managers, and mental health advocates and organizations. By raising awareness and fostering open discussions about mental health in the workplace, we can create a more supportive and inclusive environment for all individuals.

Audience Analysis

The target audience is interested in promoting mental health awareness, improving workplace culture, and enhancing productivity. Common pain points include stress, burnout, and the stigma surrounding mental health issues, highlighting the need for comprehensive mental health support and resources in the workplace.

Call to Action

As we navigate the complexities of the modern workplace, it is essential to prioritize mental health awareness and support in all aspects of our professional lives. By utilizing resources such as those provided by the National Alliance on Mental Illness (NAMI), the World Health Organization (WHO), and the Harvard Business Review, we can implement effective mental health programs and initiatives in our workplaces. Tog

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> Finished chain.

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[DEBUG]: == Working Agent: Editor
[INFO]: == Starting Task: Proofread the given blog post for grammatical errors and alignment with the brand's voice.
```

> Entering new CrewAgentExecutor chain...
I now can give a great answer

Final Answer:

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# The Importance of Mental Health Awareness in the Workplace
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Other Popular Models as LLM for your Agents

Hugging Face (HuggingFaceHub endpoint)

```
from langchain_community.llms import HuggingFaceHub

llm = HuggingFaceHub(
    repo_id="HuggingFace4/zephyr-7b-beta",
    huggingfacehub_api_token=<HF_TOKEN_HERE>,
    task="text-generation",
)

### you will pass "llm" to your agent function
```

Mistral API

```
OPENAI_API_KEY=your-mistral-api-key
OPENAI_API_BASE=https://api.mistral.ai/v1
OPENAI_MODEL_NAME="mistral-small"
```

Cohere

```
from langchain_community.chat_models import ChatCohere
# Initialize Language model
os.environ["COHERE_API_KEY"] = "your-cohere-api-key"
llm = ChatCohere()

### you will pass "LLm" to your agent function
```

For using Llama locally with Ollama and more, checkout the crewAI documentation on [Connecting to any LLM](#).

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