

Large Language Models

Audience course Large Language Models

The course Large Language Models is intended for software engineers, data scientists, and technical professionals who want to work with large language models (LLMs).

Prerequisites Large Language Models Course

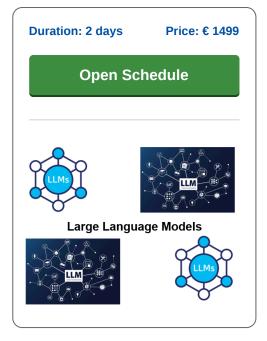
To participate in the course, a basic understanding of Python and machine learning is required. Familiarity with neural networks or natural language processing is useful.

Realization training Large Language Models

The course is led by an experienced trainer and includes a mix of theory and handson exercises. Demonstrations and case studies involving LLMs are used to illustrate key concepts.

Large Language Models Certificate

After successfully completing the course, attendants receive a certificate of participation in the course Large Language Models.



Content Course Large Language Models

This course Large Language Models provides a comprehensive understanding of large language models (LLMs), from foundational architectures like transformers to advanced topics like fine-tuning, safety, deployment, and real-world applications. Participants will explore open models, tools, and cutting-edge use cases across domains.

Intro to LLMs

This module introduces LLMs and their evolution, from GPT to BERT and T5. It explains transformers, attention, and tokenization. Participants explore training objectives, scaling laws, and key differences between pretraining and fine-tuning. Open source vs proprietary models are also compared.

Model Architectures

Participants learn LLM types: decoders, encoder-decoders, and key models like GPT, LLaMA, and PaLM. It covers training pipelines, optimizers, and precision formats. Tools like Hugging Face and Deepspeed are introduced, plus tuning techniques like LoRA and incontext learning.

Training LLMs

This module focuses on preparing and fine-tuning data for LLMs. It includes tokenizer setup, adapters, SFT, and avoiding overfitting. Participants learn metrics for evaluation, model alignment, and benchmarking. Hugging Face tools and best practices are emphasized.

LLM Deployment

Participants learn how to serve and optimize LLMs for production. Topics include quantization, distillation, and cloud deployment (AWS, Azure, GCP). Also covered are LangChain integration, embeddings, caching, and reducing inference costs with scalable strategies.

Safety and Bias

Focus is on LLM safety: identifying and reducing bias, model auditing, and prompt attacks. Topics include explainability, red teaming, and moderation. Legal and privacy concerns are discussed, with strategies for responsible LLM deployment.

LLM Use Cases

The course ends with real-world LLM applications in code, legal, health, and education. Use cases include RAG systems, agents, and plugins. Participants explore enterprise integration, model evaluation, and research trends shaping the future of LLMs.



Modules Course Large Language Models

| Module 1: Intro to LLMs | Module 2: Model Architectures | Module 3: Training LLMs |
|---|---|---|
| What are LLMs? | Decoder vs Encoder-Decoder Models | Dataset Creation and Curation |
| Transformer architecture | GPT, LLaMA, T5, and PaLM | Tokenizer Customization |
| Training Objectives (causal, masked) | Training Pipeline Overview | Data Preprocessing |
| Evolution of LLMs (GPT, BERT, T5) | Optimizers (Adam, Adafactor) | Fine-Tuning with Hugging Face |
| Open Source vs Proprietary LLMs | Precision (FP32, FP16, quantization) | SFT (Supervised Fine-Tuning) |
| Tokenization and Vocabulary | Transformers (HF), Megatron, Deepspeed | Adapters and LoRA |
| Attention Mechanism | Parameter vs Instruction Suning | Evaluation Metrics |
| Model Scaling Laws | LoRA and QLoRA | Avoiding Overfitting |
| Transfer Learning | In-context Learning | Model Alignment |
| Pretraining vs Fine-Tuning | Reinforcement Learning with HF | Model Evaluation and Benchmarking |
| Module 4: LLM Deployment | Module 5: Safety and Bias | Module 6: LLM Use Cases |
| Informac Ontimization | Lindaratanding Madel Disease | Coding Assistants |
| merence Opumization | Understanding Model Biases | Couling Assistants |
| • | Mitigation Strategies | Al for Legal and Finance |
| Model Distillation | | |
| Model Distillation Quantization Techniques | Mitigation Strategies | Al for Legal and Finance |
| Inference Optimization Model Distillation Quantization Techniques Hosting on AWS, GCP, Azure Using Model Gateways | Mitigation Strategies Model Auditing | Al for Legal and Finance Education and Learning |
| Model Distillation Quantization Techniques Hosting on AWS, GCP, Azure | Mitigation Strategies Model Auditing Adversarial Prompts | Al for Legal and Finance Education and Learning Health Care and Biotech |
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