AMBIENT-IT

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Sign up

LLM Training

3 days (21 hours)

Presentation

Transformer-based language models are powerful tools for a variety of linguistic tasks. Our LLM training course will teach you how to use this language model.

During this course, you will learn to master the key concepts of natural language processing (NLP) and the Transformer architecture and their evolution, particularly in business use cases such as telecoms, customer service or fraud detection.

You'll also learn how to convert text data into digital tokens, understand different tokenization methods (WordPiece, BPE, etc.) and model training strategies for service personalization.

The course will also teach you how to create task-optimized prompts (zero-shot, one-shot), structure queries, make constraints explicit, and exploit these techniques in industrial contexts.

As with all our training courses, our LLM course will be presented with its latest features (at the time of writing).

Objectives

- Understand the fundamentals of language models (LLMs) and NLP
- Master tokenization and LLM learning objectives
- Formulate efficient prompts (Prompt Engineering)
- Handling models via API (hosted or local)
- Adapt LLMs to specific cases with Fine-Tuning
- Building a Retrieval-Augmented Generation (RAG) system

Target audience

- Developers
- IT professionals

Prerequisites

- Basic knowledge of automatic natural language processing (ANLP) and linguistic modeling
- Basic knowledge of computer science and programming
- Understanding of tokenization

OUR LLM TRAINING PROGRAM

Introduction to LLMs and architecture

- Introduction to LLMs
- Tokenization and embeddings
- Self-Attention and Transformer architecture
- Architecture variants
- Practical workshop: visualizing GPT-2 attention heads

LLM manipulation via API

- Overview of suppliers
- Using an LLM API
- Model comparison
- Python integration
- Workshop: Comparing GPT-4, Mistral-7B and LLaMA2-13B on the same prompt

Prompt Engineering

- Prompting basics
- Advanced prompting
- Templates & tooling
- Practical workshop: Summarizing an article in 3 different

styles Augmented Generation by Recovery

- Introduction to RAG
- Complete pipeline
- Vector storage and search
- Integration with LangChain
- Practical workshop: Creating an internal support chatbot from internal PDFs

Fine-Tuning with LoRA, QLoRA, PEFT +.

- Why fine-tuning?
- LoRA, QLoRA, PEFT
- Practical implementation
- SBERT & contrastive learning
- Workshop: Fine-tuning a Mistral model on customer support tickets

Orchestration with LangChain & LangGraph

- Reminders on LLM agents
- Building chains
- Introduction to LangGraph
- Workshop: Creating an "academic researcher" agent

Complementary modules

LLM agent deployment with API and interface

- FastAPI
- Streamlit
- Docking
- CI/CD with GitLab
- Practical workshop: Deploying a complete agent (FastAPI API+ Streamlit UI) on a local

server LLMOps best practices

- Cost and latency optimization
- Security and regulation
- Observability
- Practical workshop: Creating a dashboard to track the performance+ cost of a deployed

agent Multimodal models

- Introduction to multimodal models
- Vision Transformers and BLIP
- Data processing
- Hands-on workshop: Generating automatic captions and asking questions about images

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the forthcoming course, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical training: 60% hands-on, 40% theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Certification

A certificate will be awarded to each trainee who has completed the entire course.